

IN 229 Rev. B 3/11/04



Figure 1. The IntelliScope Computerized Object Locator.

Congratulations on your purchase of the Orion IntelliScope<sup>™</sup> Computerized Object Locator. When used with any of the SkyQuest IntelliScope XT Dobsonians, the object locator (controller) will provide quick, easy access to thousands of celestial objects for viewing with your telescope.

The controller's user-friendly keypad combined with its database of more than 14,000 celestial objects put the night sky literally at your fingertips. You just select an object to view, press Enter, then move the telescope manually following the guide arrows on the liquid crystal display (LCD) screen. In seconds, the IntelliScope's high-resolution, 9,216-step digital encoders pinpoint the object, placing it smack-dab in the telescope's field of view! Easy!

Compared to motor-dependent computerized telescopes systems, IntelliScope is faster, quieter, easier, and more power efficient. And IntelliScope Dobs eschew the complex initialization, data entry, or "drive training" procedures required by most other computerized telescopes. Instead, the IntelliScope setup involves simply pointing the scope to two bright stars and pressing the Enter key. That's it — then you're ready for action!

These instructions will help you set up and properly operate your IntelliScope Computerized Object Locator. Please read them thoroughly.

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# **Parts List**

Your IntelliScope<sup>™</sup> Computerized Object Locator comes with the following parts:

- Qty. Description
- 1 Object locator computer (controller)
- 1 Altitude encoder assembly
- 1 Coil cable
- 1 Altitude encoder cable (53" long)
- 1 Azimuth encoder cable (24" long)
- 6 Wire retaining clips
- 2 Hook-and-loop strips (1 "hook" strip, 1 "loop" strip)
- 1 Plastic bumper
- 3 Wood screws
- 2 Nylon washers
- 1 9-volt battery

The only tool needed for installation is a Phillips-head screwdriver. Remove the optical tube from the base to begin installation.

Note: The IntelliScope Computerized Object Locator is only compatible with Orion Sky-Quest XT IntelliScope Dobsonians. If you have another Dobsonian, or any other telescope, the IntelliScope system will not function properly.

# 1. Installation

- 1) Install the altitude encoder assembly onto the base's right side panel. This is the side of the base opposite the side with the IntelliScope Computerized Controller Port. Below the 5/8" through-hole in the panel, there are two predrilled starter holes in the inwardfacing surface (Figure 2). Take two of the supplied wood screws and push them through the two slotted holes in the bottom of the altitude encoder's computer board. The screw heads should be on the same side as the altitude encoder's modular jack. Now, with the screws pushed through the encoder board, place a nylon washer on the end of each screw (Figure 3). Then, thread the screws into the starter holes in the side panel. The shaft on the altitude encoder assembly should protrude through the 5/8" through-hole in the side panel. It will take a bit of dexterity to keep the washers on the ends of the screws when installing, so don't get frustrated if it takes a couple tries. The screws should not be fully tightened; they should be tight, but not tight enough to prevent the altitude encoder from moving up and down within the slots in the encoder board.
- 2) There is a pilot hole above the 5/8" through hole in the right side panel's interior surface; this is where the plastic bumper that protects the altitude encoder assembly will be installed. Take the remaining wood screw, push it through the bumper, and thread it into the pilot hole until tight (Figure 4).
- Connect one end of the azimuth encoder cable (the shorter of the two cables) to the encoder jack in the top baseplate of the Dobsonian base. Connect the other end to the



**Figure 2.** The two pilot holes used to mount the altitude encoder assembly are located on the interior surface of the right side panel of the base.



**Figure 3.** Place a nylon washer on the end of each screw after the screws are pushed through the altitude encoder assembly.



**Figure 4.** Install the bumper into the pilot hole above the altitude encoder assembly.

encoder connector board that should be already installed on the base's left side panel. The cable should plug into the jack on the left side of the encoder connector board (see Figure 5).

4) Connect one end of the altitude encoder cable to the modular jack on the altitude encoder assembly. Connect the other end of the cable to the jack on the right side of the encoder connector board (see Figure 5).

5) Use the provided wire clips to secure the altitude and azimuth cables neatly to the base. We recommend using two clips for the (shorter) azimuth cable, and four clips for the (longer) altitude cable (Figure 5a.). The clips have adhesive backing; simply peel the paper off the back of the clip and press the adhesive back to the base where you want the clip to be located.

6) Place the telescope optical tube into the base. Be very careful not to hit the altitude encoder with the side bearing on the tube when doing this or damage to the encoder could result. The bumper helps to prevent such contact.

7) Reinstall the telescope's tensioning knob (the one with the Teflon and metal washers) through the base's left side panel (the side that has the IntelliScope Computerized Controller Port label) and into the threaded hole in the center of the tube's side bearing.

8) Reinstall the telescope's retaining knob, without its black nylon bushing, through the altitude encoder's aluminum shaft (now protruding from the right side panel) and into the tube's side bearing (Figure 6). Make sure this knob is fully tightened.

9) Insert one end of the coil cable into the larger of the two jacks on the top of the IntelliScope controller (Figure 1). Insert the other end into the "IntelliScope Computerized Controller Port" on the left side of the Dobsonian base.

10) Two hook-and-loop strips (one strip of "hooks" and one strip of "loops") have been provided to hang the IntelliScope controller in a convenient location on the base when not in use. Place the "hooks" strip on the



**Figure 5.** The azimuth cable plugs into the jack on the left of the encoder connector board. The altitude cable plugs into the jack on the right.



Figure 5a. Use the wire clips to secure the cables neatly to the base



**Figure 6.** The retaining knob now goes through the shaft of the altitude encoder assembly before threading into the side bearing on the telescope tube.

back of the controller, and the "loops" strip on the base in a convenient spot. Make certain the location of the strip on the base will not cause the controller to interfere with the motions of the mount. You may want to consider using the optional holster instead of the supplied hook-and-loop strips. The holster is a metal holder custom-designed to fit the IntelliScope controller. When installed at the top of the Dobsonian base, it provides a firm mounting for the controller at a convenient position for easy access. The controller can be removed from the holster when needed or kept in the holster during use.

11) Slide the battery cover off the back of the hand control and insert the 9-volt alkaline battery. Make sure the positive and negative terminals of the battery are oriented as shown in the bottom of the battery compartment. Replace the battery cover.

Your IntelliScope Computerized Object Locator is now installed and ready to be used.

# 2. Alignment

This section will familiarize you with the alignment procedure for the IntelliScope system.

### **Powering the Controller**

To turn the controller on, firmly press the **Power** button. The LED lights will activate and the LCD screen will display its introduction message. The intensity of the illumination can be adjusted by repeatedly pressing the **Power** button. There are five levels of LED brightness. Choose a brightness level that suits your conditions and needs. (Dimmer settings will prolong battery life.)

To turn the controller off, press and hold the **Power** button for a few seconds, then release it.

To conserve battery life, the controller is programmed to shut itself off after being idle for 15 minutes. So, make sure to press a button at least once every 15 minutes if you do not want the controller to turn off. If the controller does turn off, you will need to perform the initial alignment procedure again.

If the LCD screen and the buttons' backlighting automatically begin to dim, it's time to change batteries.

### **Initial Vertical Alignment**

After powering up the controller, the top line of the LCD display will read: "POINT VER-TICAL." If the vertical stop you installed on the Dobsonian base during assembly of the telescope is properly adjusted (see below), simply rotate the telescope upwards in altitude until the bottom of the tube comes into contact with the vertical stop. Once the telescope tube is in the vertical position, press the **Enter** button to start the two-star alignment procedure.

### **Adjusting the Vertical Stop**

In order for the IntelliScope system to work accurately, the vertical stop must be precisely adjusted so that the optical tube is truly perpendicular to the azimuth axis of the base when the controller says "POINT VERTICAL." For most IntelliScopes, the vertical stop must use the nylon spacer, one of the 1/16"-thick washers, and the 1/32"-thick washers to achieve this. These parts, plus an extra 1/16"-thick washer are supplied with the Dobsonian base. If you do not have access to a carpenter's level, then using the spacer,

1/16"-thick washer, and 1/32"-thick washer will be the best you can do to adjust the vertical stop.

For the most precise adjustment of the vertical stop (which will allow the best pointing accuracy to be achieved), you should use a carpenter's level. Any hardware store will have one. First, make sure the base itself is level. Place the carpenter's level on the top ground board and rotate the base 180° in azimuth (Figure 7). The level should indicate that the base is level through the entire rotation. If not, then reposition the base on the ground, or place shims underneath the feet until the base stays level though a 180° rotation.



**Figure 7.** Place a carpenter's level on the base as shown. The base should stay level through a 180° rotation in azimuth. Once the vertical stop is set, the base does not need to be level to function properly.

Next, place the nylon spacer, the 1/16"-thick washer, and the 1/32"-thick washer on the vertical stop screw, and thread the entire assembly into the insert in the base's front brace. Now, rotate the telescope upwards in altitude until the mirror cell of the telescope comes into contact with the vertical stop. Place the carpenter's level across the top of the telescope (see Figure 8). Is the top of the tube level? If so, you are finished adjusting the vertical stop. If not, add or remove a washer to the vertical stop screw until the top of the tube is level when the mirror cell comes into contact with the vertical stop.

Once the vertical stop is accurately adjusted, it should not need adjustment again. The base does not need to be level for the IntelliScope system to function properly; the



Figure 8. Once the base is leveled, point the tube up until the mirror cell comes into contact with the vertical stop. Then, place the carpenter's level across the top of the tube as shown. If the vertical stop is set properly, the top of the tube should also be level.

base only needs leveling when initially setting the vertical stop.

#### Simple Two-Star Alignment

After setting the vertical position of the optical tube, a simple two-star alignment process is all that is needed to ready the IntelliScope system for operation. This is a great simplification from other computerized systems, which require you to enter data such as your longitude, latitude, and time zone. For the IntelliScope controller to accurately find objects, you only need to center two bright stars in your telescope and indicate to the controller which two stars you have centered. This is quite easy to do. For your convenience, we have provided finder charts for the alignment stars in Appendix B. Use the finder chart to locate and identify two bright stars in your current night sky. For best results, choose two stars that are at least 60° apart from each other. (The width of your fist at arm's length is about 10°, so you want the stars to be at least six fist-widths apart.)

So, the optical tube is now in the vertical position and you've chosen two bright stars in the sky to use for alignment. The telescope should have a high power eyepiece, such as the 10mm Sirius Plössl, in the eyepiece holder and the finder scope should be properly aligned with the telescope (these procedures are described in your telescope's manual). The LCD screen will state on its top line "ALIGN STAR 1," with the name of a star flashing on the second line.

Use the arrow buttons to scroll through the names of the alignment stars. The up arrow button scrolls through the stars alphabetically from A to Z. The down arrow button scrolls alphabetically backwards, from Z to A. When you arrive at the name of the star you wish to align on, you can begin to move the telescope so that it is pointing at that star (but don't press the **Enter** button yet).

Note: The controller will not accept Polaris as the first alignment star. This helps prevent the pointing accuracy from decreasing over time. It is OK to use Polaris as the second alignment star, however.

Take hold of the "navigation knob" on the optical tube and move the telescope so that it is pointing in the general area of the alignment star. Aim the telescope so the alignment star appears in finder scope. Be careful not to confuse the alignment star with other stars in the area when doing this. (It will likely be the brightest star in the field of view.) Now,

move the telescope until you have centered the star on the crosshairs of the finder scope. Look into the eyepiece of the telescope, and you should see the alignment star in the field of view of the eyepiece. If it isn't, then your finder scope is out of alignment with your telescope and will need to be adjusted. Once the alignment star is in the eyepiece's field of view, center it in the eyepiece as best you can by making small movements to the telescope. (If you have one, an illuminated reticle eyepiece is great for centering alignment stars). Once this is done, press the **Enter** button on the controller. You have now completed one-half of the two-star alignment.

The LCD screen will now read "ALIGN STAR 2" on the first line with an alignment star's name flashing on the second line. As before, scroll through the names of the stars with the arrow buttons until you reach your second chosen alignment star. Repeat the procedure described above for your second alignment star. When you have aligned on the second star, press the Enter button. The LCD will then display a number. It is the alignment error factor, or "warp" (W) factor.

### The Alignment Error (Warp) Factor

The "warp" alignment error factor essentially lets you know if your alignment was accurate or not. Ideally, this number should be as low as possible, but any "W" of 0.5 or smaller is acceptable (regardless of + or - sign). Warp factors of  $\pm 0.3$  and  $\pm 0.4$  are the most common. Warp factors under  $\pm 0.2$  are typically not achievable. If you complete an alignment and the warp factor is larger than  $\pm 0.5$  (e.g.,  $\pm 0.6$ ,  $\pm 0.7$ ,  $\pm 0.7$ ,  $\pm 0.7$ , etc.), then you must turn the controller off (by holding down the **Power** button) and begin the alignment procedure again. Otherwise, there is no guarantee that the controller will consistently place objects within the field of view of a medium-low power eyepiece.

An unacceptable warp factor may indicate that you aligned on the wrong star or did not have the telescope initially in a precisely vertical position. If you are having problems getting the warp factor at or below  $\pm 0.5$ , see the troubleshooting section in Appendix A.

Your IntelliScope Computerized Object Locator is now ready to find objects. Replace the high- powered eyepiece you used for centering the alignment stars with a low-power, wide-field eyepiece, such as the 25mm Sirius Plössl.

# **3. Overview of Controller**

The IntelliScope Computerized Object Locator has been specifically designed for ease of use. This section will help familiarize you with the basic layout and operation of the controller.

### Pushbuttons

Besides the **Power**, **Enter**, **ID**, **FCN**, and up/down arrows, all pushbuttons have letters on them with numbers above them. The letters designate the function of the pushbutton. The numbers above them are used for entering numerical data only; the numbers are never active until a function is first chosen. The numbers are arranged like a telephone keypad for ease of number entry. None of the function buttons will work properly until an initial alignment, as outlined previously, is completed. If you press a function button before the two-star alignment is completed, the controller will display "MUST STAR ALIGN." Turn the unit off, then on again (by using the **Power** button), to begin the alignment routine again.

#### The Guide Arrows

The controller leads you to astronomical targets with guide arrows displayed on the LCD screen. After an object is selected to view, you will see two guide arrows, one that points

left or right, and one that points up or down. Move the telescope tube in the corresponding direction of the guide arrows. If you are standing to the left of the telescope and facing the same direction the telescope is pointed, the guide arrows will exactly correspond with the direction you should move the telescope (Figure 9). Otherwise, if an up arrow is displayed, move the telescope tube upward, if a down arrow is displayed, move the telescope tube downward, if a left arrow is displayed, rotate the telescope counterclockwise, and if a right arrow is displayed, rotate the telescope clockwise. There is a number next to each guide arrow that indicates how far the telescope needs to be moved to reach the selected object. As you move the telescope toward the object, this number will decrease. When the number goes below ten, the figure will be displayed in tenths; this helps to make small, precise movements to the telescope tube in order to bring the object into your



**Figure 9.** If you stand to the left of the telescope, and face the direction the tube is pointing, the guide arrows will correspond exactly with the direction you should move the telescope in order to find the selected object.

field of view. When both numbers reach zero, stop moving the telescope. The object will be within the field of view of a medium-low power eyepiece (25mm focal length or longer).

For example, look at Figure 10a, which shows an LCD screen for someone trying to locate M51, otherwise known as the Whirlpool Galaxy. The first arrow is pointing right and gives a number of 34. The second arrow is pointing up and displays the number 12. This means that the telescope tube should be moved to the right (clockwise) and up. When you are close to M51, the numbers will be displayed in tenths, as is shown in Figure 10b. When the numbers reach zero (Figure 10c), the telescope will be pointed right at the Whirlpool Galaxy.



**Figure 10a-c.** This sequence of pictures illustrate how the controller's guide arrows will look as you are finding an object. (a.) When you are far away from the object, there will be a number (from 10 to 179) to the left of the guide arrows. (b.) When you are close to the object, each guide arrow will display a number on its immediate left (from 0 to 9) and immediate right (from 0 to 9); the number on the left is whole number increments, while the number on the right is in increments of tenths. This helps in making small movements to the telescope to pinpoint the object's location. (c.) When the guide arrows display "0.0 0.0", the object will be within the field of view of the telescope (with a 25mm or longer focal length eyepiece).

It is easiest to move the telescope in one direction at a time (say altitude) until the corresponding number reached "0.0". Then move the scope in the other direction (azimuth) until that number also reads "0.0".

If the object selected to view is currently located below the horizon, the word "HORIZON" will flash before the guide arrows are displayed. Choose another object to view.

# 4. Locating the Planets

By far the most popular objects for viewing, after the Moon, are the planets. Since the other eight planets in our solar system are also orbiting the Sun, they do not appear in fixed positions in the night sky like deep-sky objects and stars do. Because of this, the controller requires you to input the date before it can find the planets.

To find planets with your IntelliScope Computerized Object Locator, use the following procedure:

- 1) Press the **Planet** button on the controller.
- 2) The LCD screen will display a date similar to the following:

### **DATE 01 JUN 2003**

- 3) The number after the word "DATE" will be flashing and represents the day of the month. Input the two-digit day using the number buttons.
- 4) The three-letter month will now be flashing. Use the arrow buttons to scroll to the present month and then press the **Enter** button.
- 5) Now the year will flash. Input the year using the number buttons.

If you make a mistake while inputting the date, press the **Enter** button at any time while still within the **Planet** button function. The LCD screen will then display the last date input, with the two-digit day after the word "DATE" flashing. Input the correct date as outlined above.

Now, to choose a planet to view, press the arrow buttons and scroll through the planets. The planet's name will be displayed in the upper left section of the LCD screen, with the guide arrows on the upper right of the LCD screen. Move the telescope in the corresponding direction shown by the guide arrows.

The lower left screen shows the constellation that the planet appears in, with its present co-ordinates given in right ascension and declination. When you are finished viewing the planet, you may scroll to another planet by using the arrow buttons.

The features and details you can see will vary from planet to planet. The following descriptions give a brief overview of what to expect when viewing them:

**MERCURY** Mercury is often so close to the Sun that it cannot be seen. Sometimes it is visible for a brief period after the Sun sets, and sometimes it's visible in the morning just before the Sun rises. Mercury does not really show any detail, but is quite bright. With your telescope, you will be able to investigate this planet's orange-colored hue. Like Venus, Mercury sometimes appears as a crescent, rather than as a full disk.

**VENUS** At its brightest, Venus is the most luminous object in the sky, excluding the Sun and the Moon. It is so bright that sometimes it is visible to the naked eye during full day-light! Ironically, Venus appears as a thin crescent, not a full disk, when at its peak brightness. Because it is close to the Sun, it never wanders too far from the morning or evening

horizon. No surface markings can be seen on Venus, which is always shrouded in dense clouds.

**MARS** The Red Planet makes its closest approach to Earth every two years. During close approaches you'll see a red disk, possibly some light and dark regions, and maybe the polar ice cap. To see surface detail on Mars, you will need a high power eyepiece and very steady air!

**JUPITER** The largest planet, Jupiter, is a great subject for observation. You can see the disk of the giant planet and watch the ever-changing positions of its four largest moons — Io, Callisto, Europa, and Ganymede. Higher power eyepieces should bring out the cloud bands on the planet's disk and maybe even the Great Red Spot.

**SATURN** The ringed planet is a breathtaking sight when it is well positioned. The tilt angle of the rings varies over a period of many years; sometimes they are seen edge-on, while at other times they are broadside and look like giant "ears" on each side of Saturn's disk. A steady atmosphere (good seeing) is necessary for a good view. You will probably see a bright "star" close by, which is Saturn's brightest moon, Titan.

**URANUS** Uranus is a faint planet, and requires high powers (at least 100x) before it starts to show any detail that distinguishes it from stars. Uranus will appear as a pale, blue-green disk.

**NEPTUNE** Like Uranus, Neptune will require high powers before showing anything to distinguish itself from stars. Neptune will appear as a bluish-colored disk, possibly with a very faint moon nearby if you are using a larger-aperture IntelliScope.

**PLUTO** Smaller than our own Moon, Pluto is very, very faint and shows little more than a point of light similar to a star. Even the Hubble Space Telescope is unable to show much detail on Pluto. Many amateur astronomers note how Pluto moves with respect to background stars (over several nights) in order to confirm their observation of our most remote planet.

# 5. Locating Deep-Sky Objects by Catalog

Catalogs are groups of deep sky objects of interest that have been assembled and given designations. Very often a deep-sky object will have a catalog number, as well as a "common" name. For example, the Orion Nebula is listed in the Messier catalog as "M42." The controller has three catalogs built-in: The Messier catalog (M), the New General Catalog (NGC), and the Index Catalog (IC). Many of the objects in the Messier catalog also have NGC catalog designations.

#### The Messier Catalog

The Messier catalog contains 110 galaxies, nebulas, and star clusters identified by the famous French astronomer Charles Messier and his colleagues in the late 1700's. These are some of the most popular celestial attractions observed by amateur astronomers.

To view an object from the Messier catalog, press the **M** button. Then enter the number of the Messier object you wish to view using the numeric buttons and press the **Enter** button. For example, to view Messier 57, also known as "the Ring Nebula," you would press the **M** button, then press the "5" button, then press the "7" button, followed by the **Enter** button. If the number of the Messier object you wish to view contains three digits, it is not necessary to press **Enter** after inputting the third digit.

The object's catalog designation will be shown in the upper left corner of the display screen, with the guide arrows in the upper right. The lower left will display the constellation the object resides in and the object's common name (if it has one) or a brief description of the object. Move the telescope in the corresponding directions shown by the guide arrows to locate the object.

You can get more information about the selected object by pressing the **Enter** button. The second line of the LCD display will then cycle information about the object you are viewing such as its celestial coordinates (R.A. and Dec.), magnitude (brightness), size (in arc-minutes or arc-seconds), and a brief scrolling text description.

When you are finished viewing the selected Messier object, you may scroll to another Messier object by using the arrow buttons, or you can select another Messier object to view by pressing the  $\mathbf{M}$  button again.

## **The New General Catalog**

The New General Catalog, or NGC, is a catalog of some 7,840 deep-sky objects compiled by the Danish astronomer J. L. E. Dreyer more than 100 years ago. It contains hundreds of excellent examples of each type of deep-sky object and is the most well known and used catalog by amateur astronomers beyond the already mentioned Messier catalog. To be more precise, the version of the New General Catalog used in the IntelliScope Computerized Object Locator is an improved version known as the "Revised New General Catalog"; this version has many corrections from Dreyer's original list.

To view an object from the NGC catalog, press the **NGC** button. Then enter the number of the NGC object you wish to view using the numeric buttons and press **Enter**. For example, to view the Andromeda Galaxy, which is listed as NGC224, you would press the **NGC** button, then the "2" button twice, then the "4" button, followed by the **Enter** button. If the number of the NGC object you wish to view contains four digits, it is not necessary to press **Enter** after inputting the fourth digit.

The object's catalog designation will be shown in the upper left corner of the LCD screen, with the guide arrows in the upper right. The lower left will show the constellation the object resides in, and the object's common name (if it has one) or a brief description of the object will be shown in the lower right. Move the telescope in the corresponding directions shown by the guide arrows.

You can get more information about the selected object by pressing the **Enter** button. The second line of the LCD display will then cycle information about the object you are viewing such as its celestial coordinates (R.A. and Dec.), magnitude (brightness), size (in arcminutes or arc-seconds), and a brief scrolling text description.

When you are finished viewing the selected NGC object, you may scroll to another NGC object by using the arrow buttons, or you can select another NGC object to view by pressing the **NGC** button again.

### The Index Catalog

The Index Catalog, or IC, contains 5,386 objects discovered in the decade or so after the NGC catalog was first published. This list contains objects similar to the NGC, but IC objects are typically fainter and more difficult to observe.

To view an object from the IC catalog, press the **IC** button. Then input the number of the IC object you wish to view using the numeric buttons and press the **Enter** button. For example, to view the Flaming Star Nebula, which is listed as IC405, you would press the **IC** button, then the "4" button, then the "0" button, then the "5" button, followed by the

**Enter** button. If the number of the IC object you wish to view contains four digits, it is not necessary to press **Enter** after inputting the fourth digit.

The object's catalog designation will be shown in the upper left corner of the LCD screen, with the guide arrows in the upper right. The lower left will show the constellation the object resides in, and the object's common name (if it has one) or a brief description of the object will be shown in the lower right. Move the telescope in the corresponding directions shown by the guide arrows.

You can get more information about the selected object by pressing the **Enter** button. The second line of the LCD display will then cycle information about the object you are viewing such as its celestial coordinates (R.A. and Dec.), magnitude (brightness), size (in arcminutes or arc-seconds), and a brief scrolling text description.

When you are finished viewing the selected IC object, you may scroll to another IC object by using the arrow buttons, or you can select another IC object to view by pressing the IC button again.

# 6. Locating Deep Sky Objects by Object Type

Rather that trying to select objects by catalog numbers, you may wish to simply view certain types of objects. This is where the **Nebula**, **Galaxy**, and **Cluster** buttons come in handy. These buttons will access a selection of the best and brightest nebulas, galaxies, and star clusters in the night sky.

The **Nebula**, **Cluster** and **Galaxy** buttons are organized by constellation. So, before using these buttons, decide in which constellation you would like to view an object. Choose a constellation that is at least 40° high in the sky to get a good view. If you are unsure of the constellations currently visible in your night sky, consult a planisphere or the monthly star chart at telescope.com.

### **Locating Nebulas**

Amongst the most beautiful objects in the night sky, nebulas are clouds of dust and gas that are lit by a nearby stellar source. There are several different types of nebulas; emission nebulas, which are where star systems form, planetary nebulas, which are the result of a star dying, and reflection nebulas, which are caused by dust reflecting starlight. Most have low surface brightness, so a dark sky free of light-pollution is best for a night of viewing nebulas.

To view a nebula, press the **Nebula** button on the controller. The LCD screen will then display the word "NEBULA" with a flashing three-letter constellation designation after it. Now, select the constellation in which you would like to view a nebula. Use the arrow buttons to scroll through the list of constellations. If you are unsure which constellation the three-letter designation represents, refer to Appendix C. Once you have selected the constellation, press **Enter**. A nebula in that constellation will now appear on the LCD screen, along with the guide arrows to lead you to the nebula. The current constellation is shown in the lower left, and the nebula's proper name or catalog number is in the lower right. For more information about the nebula selected, press the **Enter** button.

To go to the next nebula in the selected constellation, simply press the up arrow button. The guide arrows will now direct you to the next nebula in the constellation. If there are no more nebulas available in that constellation, a nebula from the next constellation (in alphabetical order) will be displayed. To select another constellation in which to view nebulas, press the **Nebula** button again.

### **Locating Star Clusters**

Star clusters are just what their name implies; groupings of stars. Star clusters come in two main types, open and globular. Open star clusters reside within our Milky Way galaxy and usually contain a handful of stars clustered together because they were spawned from the same gas cloud. Globular clusters are more like miniature galaxies, with hundreds or thousands of stars packed into a spherical shape by mutual gravity. Globular clusters reside outside the disk of the Milky Way galaxy and orbit the galaxy's center. It is believed that globular clusters are formed as a natural consequence of galaxy formation. Star clusters, in general, are somewhat bright compared to other deep-sky objects, so many will appear quite spectacular, even in the smaller telescopes.

To view a star cluster, press the **Cluster** button on the controller. The LCD screen will then display the word "STAR CLUSTER" with a flashing three-letter constellation designation after it. Now, select the constellation in which you would like to view a star cluster. Use the arrow buttons to scroll through the list of constellations. If you are unsure which constellation the three-letter designation represents, refer to Appendix C. Once you have selected the constellation, press **Enter**. A star cluster in that constellation will now appear on the LCD screen, along with the guide arrows to lead you to the star cluster. The current constellation is shown in the lower left, and the star cluster's proper name or catalog number is in the lower right. For more information about the star cluster selected, press the **Enter** button.

To go to the next star cluster in the selected constellation, simply press the up arrow button. The guide arrows will now direct you to the next star cluster in the constellation. If there are no more star clusters available in that constellation, a star cluster from the next constellation (in alphabetical order) will be displayed. To select another constellation in which to view a star cluster, press the **Cluster** button again.

#### **Locating Galaxies**

Nebulas may be beautiful and star clusters impressive, but nothing has quite the breathtaking power of observing a galaxy. Galaxies are collections of billions of stars that come in a variety of shapes and sizes. Viewing a galaxy always gives the observer a revelation of just how vast our universe truly is. Keep in mind, however, that most galaxies are quite faint, and may be challenging to identify, especially in smaller telescopes.

To view a galaxy, press the **Galaxy** button on the controller. The LCD screen will then display the word "GALAXY" with a flashing three-letter constellation designation after it. Now, select the constellation in which you would like to view a galaxy. Use the arrow buttons to scroll through the list of constellations. If you are unsure which constellation the three-letter designation represents, refer to Appendix C. Once you have selected the constellation, press **Enter**. A galaxy in that constellation will now appear on the LCD screen, along with the guide arrows to lead you to the galaxy. The current constellation is shown in the lower left, and the galaxy's proper name or catalog number is in the lower right. If you wish to have more information about the galaxy selected, press the **Enter** button.

To go to the next galaxy in the selected constellation, simply press the up arrow button. The guide arrows will now direct you to the next galaxy in the constellation. If there are no more galaxies available in that constellation, a galaxy from the next constellation (in alphabetical order) will be displayed. To select another constellation in which to view galaxy, press the Galaxy button again.

# 7. Locating Stars

The IntelliScope database contains 837 stars. Stars always appear like tiny points of light. Even powerful telescopes cannot magnify a star to appear as more than a point of light! You can, however, enjoy the different colors of the stars and locate many pretty double and multiple stars. You can also monitor variable stars from night to night to see how their brightness changes over time.

To view a star, press the **Star** button on the controller. The LCD screen will then display the word "STAR" with the word "NAMED" flashing next to it. From this screen, use the arrow buttons to choose from "NAMED," "DOUBLE," "VARIABLE," and "CATALOG."

### **Named Stars**

The named stars are the brightest in the night sky. These are the stars that the ancients gave proper names to, like "Arcturus" or "Mizar."

To select a named star, press **Enter** after selecting "NAMED" from the **Star** button choices. You can now use the arrow buttons to scroll through the list of named stars. The stars are listed in alphabetical order. Once you have found the named star you would like to observe, the guide arrows will direct you to move the telescope to the star's position. The upper left corner of the LCD screen will show the named star's ST catalog number (the IntelliScope's entire ST catalog is printed in Appendix D for easy reference), and the lower left shows the constellation in which the star resides. Pressing **Enter** again will display the star's R.A. and Dec. coordinates, its magnitude, and a brief description.

To find another named star to observe, simply continue scrolling through the list of named stars.

#### **Double (and Multiple) Stars**

Many stars in the night sky appear to be single stars, but they are not. They are actually double or multiple star systems. Some of these systems comprise two or more stars gravitationally bound to each other, while others are just two (or more) stars in the same line of sight. At high magnifications, it is possible to "split" many double (and multiple) stars into their individual components. It can also be interesting to contrast and compare the different colors and magnitudes of the stars in the system. Be aware, however, that good seeing conditions are critical for separating close components of a double or multiple star.

To select a double (or multiple) star to observe, press **Enter** after selecting "DOUBLE" from the **Star** button choices. The LCD screen will then display the word "DOUBLE" with a flashing three- letter constellation designation after it. Now, select the constellation in which you would like to view a double star. Use the arrow buttons to scroll through the list of constellations. If you are unsure which constellation the three-letter designation represents, refer to Appendix C. Once you have selected the constellation, press **Enter**. A double star in that constellation will now appear on the LCD screen, along with the guide arrows to lead you to the double star. The current constellation is shown in the lower left, and the double star's name is in the lower right.

Note: Double stars typically have names like "Zeta" (Greek letter designation) or a number like "36" (Flamsteed number). The full names for these double stars are actually linked to the constellation they reside in. For example, in the constellation Andromeda, these stars would be "Zeta And" and "36 And."

For more information about the double star selected, press the **Enter** button. (The "S=" now refers to the separation, in arc-seconds, between the double stars. For multiple stars,

the "S=" refers to the separation between the two brightest stars. The "M=" now refers to the magnitude of the brightest star.) To go to the next double star in the selected constellation, simply press the up arrow button. The guide arrows will now direct you to the next double star in the constellation. If there are no more double stars available in that constellation, a double star from the next constellation (in alphabetical order) will be displayed. To select another constellation in which to view a double star, press the **Star** button, select "DOUBLE", and press **Enter**.

### **Variable Stars**

Variable stars are stars that change their brightness, also called magnitude, over time. The period of brightness change varies greatly from star to star; some variable stars change brightness over several days while others may take several months to noticeably change. It is fun and challenging to watch a star's magnitude change over time. Observers typically compare the current brightness of the variable star to other stars around it (whose magnitudes are known and do not change over time).

To select a variable star to observe, press **Enter** after selecting "VARIABLE" from the **Star** button choices. The LCD screen will then display the word "VARIABLE" with a flashing three-letter constellation designation after it. Now, select the constellation in which you would like to view a variable star. Use the arrow buttons to scroll through the list of constellations. If you are unsure which constellation the three-letter designation represents, refer to Appendix C. Once you have selected the constellation, press **Enter**. A variable star in that constellation will now appear on the LCD screen, along with the guide arrows to lead you to the variable star. The current constellation is shown in the lower left, and the variable star's name is in the lower right.

Note: Variable stars typically have names like "Eta" (Greek letter designation) or a letter designation like "R." The full names for these variable stars are actually linked to the constellation they reside in. For example, in the constellation Aquila, these stars would be "Eta Aql" and "R Aql."

For more information about the variable star selected, press the **Enter** button. (The "M=" refers to the mean magnitude of the variable star.) To go to the next variable star in the selected constellation, simply press the up arrow button. The guide arrows will now direct you to the next variable star in the constellation. If there are no more variable stars available in that constellation, a variable star from the next constellation (in alphabetical order) will be displayed. To select another constellation in which to view a variable star, press the **Star** button, select "VARIABLE," and press **Enter**.

### **Catalog (ST) Stars**

The "ST" catalog contains all of the stars in the IntelliScope Computerized Object Locator's database. This catalog has 837 of the most interesting stars to view in the night sky. The full list of stars appearing in the ST catalog is printed Appendix D. Generally, the best way to use the ST catalog to observe stars is first to peruse Appendix D, and then note the catalog number of the star you wish to observe.

To select an ST catalog star to observe, press **Enter** after selecting "CATALOG" from the **Star** button choices. The LCD screen will then display the letter "ST" with three digits blinking after it. Now, input the ST catalog number of the star you wish to observe, and press **Enter**. If the ST catalog number of the star you wish to view contains three digits, it is not necessary to press **Enter** after inputting the third digit.

The object's ST catalog designation will be shown in the upper left corner of the LCD screen, with the guide arrows in the upper right. The lower left will show the constellation the object resides in and the star's name.

You can get more information on the star selected by pressing the **Enter** button. The second line of the LCD screen will then cycle information about the object you are viewing, such as its celestial coordinates (R.A. and Dec.), magnitude (brightness), and a brief description.

When you are finished viewing the selected star, you may scroll to another star in the ST catalog by using the arrow buttons, or you can select another ST catalog star to view by pressing the **Star** button, and pressing **Enter** once "CATALOG" is selected.

# 8. Tours of the Best Objects

The IntelliScope controller offers guided tours of the best and brightest celestial objects visible in the sky each month. There are 12 monthly tours, each consisting of 12 preselected objects. The tours are an easy and fun way to locate and observe the finest wonders of the heavens. They are a great place to start for a beginner who is unfamiliar with the night sky, or for a more experienced observer who wants to revisit some old favorites or show friends or family "what's up" on a given evening.

#### **Starting a Tour**

To start an IntelliScope tour, press the **Tour** button at any time after you have aligned the IntelliScope system. The LCD screen will display "SKY TOUR" and a flashing three-letter designation for the month. Scroll through the months by using the arrow buttons until you reach the present month, then press the **Enter** button.

The LCD screen will then display the first tour object for the selected month in the lower right of the screen, with the guide arrows in the upper right. Use the guide arrows to point the telescope, and you will soon be observing the first astronomical showpiece of the month.

You can get more information about the current tour object by pressing the **Enter** button. The second line of the LCD screen will then cycle the following information about the object you are viewing: its celestial co-ordinates (R.A. and Dec.), magnitude (brightness), size (in arc minutes or seconds), and a brief text description.

When you have finished viewing the first tour object for the selected month, you can continue the tour by pressing the up arrow button to find the next object. You can exit the tour at any time by pressing any one of the other function buttons on the controller.

Since several months' tour objects are visible in the night sky at one time, feel free to select a month before or after the current month. These tour objects will likely be visible also. Remember, however, that viewing objects below 40° or so from the horizon will not give the best view due to atmospheric distortion (and usually light pollution). If you are finding that objects in the selected tour month are too close to the horizon, you should choose a month following the selected month, or you can wait a few hours for the objects to rise higher in the sky!

# 9. The Identify Function

There may come a time in your observations when you spot an unidentified deep-sky object or star in the eyepiece and want to know what it is. With the IntelliScope Computerized Object Locator, a simple press of a button will tell you.

## **Using the ID Button**

When you locate an object and center it in the eyepiece, you can identify it by simply pressing the **ID** button. The LCD screen will display "IDENTIFY" with the word "ANY" flashing. You can then use the up/and down arrow buttons to scroll through several more specific options ("STAR", "DOUBLE", "CLUSTER", "NEBULA", and "GALAXY"). If you know which one of these object types you are looking at, selecting the object type will make the identification quicker and more accurate. This is because the computer will search through a shorter list of potential object matches, and will allow proper identification if there are several objects within the same field of view. If you are unsure of the object type you are looking at, simply select "ANY" from the list of choices. Once you have selected the object type (or "ANY"), press the **Enter** button.

The identity of the object centered in the eyepiece will now be displayed in the lower right area of the LCD screen. The constellation in which the object resides is shown in the lower left. As always, to get more information about the object, press the **Enter** button.

An interesting feature of the **ID** function is that once initiated, it is continually active. So, if you press the ID button, and choose "STAR", for instance, you can move your telescope from star to star in the sky, and the controller will automatically display the star's identity when you center the star in the eyepiece. This can be a fun and easy way to identify the stars in the sky. In fact, you can even make a "Name That Star" game out of it! Point your finger at a bright star in the sky and see if you can name it. Then, just point the telescope at the star to see if you were correct or not. If the centered star is not in the controller's database, it will display the identity of the closest star that is in its database.

To exit the identify function, simply press any other of the controller's function buttons. If you would like to identify another object type, press the **ID** button again.

# **10. Adding User-Defined Objects**

Not only does the IntelliScope's database contain over 14,000 fascinating objects to view, you can even add your own! Up to 99 user-defined objects can be entered into the database by means of the **User** button. These user-defined objects can be random stars, a faint object not contained in the controller's database, or just a pretty object that you would like to come back to at some point in the future.

To enter a user-defined object into the database, you must have the right ascension (R.A.) and declination (Dec.) coordinates for the object. If you are currently observing an object that is not in the controller's database and you wish to add it, but don't know its coordinates, you can use the **FCN** button to obtain its coordinates (described in next section).

To input a user-defined object, begin by pressing the **User** button. The LCD screen will display the word "NEW" with a two-digit number flashing after it. Since no user-defined objects currently exist, press **Enter** to create user-defined ("NEW") object number 01. The LCD will display the R.A. and Dec. coordinates for the "NEW" object selected in the lower left. Since no data has been input yet, these coordinates will be 00:00 +00.0. The first four digits indicate the R.A. coordinate (in R.A. hours and minutes), and the remaining digits (and the ± sign) indicate the Dec. coordinate (R.A. hours) will begin flashing. Press the two numerical buttons on the keypad that correspond the hours value of the R.A. coordinate. If the value of the R.A. coordinate (R.A. minutes) will begin flashing. Press the two numerical buttons that correspond to the minutes) will begin flashing. Press the two numerical buttons that correspond to the minutes value of the R.A. coordinate. If the R.A. minutes are less than 10, make sure to enter a zero first. Next, the sign

of the Dec. coordinate will be flashing. Use the arrow buttons to select "+" or "-"for the Dec. coordinate. Then, the first two digits of the Dec. coordinate will begin flashing. Press the two numerical buttons that correspond to the degrees value of the Dec. coordinate. Then the tenth of a degree value for the Dec coordinate will begin flashing. Press the numerical button that corresponds to the tenths of a degree value for the Dec. coordinate.

You have now input the data for your first user-defined object. Remember that this object is now "NEW01". If you wish to view this object in the future, press the **User** button, and press Enter once "NEW01" is selected. The guide arrows will then tell you where to point your telescope to find the user-defined object.

If you wish to input another user-defined object, select "NEW02" (by using numerical buttons or the arrow buttons) after pressing the **User** button and input the data as outlined previously. If you select a "NEW" object number that you have already entered coordinates for and attempt to input new data, you will lose the data that was input previously. You may find it convenient to keep a written log of the "NEW" objects so that you can easily keep track of them.

# **11. The FCN Button**

The IntelliScope Computerized Object Locator has several other useful functions, a couple of which can be accessed by using the **FCN** (function) button.

#### **R.A. and Dec. Coordinates**

By simply pressing the FCN button, the controller will give a continuous readout of the telescope's current R.A. and Dec. coordinates. This can be helpful and powerful in a number of ways. You can easily find any object in the night sky if you know its right ascension and declination coordinates. Grab any star atlas, choose any object you wish to view, be it faint galaxy or random star, and jot down its coordinates. Then, once you have aligned the IntelliScope system, you can point the telescope to that location by simply pressing the **FCN** button and moving the telescope until the R.A. and Dec. coordinates displayed match the coordinates of the object you wish to view. You can also press the **FCN** button at any time to display the current R.A. and Dec. coordinates of whatever you are currently viewing.

A common use for the **FCN** button is to locate "transient" objects, such as comets and asteroids. To find these objects you will need to learn their coordinates from astronomy resources, such as Astronomy, Sky & Telescope or a reliable astronomy website. Comet and asteroid positions will change from night to night, so entering the current coordinates into the user-defined database is generally not useful.

After pressing the **FCN** button, the R.A. and Dec. coordinates corresponding to the center of the telescope's field of view are displayed on the first line of the LCD screen. The lower left of the screen indicates the current constellation the telescope is pointing to. The lower right numbers are the current azimuth ("AZ") and altitude ("ALT") coordinates of the telescope; this information is generally not useful.

#### **The Realignment Function**

This function is useful for obtaining a new alignment fix during an observing session to correct for small pointing errors. Use this function only when pointing accuracy for a certain area of the sky appears to be poor compared to other areas of the sky. This is evident when objects in one area of the sky consistently fall at the edge or just outside the field of view (of the 25mm eyepiece) when the numbers on the LCD screen read 0.0 0.0. This can happen if the alignment stars initially chosen during setup are somewhat close to each other (less than 60° apart) or if the area of sky being viewed is a considerable distance away from the alignment stars chosen.

To improve pointing accuracy in a specific area of the sky, select an object in the locator's database from that region, and use the guide arrows to find the object. Precisely center the object in the eyepiece (preferably a high-powered one). Now, press the **FCN** button, and the R.A. and Dec. coordinates of the centered object will be displayed. Then, press the **Enter** button. The LCD screen will now display "ALIGN OBJECT 3" on the first line, and will be flashing the object currently centered in the telescope on the second line. Pressing Enter again then realigns the IntelliScope system to the object centered in the telescope. The LCD screen will display a new "warp factor" associated with the new alignment. If this number is greater than  $\pm 0.5$ , you may want to consider resetting the controller to perform another two-star alignment. Turn the controller off, then on again (with the **Power** button), to do this.

If, instead of pressing **Enter** a second time after pressing the **FCN** button, you press one of the arrow buttons, the list of initial setup alignment stars will be displayed. If you wish, you can select one of these alignment stars to realign on. Do this by scrolling to the desired alignment star using the arrow buttons, center the star in the telescope, and press **Enter**.

In general, it will not be necessary to use the realignment function, but it is a handy feature to have at your disposal. Also, be aware that while pointing accuracy will increase in the area of sky around the object realigned on, it may decrease in other areas of the sky.

# **12. The "Hidden" Functions**

All of the active functions of the IntelliScope Computerized Object Locator have been outlined. There are, however, some additional "hidden" functions that may be of some use to you. To access the hidden functions, press the **Enter** button while pressing the **Power** button to turn the controller on. The LCD will display its introduction screen (with software version number) and then show the words "ALT AZM TEST." This is the first hidden function. Scroll to the other hidden functions by using the arrow buttons. The other hidden functions are "ENCODER TEST," "DOWNLOAD," "CHECKSUM," "REWRITE," and "CLOCK." When the hidden function you wish to use is displayed, press **Enter** to select it. To exit the currently chosen hidden function, press any button except for the **Enter** or arrow buttons. To completely exit the hidden functions section of the controller, you will need to hold the **Power** button down until the controller turns off.

The rest of this section gives the details and purpose of each hidden function.

### **Altitude and Azimuth Test**

The altitude and azimuth test ("ALT AZM TEST") is a diagnostic test that gives relative altitude and azimuth positions for the telescope. This test will allow you to easily see if the encoders are "talking" to the controller, and if the encoders are accurately monitoring the telescope's motions. To effectively use this test, make sure the telescope optical tube is in the horizontal position when pressing the **Enter** and **Power** buttons to access the hidden functions.

Once "ALT AZM TEST" is chosen from the hidden function options, the LCD screen will display the telescope's current relative altitude and azimuth position (in degrees); the relative altitude is in the upper right, while the relative azimuth is in the lower right. To begin

with, both of these numbers will be +000.0. The first two sets of numbers on the upper and lower lines of the LCD screen are meaningless for the purposes of this test.

If you move the telescope counter-clockwise in azimuth, the number in the lower right should increase, while if you move clockwise in azimuth, the number will decrease. If you rotate the telescope exactly 360° in azimuth, the readout should return to the original +000.0 reading.

If you move the telescope upwards in altitude, the number in the upper right should increase, while if you move downwards in altitude, the number will decrease. If the telescope tube was perfectly horizontal when you enabled the hidden functions of the controller, then the altitude will read +090.0 when the telescope is pointed precisely vertical.

If one, or both, of the encoders are not behaving properly when performing this diagnostic test, there may be a problem with the assembly of the system, or a problem with one of the encoder boards or discs. Also, be sure to check that all cable connections are secure.

### **Encoder Test**

The encoder test is another diagnostic test that gives information about the performance of the encoders themselves. Select "ENCODER TEST" from the list of hidden functions using the arrow buttons and press **Enter**.

The LCD screen will now display two lines of data. The top line of data corresponds to the altitude encoder, while the lower line of data corresponds to the azimuth encoder. The first two digits on each line denote the amplitude of the signal from one of the magnetic sensors on the encoder board, the second two digits represent the amplitude from the other sensor on the encoder board. The numbers are in hexadecimal (base 16) digits. Therefore "A" in hexadecimal represents "11" in decimal, "B" represents "12" in decimal, "C" represents "13," "D" represents "14," "E" represents "15," and "F" represents "16." When moving the telescope in altitude or azimuth, you will note that each of the digit pairs rises and falls. None of the digit pairs should ever go above "F3." If they do, then the encoder disk is too close to the sensors on the encoder board. This will generally not happen in altitude, but can happen in azimuth.

If you notice that the first or second digit pair on the second line of the display goes above "F3," then try loosening the lock nut on the azimuth nut of the base by about 1/16 turn. If this does not work, you will need to disassemble the azimuth encoder (azimuth encoder disk, brass bushing, and azimuth encoder board) and reassemble it carefully according to the instructions that came with the IntelliScope Dobsonian telescope itself.

If you notice that the two digit pairs on the first line are going above "F3," then there is a problem with your altitude encoder assembly. More than likely, the altitude encoder disk is bent.

The three-digit number displayed after the digit pairs on each line is the "radius" for each encoder. This number should not go above about 125 or below about 30. If it does, performance may be compromised for the corresponding encoder. If the number goes above 125, then the encoder disk and magnet may be too close to each other. If the number goes below 30, then the encoder disk and magnet may be too far away from each other. Also, if the radius varies by more than 30 counts in a cycle, encoder performance may not be optimal, and you should contact Orion's Customer Service Department.

The four-digit number at the end of each line is the raw encoder "ticks" in hexadecimal numbers. This information will generally not be useful for diagnostic testing of the encoders.

## Download

This function allows downloading of software changes and upgrades available from Orion's website. To use this option, you must have the optional IntelliScope-to-PC cable, available from Orion. Check www.telescope.com for more information about available software downloads for the IntelliScope Computerized Object Locator.

#### Checksum

The checksum function is used to make sure that software has loaded into the controller properly. It has no purpose until a new software version is downloaded. Check the IntelliScope download section on www.telescope.com to see what the proper checksum should be for each new software version.

### Rewrite

Rewrite is also only used after a new software version has been downloaded. It rewrites the new software into its memory in order to prevent any potential problems from arising after the software transfer.

#### Clock

This function allows use of the IntelliScope system with equatorial platforms for Dobsonian telescopes. If you are using your IntelliScope with a Dobsonian equatorial platform, press **Enter** when the selection "CLOCK" is displayed from the available "hidden" function choices. The LCD screen will then show the word "ON" blinking. For normal operation of the IntelliScope system, the controller's internal clock should be on. For use with a Dobsonian equatorial platform, use the up or down arrow button to change "ON" to "OFF," and press **Enter**. The controller is now ready to be used with a Dobsonian equatorial platform. Now, when you press **Power** to turn the controller on, the LCD screen will state "CLOCK IS OFF" on the second line of its introduction screen.

To turn the controller's internal clock back on, access the hidden functions, select "CLOCK," press **Enter**, change the "OFF" back to "ON," and press **Enter** again.

# **13. Specifications**

Objects in database:

- 110 Messier objects
- 7840 New General Catalog objects
- 5386 Index Catalog objects
- 8 Major planets
- · 99 User-defined objects

Computer interface: RS-232 port

Power: Requires one 9V battery

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device nay not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes of modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will no occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- · Increase the separation between the equipment and receiver.
- Connect the equipment into an output on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.
- A shielded cable must be used when connecting a peripheral to the serial ports.

# Appendix A: Troubleshooting the IntelliScope System

This section is intended to help you if you are encountering any problems with your IntelliScope system. If this information is not useful to you in determining the source of the problem, contact Orion Technical Support via phone or email.

#### Azimuth encoder, in general

- Is the azimuth axis screw's hex lock nut tight enough? Is it too tight? Remember, it should be tightened 3/16 to 1/4 turn past when the fender washer is no longer loose under the nut.
- Does the brass bushing extend slightly above the top surface of the top baseplate? If not, the bushing or top baseplate may need replacement, or there may be an assembly problem.
- Is the azimuth encoder disk (magnet) bent? If so, you will need to flatten it by bending.
- 4. Is the azimuth encoder board trimmed flush on the side in contact with the top baseplate? If not, the board will not seat flat against the baseplate and this may cause the encoder's sensors to come too close to the encoder disk.
- 5. Is the brass bushing properly registered with the azimuth encoder disk? The feature on the front of the bushing needs to seat into the hole in the disk.

#### Altitude encoder, in general

6. Is the altitude encoder disk significantly bent? If so, the altitude encoder assembly will need replacement. Also, if the altitude encoder mounting screws are loose, there is an increased chance of the user bending the altitude encoder disk.

## Warp factor consistently above ±0.5 but below ±2.0

- 7. Check accuracy of vertical stop. Use a carpenter's level to do this.
- Are alignment stars being centered with reasonable precision? A high-power eyepiece (at least 10mm focal length), or an illuminated reticle eyepiece (preferred) is recommended.
- 9. Check encoders as outlined previously.
- 10. Try to use alignment stars that are well above the horizon. Light from stars is refracted as it travels through the atmosphere and starlight near the horizon has to travel through the greatest amount of atmosphere before reaching your telescope. Stars near the horizon can appear as much as 2° away from their actual position.
- 11. Avoid long delays between aligning on the first and second alignment stars. The stars in the night sky appear to move due to the rotation of the Earth. If you take more than a few minutes to align on the second star, this stellar motion will result in an increase in the warp factor (and decrease the resultant pointing accuracy). This is because the controller does not yet have a frame of reference to tell which way the stars should appear to be moving before the second star is aligned on.

### Warp numbers larger than 2.0

- 12. Are the stars you aligned on actually the stars you select-ed on the controller? Consult the finder charts in Appendix A if you are unsure.
- 13. The encoder sensors may be coming into contact with the encoder disks. Check both the altitude and azimuth encoders as outlined above.

# Altitude readouts do not change when you move the scope (during "ALT AZM TEST")

- 14. Check the altitude cable's connections.
- 15. Make sure the knob that goes through the altitude encoder is tight.

# Azimuth readouts do not change when you move the scope (during "ALT AZM TEST")

- 16. Check the azimuth cable's connections.
- 17. Make sure the hex lock nut on the azimuth axis screw is tight. The fender washer underneath the hex lock nut should not be able to move. Remember, the hex lock nut should be tightened about 3/16 to 1/4 turn beyond the point where the washer cannot move any longer.
- Try disassembling then reassembling the azimuth encoder by disassembling the top and bottom groundboards of the base.

If you need to contact Orion Technical Support, email support@telescope.com or call (800) 676-1343.

# **Appendix B: Alignment Star Finder Charts**









# **Appendix C: Constellation Abbreviations**

And Andromeda CVn Canes Venatici Ant Antlia Cyg Cygnus Delphinus Aps Apus Del Aql Aquila Dor Dorado Aqr Aquarius Dra Draco Ara Ara Equ Equuleus Aries Ari Eri Eridanus Aur Auriga For Fornax Boo Boötes Gem Gemini Cae Caelum Gru Grus Cam Camelopardalis Hercules Her Cap Capricorn Hor Horologium Carina Car Hya Hydra Cas Cassiopeia Hyi Hydrus Cen Centaurus Ind Indus Cep Cepheus Lacerta Lac Cet Cetus Leo Leo Cha Chamaeleon Lep Lepus Cir Circinus Lib Libra Cnc Cancer LMi Leo Minor Lup Lupus CMa Canis Major CMi Canis Minor Lyn Lynx Col Columba Lyr Lyra Com Coma Berenices Men Mensa CrA Corona Microscopium Mic Australis Mon Monoceros CrB Corona Borealis Mus Musca Crt Crater Nor Norma Cru Crux Oct Octans Crv Corvus Oph Ophiuchus

Ori Orion Pav Pavo Peg Pegasus Per Perseus Phe Phoenix Pictor Pic PsA Piscis Austrinus Psc Pisces Pup Puppis Pyx Pyxis Ret Reticulum Sculptor Scl Sco Scorpius Sct Scutum Ser Serpens Sex Sextans Sge Sagitta Sgr Sagittarius Tau Taurus Tel Telescopium TrA Triangulm Australe Triangulum Tri Tuc Tucana UMa Ursa Major UMi Ursa Minor Vel Vela Vir Virgo Vol Volans Vul Vulpecula

Number	Name	Other	RA	Dec	Mag	Sep	Con	Code	
mber	Name	Other	RA	Dec	Мад	Sep	Con	Code	
ST001	0ΣΣ254		00 01.2	+60 21	7.6	59"	Cas	5	colored double star
002	30		00 02.0	-06.0	4.4	*	Psc	-	red variable star
003	Σ3053		00 02.6	+66 06	5.9	15"	Cas	5	colored double star
004	SU		00 04.6	+43.5	8	*	And	-	red variable star
005	Ced214		00 04.7	+67.2	7.8	30'	Сер	130	emission nebula
006	Σ3062	ADS 61	00 06.3	+58.4	6.4	1.5"	Cas	4	double star challenge
007	Alpheratz	Alpha	00 08.4	+29 05	2.1	*	And	21	star
008	Σ2	ADS 102	00 09.3	+79.7	6.6	0.8"	Cep	4	double star challenge
600	Kappa	ß 391	00 09.4	-28 00	6.2	2"	Scl	4	double star challenge
010	Algenib	Gamma	00 13.2	+15.2	2.8	*	Peg	21	star
011	AD	ADS 180	00 14.5	-07.8	4.9	1.5°	Cet	1	red variable star
012	7		00 14.6	-18.9	4.4	*	Cet	٢	red variable star
013	Σ12	"35. UU"	00 15.0	+08 49	5.8	12"	Psc	5	colored double star
014	i No		00 15.4	-32.1	5.5	*	Scl	22	variable star
015	<b>513</b>		00 16 2	±76.0	2.0	"o 0	a C	4	double star challenge
016	ST 2		00 17 6	+503	. 0	o .	and of the second	•	red variable star
17	Groombridge34	ADS 246	00 18 1	0.004	) a	30"	200	- ~	double star
10	Vo4	017 000	00 10 5	00.90.	9			4 0	double stat
010	1010		4 01 00	00 07	0.0	n *		4 6	uouure stat
610	1014		00 19.4	- 10.0	0.0			7 2	31dl
070	< .		00 19.9	+44./	0		And	7	star
170	×		00 24.0	CE 85+	5.8	Stellar	And	77	variable star
022	230		00 27.2	+49 59	6.9	15"	Cas	2	double star
023	AQ		00 27.6	+35.6	6.9	*	And	-	red variable star
024	Beta	Lacaille 119	00 31.5	-63.0	4.4	27"	Tuc	2	double star
025	Σ36	ADS 449	00 32.4	+06.9	5.7	28"	Psc	2	double star
026	Zeta	17	00 37.0	+53.9	3.7	*	Cas	21	star
027	Delta		00 39.3	+30.9	3.3	*	And	21	star
028	55		00 39.9	+21 26	5.4	.9	Psc	5	colored double star
029	Schedar	Alpha	00 40.5	+56.5	2.2	*	Cas	21	star
030	OT18	ADS 588	00 42 4	+04.2	7.8	15"	Bsc	4	double star challenge
031	HN122	ADS 624	00 45.7	+75.0	5.7	36"	Cas	2	double star
032	Delta		00 48 7	±07.6	4.4	8 *	C o	2	star
033	Eta		00 40 1	+57 40	4 6	10"	e C	ų r	colored double star
034	67 67	ADS 683	00 40 0	22 10 T	r cr	4 4"	200	o ư	colored double star
035	Do 13	000	00 50 0	- E4 1	1-	- - -	e C	120	scattered aroun of stars
0.26	ambda 1	Duplon 2	00 52 4	60 F	5		C I		double star
220	26	ADC 766	00 55 0	1026	20	"a c	Puv	1 4	double star challenge
920	iven	"Commo Teih"	00 56 7	160.7	u c	o .	300	- 5	etor
000	Yev		00 00	100.47	2 4	"ac	5 to	4 0	double stor sound mosmitude
010	700		4 00 10	14 0.04	t 0 0	0, 0			
040	2/3		1.00.10	+44 43	0	0	And	200	double star equal magnitude
041			01 02.3	+81 51	6.8	Stellar	Cep		variable star
042	288	74	01 05.6	+21 28	5.3	30"	Psc	e	double star equal magnitude
043	Σ90	77	01 05.8	+04 55	6.8	33"	Psc	2	double star
044	Zeta	Rumker 2	01 08.4	-55.3	3.9	6.4"	Phe	7	double star
045	Eta		01 08.6	-10.2	3.5	*	Cet	21	star
046	Lux Lydiae	SAO 181	01 08.7	+86.3	4.3	*	Cep	21	star
047	Mirach	Beta	01 09.7	+35.6	2	*	And	21	star
010									
	040		1 2 4	107 8	u u	"CC		ç	double star

**Appendix D: ST Catalog** 

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		01 16.2	+ 25 8		<b>2</b> <b>)</b>		2000	star
Z440	ç	10.1	0.02+	0.0	"U F	190	7	double stor shellonge
2113	42 A DO 4400	01 01 0	10 00-	4 1	0.0	Lei	4 C	double star challenge
<u>s</u> a	AUS 1 28	01 20.9	+00.	4.7	C7 *	Cas		couple star magnitude contrast
Gamma		A 20 10	C 24-	10	.,	040	10	valiable stat
Achernar	Add	01 27 7	-57.14	t u	r *	2	4 C	star
51 51	Bilde	0 32 10	9 907	2.0	*	204	4 C	star
10		0.00.10	10.0	1 0			7	
<b>N</b>	14 14 14 14 14 14 14 14 14 14 14 14 14 1	0.00.00	0.01			19 L	7 0	
-	c doiund	01 38.0	2.00-	0.0	c. ,		1	double star
n	106	41.4	c.cu+	4.4		Lsc	5	star
44	Burnham 1103	01 43.3	+60.6	5.8	1.6"	Cas	7	double star
Phi		01 43.7	+50.7	4.1	*	Per	21	star
Σ162		01 49.3	+47 54	5.8	2"	Per	80	triple star challenge
Σ174	-	01 50.1	+22.3	9	2.6"	Ari	2	double star
Σ163		01 51.3	+64 51	6.6	35"	Cas	5	colored double star
Baten Kaitos	Zeta	01 51.5	-10.3	3.7	3	Cet	2	double star
<b>5178</b>		01.52.0	+10.48	8.5		Ari	e	double star equal magnitude
V180	Gamma	01 52 5	+10.3	4.5	ā	Δri		double star aqual magnitude
100	2	01 52 6	46.2		° ů	Dho	, ≁	red veriable star
	5	0.00.00	- 0.0	+ + + c	n *		- 2	
Epsilon	45	01 54.4	+03.7	3.4	. :	Cas		star star
2186	ADS 1538	01 55.9	+01.9	6.8		Cet	4	double star challenge
56	ADS 1534	01 56.2	+37.3	5.7	ō	And	7	double star
Lambda	ADS 1563	01 57.9	+23.6	4.8	37"	Ari	2	double star
Upsilon		02 00.0	-21.1	4	*	Cet	21	star
<u> 2202</u>	Alpha	02 02.0	+02.8	4	1.6"	Psc	4	double star challenge
Almach	Gamma	02 03.9	+42.3	2.2	10"	And	5	colored double star
Hamal	Alpha	02 07.2	+23.5	2	*	Ari	21	star
59	-	02 10.9	+39 02	5.6	16"	And	5	colored double star
lota	ADS 1697	02 12.4	+30.3	5	3.8"	Tri	5	colored double star
Σ231	66	02 12.8	-02.4	5.7	16.5"	Cet	2	double star
<u>5</u> 228	ADS 1709	02 14.0	+47.5	6.6	1.1"	And	4	double star challenge
5232	0	02 14 7	+30.24	0 00	7"	Tri	e	double star equal magnitude
5239		02 17 4	+28.44	2	14"	Ţ	0	double star
Mira	Omicron	02 19 3	-03.0			Cet	22	variable star
lota		02 29 1	+67.4	4	2.0"	Sas	G	trinle star
5268		02 29.4	+55.31	6.9	- -	Per	0	double star
5274		02 31 5	+01.05	7.3	14"	Cet.		double star equal magnitude
Dolorie	Add	a 12 CO	100 10	2.0	- at	imi	о с	
Omeans	5000 H		100 10			CIVI 1 2	4 C	
Cirega	0000	0 20 20	00 07-	L L	- 00		1 1	colored double stor
00 0	101 0	0.75 00	+24.30	0.0 V	0 *	i-t		colored double star
V V	Commo	0.10.40	0.401	t u	- F C	100	3 0	Valiable stat
2633	Qallilla	1 40.0	10.00	0 1	2.1	- CE		
2305		G. 14 ZU	77 AL+	6.9		ALI	4	double star challenge
۲۲.		02 48.9	+69 38	6.2	Stellar	Cas	22	variable star
ā	i	02 49.3	+17 28	5.2		Ari	9	triple star
2307	Eta	02 50.7	+55 53	3.9	28"	Per	თ	double star magnitude contrast
ĸ		02 53.9	-49.9	4.7	*	Hor	22	variable star
Σ330	ADS 2237	02 57.2	-00.6	7.3	<del>م</del>	Cet	2	double star
Acamar	Theta	02 58.3	-40.3	3.5	-8	Eri	2	double star
Σ333	Epsilon	02 59.2	+29.3	4.6	1.4"	Ari	4	double star challenge
Epsilon	-	02 59.2	+21 20	4.6	-	Ari	4	double star challenge
<u>5</u> 331		03 00.8	+52 20	5.4	12"	Per	2	double star
Menkar	Alnha	03 02 3	+04 1	2.5	4 *	ta C	4 č	etar
Rho	25	03.05.2	138.8	4 6	*	Der	- -	red variable star
2000	07		10.01	t e		D	_	
		C 30 50						

Beta         00072         5110         22         19         PUI         22           46         ADS 2472         03113         440         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5 <td< th=""><th>Nalie</th><th></th><th></th><th></th><th><b>6</b>2</th><th></th><th></th><th></th><th></th></td<>	Nalie				<b>6</b> 2				
NBS 240         03.03 $\pm \pm 10$ $\pm 2$ $\pm 10$	n3568	ć	03 07.5	-/9.0	5.6	15"	Ā	2 0	double star
ADS 2402         03121         -124.0         4         5         Fer         2           2         ADS 2472         03124         -124.0         4         5         7         5         Fer         2           3         315.2         +40.02         8         7         7         1         2         2           3         315.2         +40.02         8         7         7         1         2         2           3         315.2         +40.02         8         7         7         1         2         2           3         315.2         +40.02         8         7         1         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2	Algol	Beta	03 08.2	+41.0	2.2	. 1	rer	77.	variable star
z         ADS 2472         0312.3         -44.4         6         3.57         6.10         2           2         ADS 2472         0313.2         -44.4         6         3.57         6.10         2           2         ADS 2472         0313.2         -60.23         6.7         3.6         7         7         6.8         7         7         6.8         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         <	Alpha	ADS 2402	03 12.1	-29.0	4	- -	For	.7	double star
z         ADS 2472         0316.3         +60.02         8.5         7         6am         3           z         ADS 2472         0319.5         -49.02         8.5         7         6am         3           ADS 2472         0319.5         -49.65         7.8         6.7         7         9.7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7	n3556		03 12.4	-44.4	9	3.5	Ē	.7	double star
z         ADS 2472         0.011.2	2302		03 10.3	+60.02	0 N 0 V		Cam		double star equal magnitude
z         ADS 2472         03 16.1 $20.0$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$ $5.2$	ADC2446		7 1 20	120 5	7 D	- - -	Dor	0 4	double star challenge
x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x         x	7040		0.1 0.0	-62 E	0.4	с. ц	tod	r c	
z         SAO 75671         0.3.12.3         2.5.0.         6.7         9°         AII         2.1           ADS 2544         0.3.243         +459         1         7         AI         2           ADS 2544         0.3.243         +459         1         7         AI         2           ADS 2561         0.3.243         +459         4         2         7         AI         2           ADS 2561         0.3.341         +592         4         1         7         AI         2           ADS 2650         0.3.416         +593         8         4         14'         Cam         2           ADS 2650         0.3.416         +52.6         3         4         14'         2           ADS 2650         0.3.416         +52.6         3         4         5         2           ADS 2650         0.3.413         +32.3         3         4         5         7         2           ADS 2650         0.3.461         +32.3         3         4         5         7         2           ADS 2726         0.3.461         +32.3         3         4         5         7         2           ADS 372	Tour	ADC 2470	101 00	0.70-	1 1 0	<b>.</b> *		4 č	
April and the second	Tomo Tonoz	AUG 2412	0.00.00	0.00.	1.0	°		4 6	2101
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Mirfab	5AU / 30/ 1	03 20.3	+ 40 50	4, 4 0, 0	× ش	Der	7 6	Star
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	<pre>V</pre>		7 70 80	20 241	0 T	*	Dor	20	variable star
ADS 2644         0328.0         +56.4         0.3         +56.4         0.3         -5         2.4°         0.4m         2           ADS 2612         033313         +48.0         6.5         2.7°         0.4m         2           ADS 2612         033313         +48.0         6.8         1.4°         Cam         2           ADS 2612         033416         +48.0         6.8         1.4°         Cam         2           ADS 2650         033416         +22.3         8.8         44°         °         2           ADS 2726         03340.6         +82.0         6.8         1.4°         Cam         2           ADS 2726         03341.6         +22.3         3.8         4.7         2         2           ADS 21016         03345.6         +32.3         3.8         4.1         2         2           ADS 21016         03348.6         +13.2         5         9°         7         4         6         2           ADS 21016         03348.6         +13.2         5         9°         7         4         7           ADS 21016         03348.6         +13.2         5         9°         7         9°         7	V30.4		0 30 50	7.441			- v	3 0	Valiable star
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Var	ADC 2644	0.02 00	12021				4 0	
ADS 2610         +420         +41         +41         +41         +41         +41         +41         +41         +41         +41         +41         +41         +41         +41         +41         +41         +41         +41         +41         +41         +41         +41         +41         +41         +41         +41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -41         -	Vac V		03 20 1	1001	1 11	= - c	200	4 0	
ADS 2612         033.13 $\pm 77.34$ 6.4         11°         Tau         3           ADS 2612         033.13 $\pm 77.34$ 6.4         11°         Tau         3           ADS 2650         033.13 $\pm 72.34$ 6.8         1.4°         Cam         2           ADS 2650         033.40. $\pm 63.3$ 6.8         4.6°         Cam         2           ADS 2650         033.40. $\pm 63.3$ $\pm 3.2$ $\pm 8.8$ $\pm 6.°$ $\pm 6.°$ $2           ADS 2650         033.46.1         \pm 1.2.7 \pm 4.4 \pm 6.° \pm 1.4° 2           ADS 2650         033.45.         \pm 65.5 \pm 4.5 \pm 7.9° \pm 1.4° 2           ADS 2850         033.45.         \pm 65.5 \pm 4.5 \pm 7° \pm 1.4° 2           ADS 2855         033.45.         \pm 63.5 \pm 3.3 \pm 2.7° \pm 1.4° 2           ADS 2855         040.07         \pm 38.1 \pm 3.6° \pm 6.0° \pm 7° \pm 1.4° 2           ADS 2850         040.07         \pm 38.3 \pm 2.6° \pm$	Ciama		03 30 6	17 80+	C 0		Dor	4 6	duuule stat
ADS 2612         0.331,3 $+2.1$ , $+3.1$ $+3.1$ $+1.4^{41}$ $-1.4^{41}$ $-3.1$ ADS 2612         0.336,0 $+630$ $6.8$ $1.4^{41}$ $Cam$ $2$ ADS 2650         0.344.6 $+62.6$ $8.1$ $-4.2^{41}$ $cam$ $2$ ADS 2726         0.344.3 $+12.2$ $3.8$ $1.4^{41}$ $Cam$ $2$ ADS 2726         0.344.6 $+12.1$ $3.4$ $-6.2$ $-2.2^{21}$ $2$ ADS 2706         0.344.6 $+12.1$ $4.4$ $-6.2^{21}$ $2$ ADS 280         0.344.6 $+12.1$ $4.4$ $-6.2^{21}$ $2$ ADS 2805         0.344.1 $+31.5$ $3.2$ $4.5$ $-7^{21}$ $2$ ADS 2805         0.354.1 $+31.5$ $2.3$ $-7^{21}$ $2$ $2$ ADS 2805         0.407.6 $+38.1$ $7.4$ $8^{21}$ $2^{21}$ $2^{21}$ ADS 2805         0.407.6 $+38.1$ $7.4$ $8^{21}$ $2^{21}$ </td <td>010111d</td> <td></td> <td>0.00.00</td> <td>10.041</td> <td>+ t</td> <td></td> <td></td> <td><u>,</u> c</td> <td>aldi deritis star sarral masaritrida</td>	010111d		0.00.00	10.041	+ t			<u>,</u> c	aldi deritis star sarral masaritrida
ADS 2612         0.336.9         +50.0         5.1         1.4"         Can         2           ADS 2650         03.40.0         +63.9         6.8         1.4"         Can         2           ADS 2650         03.40.0         +63.9         6.8         4.6"         Can         2           ADS 2650         03.47.0         +73.3         3.8         +21.3         3.8         2         21           ADS 2650         03.47.1         -14.2         3.8         +21.3         3.8         21         2           A16         03.47.5         -74.2         3.4         -         Hyl         21         2           A16         03.47.5         -74.2         3.4         -         Hyl         21         2           A16         03.44.5         -74.2         4.9         8         -         14         2           Sabo         03.45.1         +31.7         5         9         -         14         2           Cam         03.51.9         +40.01         2.9         9         -         14         2           Cam         03.51.9         +40.01         2.9         9         -         14         2	Z401		0.10.00	+2/ 34	4 t		Iau	n 2	double star equal magnitude
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	E PallOI	0100 001	00 07 00	0.00.				<u>,</u> c	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	2400	AUS 2012	0.05.00	1.00+	0 0	+. I	Cam	1	double star
ADS 2726 0341,0 +22,0 81 - 0.4m - 22 26 0346,1 -12,1 3,4 - 14/1 21 30 0346,1 -12,1 3,4 - 14/1 21 30 0346,1 -12,1 3,4 - 14/1 21 30 0346,1 -12,2 3,2 9' 14/1 21 203,4,1 -13,1 -31,9 2,9 ' 14/1 21 203,4,1 -31,9 2,9 ' 14/1 21 203,5,1 -31,1 -31,5 3, - 14/1 21 203,5,1 -13,5 3, - 14/1 22 40 03,5,1 -13,5 3, - 14/1 22 40 04,15, -53,3 4,4 4' 14/1 21 204,15, -53,3 4,4 4' 14/1 22 40 04,15, -53,3 4,4 4' 14/1 22 ADS 3137 04,26, +25,6 5,5 19,4' 14/1 22 Chi 04,22,6 +25,6 5,5 19,4' 14/1 22 Chi 04,22,6 +25,6 5,5 19,4' 14/1 2 Chi 04,22,6 +25,6 5,5 19,4' 14/1 2 ADS 3305 04,33,5 +14,7 3 1,4'' 14/1 2 ADS 3305 04,33,5 -14,3 3,0'' 14/1 14/1 14/1 2 ADS 3305 04,33,5 -14,3 3,0'' 14/1 14/1 14/1 2 ADS 3305 04,33,5 -14,3 3,0'' 14/1 14/1 14/1 14/1 14/1 14/1 14/1 14	0230	AUS 2650	03 40.0	+03.9	0.8 9	40	Cam	7	double star
Alb         Z726         0344.3         +22.3         3.8         +Per         21           26         0347.2         74.2         3.8         +Per         21           30         0347.2         74.2         3.2         *         Hyi         21           30         0347.2         74.2         3.2         *         Hyi         21           30         0347.3         +65.5         4.5         *         Fin         21           21         0343.3         +65.5         4.5         *         Fin         21           21         0354.1         +61.5         3.2         *         Fin         21           21         0354.1         +13.5         3.3         *         Fin         21           21         0354.1         +31.5         3.3         *         Fin         21           22         0355.0         -13.5         3.3         -         Fin         21           32         04 00.7         +31.5         7.3         -         Fin         21           33         04 00.7         +32.6         5.3         4.4         -         Fin         21           33	.5		03 41.6	9.29+	0.J		Cam	77	variable star
Z6         03.46.1         -12.1         3.4         -1         1           30         03.46.1         -12.1         3.4         -1         1         1         1           30         03.46.1         -11.2         5         9'         Fit         1         2           301         03.44.1         -11.2         5         9'         Fit         2         2           203         03.44.1         -31.13         2.3         -         Fer         2         2           201         03.54.1         -31.13         2.3         -         Fer         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2	Omicron	ADS 2726	03 44.3	+32.3	8.5		- Per	51.	star
30         03472         :14.2         3.2         9         Hyl         21           A16         03466         :3737         4.9         8"         Eri         3           SA0 12916         0345.6         :3737         4.9         8"         Eri         3           SA0 12916         0345.6         :3737         4.9         8"         Eri         3           SA0 12916         0354.1         :315.5         4.5         "         Per         21           ADS 2860         0354.1         :315.5         3         "         Per         21         21           Gamma         0355.0         :13.5         3         "         Per         21         21           Gamma         0355.0         :13.5         3         "         Per         21         22           Samma         0407         :38.1         7.4         B"         Per         21           ADS 2985         0407.6         :38.1         7.3         1.4"         Per         21           ADS 2985         0407.6         :38.1         7.4         Per         21         22           Runker3         0416.5         :59.3         4.4	Ā	26	03 46.1	-12.1	4.4	ę .		-	red variable star
310         0.344.3         +11.2         5         9         1au         2           A16         0.344.5         +65.5         4.5         8         6         7         1au         2           ZAD         12216         0.344.5         +65.5         4.5         8         7         1au         2           Zaba         0.357.9         +40.5         2.9         7         1au         21         21           Zaba         0.357.9         +40.5         12.9         9         1au         21         21           Zaba         0.357.9         +40.1         2.9         9         1au         22           ADS 2955         0.407.8         +62.20         7         4.9         8         22           ADS 2955         0.407.8         +62.20         7         90"         23         2           ADS 3137         0.416.2         53.3         4.4         83"         8         2           ADS 3137         0.422.6         +15.5         53.3         6.2         4.5         1au         2           ADS 3305         0.422.1         +15.1         7.3         14"         1au         2	Gamma	;	03 47.2	-/4.2	3.2		ΙÂΗ	5	star
ADS         280         -37.37         4.9         8'         End         3           Zeta         03.54.1         -31.9         2.9         '         End         2           Zeta         03.54.1         -31.9         2.9         '         End         2           ADS 2850         03.57.3         +40.01         2.9         '         End         2           Gamma         03.57.9         +40.01         2.9         ''         End         2           Gamma         03.57.9         +40.01         2.9         ''         End         2           Gamma         03.57.9         +40.01         2.9         ''         End         2           ADS 2895         04.07.8         +38.1         7.4         1.4"         Per         4           ADS 23137         04.16.7         -53.3         6.4         ''         Ret         2           ADS 3137         04.16.7         -53.3         6.4         ''         Ret         2           Chi         04.16.7         -53.3         6.4         ''         '''''         ''''''''''''''''''''''''''''''''''''	252	30	03 48.3	+11.2	2	5	Tau	~	double star
ADD 12(16)         0344.5         +15.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.5         4.6         4.6         4.7         4.7         4.6         4.6         4.7         4.7         4.6         4.7         4.7         4.6         4.7         4.7         4.6         4.7         4.7         4.7         4.7         4.7         4.7         4.7         4.7         4.7         4.7         4.7         4.7         4.7         4.7         4.7         4.7         4.7         4.7         4.7         4.7         4.7         4.7         4.7         4.7         4.7         4.7         4.7         4.7         4.7         4.7         4.7         4.7         4.7         4.7	± i	A 16	03 48.6	-3/3/	4.9	50 -	ц,		double star equal magnitude
Jera         Jera <th< td=""><td>BE</td><td>SAU 12916</td><td>03 49.5</td><td>+65.5</td><td>4.5</td><td></td><td>Cam</td><td>5</td><td>star</td></th<>	BE	SAU 12916	03 49.5	+65.5	4.5		Cam	5	star
ADS 2860         0354.3         -630         5         -67         Err         5           Gamma         0354.3         -13.5         3         -         F         E         5           35         007         -13.5         3         -         E         14         22           35         0407         +38.1         7.3         1.4"         Per         2           35         0407         +38.1         7.3         1.4"         Per         2           40         0416.5         -59.3         4.4         4"         Ret         2           40         0416.5         -59.3         4.4         4"         Ret         2           8         0416.5         -59.3         4.4         4"         Ret         2           8         0416.5         -59.3         4.4         4"         Ret         2           10         0422.0         +15.1         7.3         1.4"         1au         2           11         0422.1         +15.1         7.3         1.4"         1au         2           10         0422.1         +15.1         7.3         1.4"         1au         2	Atik	Zeta	03 54.1	+31.9	2.9	. 1	- Per	5	star
Gamma         035/3         +440         2.9         9         9           35         04007         +13.6         2.9         9         9         9           35         04007         +13.6         2.3         9         9         9         22           35         0407.6         +13.5         3.3         9         9         22           35         0407.8         +62.20         7         90"         Cam         22           40         0415.2         50.7         4.5         83"         8         2         22           80         0415.2         50.7         4.5         83"         8         2         2           80         0415.7         53.3         6.2         4.5         8         8         2           ADS 3137         0422.0         +19.3         8.4         2         2         2           ADS 3137         0422.1         +15.1         7.3         1.4"         7         2           ADS 3305         0424.0         -33.0         7.3         1.4"         7         2           ADS 3305         0424.0         -16.7         7.3         1.7"         6	32	ADS 2850	03 54.3	-03.0	2		Ē	2	colored double star
Gamma         0.03.84.0         +13.5         3.3         *         En         21           35         0407.6         +38.1         7.4         1.4"         Per         2           ADS 2895         0407.6         +38.1         7.4         1.4"         Per         2           ADS 2895         0407.6         +38.1         7.4         1.4"         Per         4           SZ         0416.5         -53.3         6.4         4         Per         2           ADS 3137         0416.5         -53.3         6.4         4         Per         2           Rumker3         0416.5         -53.3         6.4         4         Per         2           ADS 3137         0422.0         +27.4         5         52."         Tau         2           Chi         0422.0         +26.1         7.3         1.4"         Tau         2           Upsilon3         0422.1         +15.1         7.3         1.4"         Tau         2           Ot         0422.1         +15.1         7.3         1.4"         Tau         2           Upsilon3         0422.1         +15.1         7.3         1.4"         Tau <td< td=""><td>Epsilon</td><td></td><td>03 57.9</td><td>+40 01</td><td>2.9</td><td>- 0</td><td>Per</td><td>6</td><td>double star magnitude contrast</td></td<>	Epsilon		03 57.9	+40 01	2.9	- 0	Per	6	double star magnitude contrast
JSS         305         04.0.0.7         +12.5         3.3         1.4"         Per         22           ADS         2905         04.07.6         +13.5         3.3         1.4"         Per         4           SZ         04.07.6         +13.5         5.3         4.4         1.4"         Per         4           SZ         04.07.6         +52.20         7         90"         Cam         2           ADS         3137         04.15.2         -53.3         6.2         4.3"         Reit         21           Rumker,3         04.17.7         -53.3         6.2         4.5         52"         Tau         2           ADS         3137         04.22.0         +19.3         5.5         Tau         2           Chi         04.22.0         +15.1         7.3         1.4"         Tau         2           Chi         04.22.1         +15.1         7.3         1.4"         Tau         2           Upsilon3         04.27.9         -21.30         7.3         1.7"         Eri         4           Upsilon3         04.37.4         +46.01         7.3         1.7"         Eri         4           ADS <t< td=""><td>Zaurak</td><td>Gamma</td><td>03 58.0</td><td>-13.5</td><td>m</td><td>•</td><td>Eri</td><td>21</td><td>star</td></t<>	Zaurak	Gamma	03 58.0	-13.5	m	•	Eri	21	star
ADS 2995         04 0.0         +38.1         7.4         1.4         Per         4           40         0415.5         -03.7         4.5         9.3         Eri         8           40         0415.5         -03.7         4.5         83"         Eri         8           40         0415.5         -03.7         4.5         83"         Eri         8           0415.5         -03.7         4.5         83"         Eri         8           0415.5         -03.1         +127.4         5.3         4.4         8         21           ADS 3137         042.0         +15.1         7.3         1.4"         Tau         22           Chi         042.0         +25.6         5.5         19.4"         Tau         2           Upsilon3         042.1         +15.1         7.3         1.4"         Tau         4           042.1         +16.1         7.3         1.4"         Tau         2         2           042.1         -24.3         5.5         1.4"         Tau         2         3         4         4           042.1         -24.3         5.4         1.4"         Tau         2         4	Lambda	35	04 00.7	+12.5	ю. 1.3		Tau	22	variable star
52         04.07.8         +62.2         1.5         9.07         Cam         2           Rumker3         04.16.5         -59.3         4.4         5         83"         Cam         2           Rumker3         04.16.5         -59.3         4.4         5         83"         Cam         2           Rumker3         04.16.5         -59.3         4.4         5         88"         21         8           Rumker3         04.10.4         +27.4         5         5.2"         Tau         2           ADS 3137         04.20.4         +27.4         5         5.2"         Tau         2           Chi         04.22.0         +15.1         7.3         1.4"         Tau         2           Upsilon3         04.22.0         +15.1         7.3         1.4"         Tau         2           04.22.0         +15.1         7.3         1.7"         Eri         4         3           04.33.5         04.33.5         5.4         10"         7         17"         Eri         4           04.33.5         04.33.5         5.4         10"         7         17"         Eri         1           ADS 3305         04.3	02531	ADS 2995	04 07.6	+38.1	7.4	1.4	her	4	double star challenge
40         0415.2         -01.1         5.3.3         4.5         83         En         8           Rumker         0417.7         -63.3         6.2         4"         Ret         21           ADS 3137         0417.7         -63.3         6.2         4"         Ret         21           ADS 3137         0420.4         +19.74         5.         19.4"         Tau         2           ADS 3137         0422.6         +55.6         5.5         19.4"         Tau         2           ADS 3137         0422.6         +55.6         5.5         19.4"         Tau         2           Opsilon3         0422.0         +19.3         7.3         1.4"         Tau         2           Upsilon3         0422.0         +51.30         7.3         1.4"         Tau         2           0432.1         -21.30         7.3         1.4"         Tau         3           0432.1         -21.30         7.3         1.7"         Eri         4           ADS 3305         0433.5         -16.7         5.7         4"         7         4           ADS 3305         0433.5         -16.5         5.4         10"         5         2 <td>2485</td> <td>ZS</td> <td>04 07.8</td> <td>+62 20</td> <td></td> <td>-06</td> <td>cam</td> <td>21</td> <td>double star</td>	2485	ZS	04 07.8	+62 20		-06	cam	21	double star
Rumker3         0416.5         -53.3         6.4         *         Ret         21           ADS 3137         0416.5         -53.3         6.4         *         Ret         21           ADS 3137         0420.4         +27.4         5         5.2"         Tau         2           Chi         0422.0         +216.3         5.5         15.4         Tau         2           Chi         0422.0         +15.1         7.3         1.4"         Tau         22           Chi         0422.0         +15.1         7.3         1.4"         Tau         2           Upsilon3         0422.1         +15.1         7.3         1.7"         Eri         4           Upsilon3         0422.9         +51.80         7.3         1.7"         Eri         4           0432.0         +53.65         5.4         10"         Cam         5         3           0432.1         +51.65         0.6         7.3         1.7"         Eri         21           ADS 3305         0433.5         +16.5         0.9         3"         7         1.7"         Eri         21           ADS 3305         0433.5         +16.5         0.9	Omicron2	40	04 15.2	-07.7	4.5	83"	Ēri	80	triple star challenge
Rumker 3         04.11.7         -63.3         6.2         5.2"         Tell         2           AlbS 3137         04.21.7         -63.3         6.2         5.2"         Tell         2           AlbS 3137         04.21.6         +19.32         8.4         Stellar         Teu         2           Chi         04.22.7         +15.1         7.3         1.4"         Teu         22           Chi         04.22.7         +15.1         7.3         1.4"         Teu         22           Chi         04.22.7         +15.1         7.3         1.4"         Teu         2           04.22.7         +15.1         7.3         1.7"         Eri         4         4           04.31.4         +40.01         7         9"         Per         3         3           04.31.5         +18.01         6.9         3"         Teu         3         3           Alps         04.35.5         +18.01         6.9         3"         Teu         2           Alpha         04.35.5         +18.01         6.9         30"         Teu         2           Alpha         04.35.5         +18.01         6.9         30"         Teu	Epsilon		04 16.5	-59.3	4.4	*	Ret	21	star
ADS 3137         042.0.4         +27.4         5         5         73         13         2           Chi         042.0         +27.4         5         5         19.4"         1au         2           Chi         042.0         +15.1         7.3         1.4"         Tau         22           Upsilon3         0422.0         +15.1         7.3         1.4"         Tau         2           0422.1         +15.1         7.3         1.4"         Tau         2           0422.1         +15.1         7.3         1.4"         Eri         4           0427.9         -2130         7.3         1.4"         Eri         4           0432.0         +53.55         5.4         10"         Cam         3           0432.1         +53.55         5.4         10"         Cam         3           ADS 3305         0433.5         -16.7         5.7         4"         1au         2           ADS 3305         0435.5         -16.7         5.7         4"         Eri         21           ADS 3305         0436.5         -16.7         5.7         4"         Eri         21           ADS 3305         0436.5 <td>Theta</td> <td>Rumker 3</td> <td>04 17.7</td> <td>-63.3</td> <td>6.2</td> <td>4"</td> <td>Ret</td> <td>2</td> <td>double star</td>	Theta	Rumker 3	04 17.7	-63.3	6.2	4"	Ret	2	double star
Chi         04.22.0         +15         32         8.4         Stellar         Tau         22           Chi         04.22.7         +15.1         7.3         19.4"         Tau         22           Upsilon3         04.22.7         +15.1         7.3         1.4"         Tau         2           Upsilon3         04.22.7         +15.1         7.3         1.4"         Tau         2           Upsilon3         04.24.0         -21.3.0         +3.5.5         7.3         1.7"         Eri         4           04.31.4         +40.01         7.3         1.7"         Eri         4         3           04.33.5         +18.01         6.9         3"         Tau         3         4         5           Alpha         04.35.6         +18.01         6.9         3"         7         1         21           Alpha         04.35.3         +16.5         0.3         30"         Tau         3           Alpha         04.38.5         +16.5         0.9         30"         Tau         3           Alpha         04.38.5         1.4.3         30"         Tau         3         2           Alpha         04.38.5	Phi	ADS 3137	04 20.4	+27.4	5	52"	Tau	2	double star
Chi         0422.6         +55.6         5.5         19.4"         Tau         2           0422.7         +15.1         7.3         1.4"         Tau         2           Upsilon3         0422.7         +15.1         7.3         1.4"         Tau         2           0427.7         +15.1         7.3         1.4"         Tau         4           0427.9         -40.0         7.3         1.4"         Tau         4           0427.9         +40.0         7.3         1.4"         Tau         4           0432.0         +5355         5.4         10"         Cam         5           0433.5         0.68.7         5.7         4"         Tau         3           Abba         0435.3         +16.5         0.3         3"         1au         5           48         0435.3         +16.5         0.9         30"         1au         5           0438.2         -14.3         3.9         1"         1"         1"         21           0438.2         -14.3         3.9         1"         2"         21         21           0438.2         -14.3         3.9         1"         1"         21 <td>F</td> <td></td> <td>04 22.0</td> <td>+19 32</td> <td>8.4</td> <td>Stellar</td> <td>Tau</td> <td>22</td> <td>variable star</td>	F		04 22.0	+19 32	8.4	Stellar	Tau	22	variable star
04.22.7         +15.1         7.3         1.4"         Tau         4           Upsilon3         04.22.4         241.30         4         4         4           Upsilon3         04.22.4         241.30         7.3         1.7"         Eri         1           04.32.4         241.30         7.3         1.7"         Eri         1         4           04.32.4         241.00         7.3         1.7"         Eri         1         4           04.32.5         4.50.01         5.4         10"         Cam         5           04.33.5         04.33.5         416.01         6.7         3"         7"         1         3           Alpha         04.36.5         416.5         0.9         30"         Tau         3           Alpha         04.36.5         416.5         0.9         30"         Tau         3           Alpha         04.38.5         4.13.3         3.9         11"         Eri         21           Alpha         04.38.5         4.3.3         3.9         1.9"         Eri         21           Albha         04.38.5         4.3         3.9         1.9"         21         21 <td< td=""><td>Σ528</td><td>Chi</td><td>04 22.6</td><td>+25.6</td><td>5.5</td><td>19.4"</td><td>Tau</td><td>2</td><td>double star</td></td<>	Σ528	Chi	04 22.6	+25.6	5.5	19.4"	Tau	2	double star
Upsilon3         0424.0         -34.0         4         •         Eri         1           Upsilon3         0427.9         -31.30         7.3         1.7"         Eri         4           0427.9         -5.130         7.3         1.7"         Eri         4           0437.9         -480.01         7.3         1.7"         Eri         4           0433.5         +48.05         5.4         10"         Peri         3           0433.5         +616.5         5.7         4"         Eri         2           Abbaa         0433.5         +16.5         0.3         30"         1au         3           48         0438.2         -16.5         0.3         30"         1au         5           48         0438.2         -14.3         3.9         1" <tttttra< td="">         21         21           0438.2         -14.3         3.9         1"<tttttra< td="">         Eri         21         21           0440.6         -98.2         6.7         4.3         -         51         21           55         0440.6         -98.2         6.7         -         52         21         21           64         0436.6</tttttra<></tttttra<>	ADS3169		04 22.7	+15.1	7.3	1.4"	Tau	4	double star challenge
0427.9         -2130         7.3         1.7"         Eri         4           0437.4         -435.5         5.4         10"         Per         3           0432.0         +53.55         5.4         10"         Cam         5           0432.0         +53.55         5.4         10"         Cam         5           0432.0         +53.55         5.4         10"         Cam         5           0432.0         0433.9         +16.5         0.9         3"         Tau         3           1         ABba         0435.9         +16.5         0.9         30"         Tau         5           1         ABba         0436.3         -14.3         3.9         11"         Eri         21           0438.5         -14.3         3.9         11"         Eri         21           0438.5         -14.3         3.9         11"         Eri         21           0440.5         -38.2         6.7         -7         2"         1"         3           55         0440.5         -38.2         6.7         -7         5"         2"         1"         3	43	Upsilon3	04 24.0	-34.0	4	*	Eri	-	red variable star
(431.4         +40.01         7         9"         Per         3           043.2.0         +83.55         5.4         10"         Cam         5           043.2.0         +83.55         5.4         10"         Cam         5           ADS 3305         0433.5         +16.15         5.7         4"         Eri         2           ADS 3305         0435.9         -06.7         5.7         4"         Eri         2           48         0435.9         -16.5         0.9         30"         Tau         5           0435.5         -14.3         3.9         11"         Eri         21           0435.5         -14.3         3.9         1"         Eri         21           0438.5         -14.3         3.9         1"         Eri         21           0440.6         -38.2         6.7         4"         Eri         3           55         0440.5         -38.2         6.7         9"         5"         3	ß 184		04 27.9	-21 30	7.3	1.7"	Ëri	4	double star challenge
(132,0)         +53.55         5.4         10°         Cam         5           (133,5)         (133,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5)         (11,5) <td< td=""><td>Σ552</td><td></td><td>04 31.4</td><td>+40 01</td><td>7</td><td>-B</td><td>Per</td><td>3</td><td>double star equal magnitude</td></td<>	Σ552		04 31.4	+40 01	7	-B	Per	3	double star equal magnitude
04 33.5         +18.01         6.9         3"         Tau         3           ADS 3305         04 33.9         -06.7         5.7         4"         Eri         2           ADS 3305         04 33.9         +16.5         5.7         4"         Eri         2           ADS 3305         04 36.3         -03.4         3.9         30"         Tau         5           48         04 36.3         -03.4         3.9         30"         Tau         5           04 36.3         -03.4         3.9         11"         Eri         21           04 38.2         -16.5         3.3         4"         Tau         3           04 40.4         -19.7         4.3         -19         21         3           04 40.5         -38.2         6.7         -6         22         3           04 40.5         -38.2         6.7         -6         22         3         3	-		04 32.0	+53 55	5.4	10"	Cam	5	colored double star
ADS 3305 04 33.9 06.7 5.7 4' Eri 2 atan Alpha 04 35.9 +16.5 0.9 30° Tau 5 04 36.3 -03.4 3.9 10° Eri 21 04 38.5 -14.3 3.9 1° Eri 21 04 40.5 56 1.7 4° Eri 21 04 40.5 -38.2 6.7 9° Eri 3 04 40.5 -38.2 6.7 ° Eri 3	<u>Σ</u> 559		04 33.5	+18 01	6.9	3"	Tau	в	double star equal magnitude
aran Alpha 04359 +16,5 0.9 30° Tau 5 48 0436,3 -0,3 3,9 11° Eri 21 0438,5 -14,3 3,9 -11° Eri 21 0438,5 +28,6 7,3 4° Eri 21 0440,5 -38,2 6,7 9° Eri 3 0440,5 -38,2 6,7 9° Eri 3 0440,5 -38,2 6,7 9° Eri 3	46	ADS 3305	04 33.9	-06.7	5.7	4	Eri	2	double star
48 0436.3 -03.4 3.9 11° Eri 21 0438.2 -14.3 3.9 11° Eri 21 0438.4 -19.7 4.3 4° Tau 3 0440.4 -19.7 4.3 6.7 9° Eri 1 0440.5 -38.2 6.7 9° Eri 3 0440.5 -08.2 6.7 9° Fri 3	Aldebaran	Alpha	04 35.9	+16.5	0.9	30"	Tau	5	colored double star
0438:2         -14.3         3.9         •         Eri         21           0438:5         -12656         -23         -         -         Eri         21           0438:5         -2656         -33         -         -         Eri         3           0440:5         -382         6.7         -         -         Eri         3           65         0440.5         -382         6.7         -         Eri         22	NU	48	04 36.3	-03.4	6.6	110	Eri	21	star
04 38.5 + 26.56 7.3 4" Tau 3 04 40.4 -19.7 4.3 * Eri 1 04 40.5 -38.2 6.7 a" Eri 2 04 40.5 -38.2 6.7 a" Fri 3	53		04 38.2	-14.3	6.6	*	Ēri	21	star
04 40.4 -19.7 4.3 • Eri 1 04 40.5 -38.2 6.7 ° Eri 3 6.7 ° Fri 3	5572		04 38.5	+26.56	7.3	4"	Tau		double star equal magnitude
04.40.5 -38.2 6.7 * Cae 22 55 0.4.43.6 -08.48 6.7 ° Fri 3	54		04 40.4	-19.7	4.3		Ēri	-	red variable star
55 04.43.6 -08.48 6.7 9." Eri 3	ж		04 40.5	-38.2	6.7	*	Cae	22	variable star
	7590	22	0 01 10						

NUIIIUEI ST160	s <sup>T</sup>		RA 04 51.2	<b>Dec</b> +68 10	Mag 9.2	Sep Stellar	Con Cam	Code	red variable star
	Pi4	3	04 51.2	+05.6	3.7	*	Ori	21	star
	TT		04 51.6	+28.5	8	*	Tau	22	variable star
	PI5	× 0	04 54.2	+02.4	3.7		50	5 2	star
	Omicron 2	7	04 50.4	+ 13.5	4 		- C	2 6	Star
	Pié	10	04 58 5	+017	4.5	*	ē	24	star
	Omega	ADS 3572	04 59.3	+37.9	2 5	5.4"	Aur		double star
	Hinds Crimson Star	e ce	04 59 6	-14.8	59		ue l	22	variable star
	5627	-	05 00 6	+03.36	999	21"	żč	1 0	double star equal magnitude
	7631	ADS 3606	05 00 7	-13.5	7.5	"ע ע			double star
	7630	ADS 3623	05 02 0	+016		τ. 	ł	10	double star
	Ensilon		05 02 0	+43 49	0.0	Stellar	Aur	22	variable star
	Zeta	α	05.02.5	+411	a i c	*	Aur		star
	W	þ	05.05.4	+01 2	9 9	*	č	22	variable star
	Ensilon		05.05.5	4 20-	0.0	*		27	star star
	Eta	10	05.06.5	+41 2	3.0	*	Aur		star
	OYOR	44	05.07.0	±08.20	4 0 4	. 7	č	4	double star challence
	14	t	100 30	0.000	0 10	* 0		+ c	vouble stat citalienge
			00.00.0	102.0	0.0	,		77	
	51		8.60 60	9.00-	50		E I	77.	variable star
	2644		05 10.4	+3/1/	6.8		Aur	4	double star challenge
	<u>2655</u>	lota	05 12.3	-11.9	4.5	13"	Lep	7	double star
	Rho		05 13.3	+02 52	4.5	7"	Ōri	2	colored double star
	Rigel	Beta ORI	05 14.5	-08.2	0	9.4"	Ori	<b>б</b>	double star magnitude contrast
	Σ653	14	05 15.4	+32.7	5.1	11"	Aur	9	triple star
	Capella	Alpha	05 16.7	+46 00	0.1	*	Aur	21	star
	S 476		05 19.3	-18 30	6.2	39"	Lep	e	double star equal magnitude
	h3750		05 20.5	-21 14	4.7	4"	Lep	6	double star magnitude contrast
	٨٨		05 21.8	+32.5	7.4	*	Aur	22	variable star
	ADS3954	ADS 3954	05 21.8	-24.8	5.5	3.2"	Lep	2	double star
	Σ696	ADS 3962	05 22.8	+03.6	5	32"	Ōŗ	2	double star
	Σ701	ADS 3978	05 23.3	-08.4	9	-9	Ori	2	double star
	Eta		05 24.5	-02 24	3.4	1.5"	Ori	4	double star challenge
	Sigma	ADS 3984	05 24.7	+37.4	5	-b -	Aur	2	double star
	Theta	Dunlop 20	05 24.8	-52.3	6.8	38"	Pic	2	double star
	Bellatrix	Gamma	05 25.1	+06.3	1.6		Ō	21	star
	7698	ADS 4000	05 25 2	+34.9	99	31"	Aur		double star
	5716	118	05 29 3	+25.09	5.8		Tau		double star
	5725	24	05 20 7	- 11 1	4 7	<b>.</b>	- C	4 <sup>c</sup>	star star
	C I I		0.02 20 0	0 2 4	ŕu	0	5	- -	otal
	00400	400 000		0.00		=01	n C	- c	
	110		05 22 2	10.00-	7 7	°.		20	
	5710	ć	V 00 30	10.04	1	=0	A	- c	double stor sound measitude
	01.17			1 0 10	2.0	<b>o</b> *	2		
	R1 5747	0011 004	01 33.2	7.10+			5 6	77 0	
	2/4/	AUS 4162	0.05.00	- 00.50	0 T	00	5 6	1	
			1.05.00	0C R0+	9.9	4	5	ומ	double star magnitude contrast
	Irapezium		05 35.3	-05 23	5.1	13"	-ID		quadruple star
	2752	lota	05 35.4	-05 55	2.9	- 11	Ö	თ	double star magnitude contrast
	Alnılam	Epsilon	05 36.2	-01.2	1.7		-ID	21	star
	Phi2		05 36.9	+09.3	4	*	Ori	21	star
	Zeta	123	05 37.6	+21.1	e	*	Tau	21	star
	Sigma		05 38.7	-02 36	3.7	11"	Ori	7	quadruple star
	Phact	Alpha	05 39.6	-34.1	2.6	*	Col	21	star
	Alnitak	Zeta	05 40.8	-01.9	2	2.4"	Ōri	б	double star magnitude contrast

-	:		i	1		•	¢		
Number	Name	Other	RA	Dec	Mag	Sep	Con	Code	
215	Gamma	ADS 4334	05 44.5	-22.5	3.7	97"	Lep	2	double star
ST216	>:		05 45.7	+20.7	7.1	* •	Tau	22	variable star
217	Mu	SAU 196149	05 46.0	-32.3	5.2		000	5.2	star
218	Salph V705	Карра	0 4/ 50	-09.7	7 4	-0	56	5	Star double star challenge
ST220	Beta	Wazn	05 51.0	-35.8		·	50	21	star
221	Delta		05 51.3	-20.9	8.6	*	Lep	21	star
222	Nu		05 51.5	+39.1	4	30"	Aur	21	star
223	<b>2817</b>		05 54.9	+07 02	8.8	19"	Ori	e	double star equal magnitude
224	Betelgeuse	Alpha	05 55.2	+07 24	0.5	Stellar	Ori	21	star
225	D		05 55.8	+20.2	5.3	*	ori	22	variable star
26	Theta		05 59.7	+37 13	2.6	3.5"	Aur	<b>б</b>	double star magnitude contrast
227	Ē		05 59.9	+45.9	4.3	•	Aur	-	red variable star
228	<u>A23</u>		06 04.8	-48 27	2	2.7"	Pup	m -	double star equal magnitude
229	2855		06 09.0	+02 30	9	30"	ō	7	double star
ST230	TU	;	06 10.9	+26.0	7.5	* 0	Gem	22	variable star
231	2845	41	11.7	+48 42	0.1	× •	AUL	7	double star
232	SS		06 13.4	+47.0	01.		Aur	22.2	variable star
233	Gamma	ł	06 14.9	-00.3	4 0	, 20 +	Mon	5	star
104	Propus	E1d	00 14.9	0.22+	0.0		u ao	<b>N</b> 0	Star January 2022
900	7107	AU3 4048	0.01 00	1.00.4	р ц С		Mon	4 6	uouble stat
220	Zata	Pining	06 20 3	-30.4	0.0 0	а F°	Cm.	27	valiaure stal
38	7 7 2 2 1 9		06 22 7	- 00-	n 4	· ·	Mon	20	stat variable star
020	Mirzam	Reta	06 22 7	-18.0	0	*	em.C	21	star
240	Mu		06 23.0	+22.5	2.9	*	Gem	21	star
241	œ		06 23.8	+04 36	4.3	13"	Mon	5	colored double star
242	Canopus	Alpha	06 24.0	-52 42	-0.7		Car	21	star
243	BL .	BL.	06 25.5	+14.7	8.5	*	Ori	22	variable star
244	15		06 27.8	+20 47	6.6	27"	Gem	2	double star
245	Beta		06 28.8	-07 02	3.8	°.	Mon	9	triple star
246	ADS5150		06 31.8	+38.9	11.5	4.5"	Aur	2	double star
247	<u>5924</u>	20	06 32.3	+17.8	6.3	20"	Gem	5	colored double star
48	ADS5188		06 34.3	+38.1	6.7	43"	Aur	5	double star
49	CR		06 34 4	+16.1	8.5	*	Gem	22	variable star
50	<b>7928</b>	ADS 5191	06.34.7	+38.4	7.6	3.5"	Aur	2	double star
551	ADS5201		06 35 1	+37.1	7 4		Aur		double star
101	02020	ADC 5 208	00 00 4	7 20.	4 1	0.4		4 0	double star
52	7020		06.25.00	10101	t c a	"0°	Mon	4 0	double star
54	ADS6221		06.26.20	0 96.1	n u		Aur		double star challonge
+0	1220014		7.00 00	100.4	0.0	1.1	in C	t 1	מסמתוב אמו הוומווטב
000			00 30.4	1.01-	0 4	c.//	oma Aur	n 6	colored double star
000			00 00 00	0.00+	1		AUL	77 0	Variable star
197	ADS5240		06 36.9	+38.2	9.7	2.2	Aur		double star
258	ADS5245		06 37.3	+38.4	8.8	.0	Aur		double star
259	South 529		06 37.6	+12.2	1.6		Gem		double star
260	Innes5		06 38.0	-61.5	6.4	2.4	Pic	5	double star
261	ADS5265		06 38.4	+38.8	9.6	4.6"	Aur	cz ·	double star
292	Innes1156	ADS 5311	06 39.1	-29.1			Cma	4	double star challenge
263	SAO172106		06 39.5	-30.0	7.8	2.5°	Cma	-	red variable star
264	<u>2953</u>		06 41.2	+08 59	7.1	7"	Mon	2	double star
ST265	٨٨		06 42.2	+31.5	8.7	*	Gem	22	variable star
ST266	Sirius	Alpha	06 45.1	-16.7	÷	-0 -	Cma	6	double star magnitude contrast
ST267	2948	12	06 46.2	+59 27	4.9	5	Lyn	80	triple star challenge
268	<u>2958</u>		06 48.2	+55 42	5.5	2"	Lyn	e	double star equal magnitude
260	/								

7863         14         06331         4365         547         0.4"         1/m         4           7997         1         6         644         3.1         551         4.36         5.4         1.1         1.3         0.6         1.4         0.6         1.4         1.4         0.6         1.4         1.4         0.6         1.4         1.4         0.6         1.4         1.4         1.4         0.6         1.4         1.4         1.4         0.6         1.4         1.4         1.4         0.6         1.4         1.4         0.6         1.4         0.6         1.4         0.6         1.4         1.4         0.6         1.4         0.6         1.4         1.4         0.6         1.4         0.6         1.4         0.6         0.6         1.4         0.6         1.4         0.6         0.6         1.4         0.6         0.6         0.6         0.6         0.6         0.6         0.6         0.6         0.6         0.6         0.6         0.6         0.6         0.6         0.6         0.6         0.6         0.6         0.6         0.6         0.6         0.6         0.6         0.6         0.6         0.6         0.6         0.6	Janiine	Nallie	01161			ĥ	200	5	2000																																		
RY         Non         22           Differential         14         06.532         -054         7         1         Non         22           SBA         14         06.531         -054         7         1         1         Non         22           SBA         14         06.531         -054         7         1         1         Non         22           SBA         14         12         7.3         2         0         0         23         2         0         24         0         22         0         22         0         22         0         23         2         0         0         23         23         2         0         0         23         23         23         23         23         23         23         23         23         23         23         23         23         23         23         23         23         23         23         23         23         23         23         23         23         23         23         23         23         23         23         23         23         23         23         23         23         23         23         23         23	02	Σ963	14	06 53.1	+59.5	5.7	0.4"	Lyn	4	double star challenge																																	
Total         13         Mon         4           Omicioni         19         06541         -0551         7.1         1.3'         Mon         4           Sast         Nu         06541         -0551         7.1         1.3'         Mon         2           Sast         Nu         06541         -0551         7.1         2         Mon         2           CNS         05584         +042         7.2         2         Mon         2           CNS         05584         +042         7.2         2         Mon         2           CNS         22         07017         -27.8         3.5         -         Mon         2           Methologit         Z         07041         +30.6         5         2         Mon         2           Methologit         Z         07041         +30.6         5         7         -         Mon         2           Methologit         Z         07041         +30.6         5         20.5'         Mon         2           Methologit         Z         07041         +30.6         5         20.5'         Mon         2           Methologit         Z	11	GY		06 53.2	-04.6	9.4	*	Mon	22	variable star																																	
Thema         14         06 541         242         39         ··         Cma         21           Thema         14         06 541         -14.2         3.9         ··         Cma         21           Thema         14         06 541         -14.11         4.7         7         2         Cma         21           Stat         21         06 541         -14.12         7.3         2         Cma         21           Revision         21         07 541         +30.6         7.5         7         5         Cma         22           Revision         23         07 541         +30.6         7.5         Cma         22           String         7003         23         2.9         7.6         7.6         Cma         21           Nonconci         24         7.05         +4.4         1.9         2.7         Cma         22           Nonconci         24         7.06         +4.4         1.9         2.7         Cma         22           String         7.035         4.4         1.06         +4.4         1.06         2.4         2.4           String         7.035         4.4         1.125 <td< td=""><td>72</td><td>Σ987</td><td></td><td>06 54.1</td><td>-05 51</td><td>7.1</td><td>1.3"</td><td>Mon</td><td>4</td><td>double star challenge</td></td<>	72	Σ987		06 54.1	-05 51	7.1	1.3"	Mon	4	double star challenge																																	
	73	Omicron 1	16	06 54.1	-24.2	3.9		Cma	21	star																																	
38         0         0554         +131         1         27         Gen         5           205         0         0554         +071         92         28         000         22           205         0         0554         +071         92         28         000         22           050         0         0554         +071         92         28         000         22           0500         0         0554         +071         92         28         000         22           0501         23         35         7         2         000         22           0511         23         35         7         5         000         22           07015         424         57         64         13         2         23           10015         00167         427         84         16         17         13         2           1013         01073         411         155         64         16         17         13         14         16         17           1013         01073         411         155         64         16         14         16         17         16 <td>74</td> <td>Theta</td> <td>14</td> <td>06 54.2</td> <td>-12.0</td> <td>4.1</td> <td></td> <td>Cma</td> <td>21</td> <td>star</td>	74	Theta	14	06 54.2	-12.0	4.1		Cma	21	star																																	
Signt         Mu         0656.1         -14.02         5.3         2.8°         Cma         9           0280         2080         208         -14.02         5.3         2.8°         Cma         21           0280         2080         23.8         +14.2         7.3         2°         06m         22           0581         70.17         27.9         3.5         7.6°         0.0m         22           06581         70.17         27.9         3.5         7.6°         0.0m         22           0000003         24         77.04.7         5.3         3.7         5.6         0.0m         22           00000503         24         77.04.7         5.3         3.7         5.6         0.0m         22           00000503         24         77.04.112.6         4.3         2         0.0m         22           1035         0010014         711.6         4.4         1.12.6         0.0m         22           10346         77.01.1         4.1         2.3         2.4         1.2.6         0.0m         22           10346         7.112.6         7.33         2.3         2.4         2.4         2.4         2.4	75	38		06 54.6	+13 11	4.7	7"	Gem	5	colored double star																																	
BG         OC         OC <thoc< th="">         OC         OC         OC<!--</td--><td>76</td><td><u>2997</u></td><td>Mu</td><td>06 56.1</td><td>-14 02</td><td>5.3</td><td>2.8"</td><td>Cma</td><td>6</td><td>double star magnitude contrast</td></thoc<>	76	<u>2997</u>	Mu	06 56.1	-14 02	5.3	2.8"	Cma	6	double star magnitude contrast																																	
QC80         CO80         CO80         CO80         CO80         CO8         Cons         Z         Cons         Z           Epsilon         21         06584         -73         3         -         Cons         22           Signa         24         07043         -33.8         3         -         Cons         22           Signa         24         07041         +40.2         7.5         Cons         22           Nebbuda         Zeta         07051         +20.6         37         -         Cons         22           Signa         07051         +20.6         54         +17         Cons         23           Signa         07051         +22.6         6         -         136         01         2           Signa         07051         +11.1         +00.2         4         136         01         2           Signa         07052         43.1         7.12         4.4         136         01         2           Signa         07143         7.11         4.4         136         01         2         0         2         0         2         0         2         2         2         0	27	BG		06 56.4	+07.1	9.2	•	Mon	22	variable star																																	
FeV         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ···         ··· <td>78</td> <td>0580</td> <td></td> <td>06.58.1</td> <td>+14.2</td> <td>7.3</td> <td>2'</td> <td>Gem</td> <td>c</td> <td>asterism</td>	78	0580		06.58.1	+14.2	7.3	2'	Gem	c	asterism																																	
Epision         21         0656         290         15         75'         Cma         21           Reladida         Zeta         07041         +206         37         5         5         7         5         7         2           Dunktonda         Zeta         07041         +206         37         5         5         7         5         5         7         5         7         5         7         5         7         2         2         2         2         2         2         2         2         2         2         2         2         2         2         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5	29	RV		06.58.4	+06.2	7		Mon	22	variable star																																	
Qriant         22         07017         278         35         50         700         21           Nunlogas         Zat         07017         278         56         20.5*         Cma         21           Nunlogas         Zat         07017         426         61         41*         10m         23           Nunlogas         Zat         07061         436         56         7         50         50         20           Nunlogas         Nunlogas         Nunlogas         21         20         21         20         21           Nunlogas         Nunlogas         07011         415         64         36         41         10m         22           Nunlogas         Nunlogas         07111         402         7         44         10         21           Nunlogas         1346         07112         417         70         21         21         21         21           Nunlogas         134         107         712         44         10         21         21           Nunlogas         134         21         21         21         21         21         21         21         21         21         21	08 0	Ensilon	21	06.58.6	0 62-	15	7.6"	Cma	10	double star																																	
Okumon         24         07.03.1         24.8         07.03.1         24.8         07.04.1         24.8         07.04.1         24.8         07.04.1         24.8         07.04.1         24.8         07.04.1         24.8         07.04.1         24.8         07.04.1         24.8         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1         24.1	5	Ciamo Siamo	20	02 00 20	-27.0	2 4	2 *		1 č	ctor																																	
Dimetricity         Cal         07 0401         -5.8         5         -0.5         Pup         2           Rebunds         Zeia         07 04.1         -4.28.7         6         -0.5         Pup         2           R         R         R         07 04.1         -4.27.6         6         -1.25.6         6         -1.1         5         6         2         6         2         6         2         7         1         2         2         2         2         1         1         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2		origina original orig		1.10.10	6.12-	0.0		CIIIa	7	51dl																																	
Michology Michology (10)         Call (15)         Call (15) <thcall (15)         Call (15)         <thcall (15)<td>70</td><td>Dunkronz</td><td>74</td><td>07 04 0</td><td>9.07-</td><td>o u</td><td>= 1 00</td><td>Cma</td><td><b>v</b> c</td><td>Star double ator</td></thcall </thcall 	70	Dunkronz	74	07 04 0	9.07-	o u	= 1 00	Cma	<b>v</b> c	Star double ator																																	
Mercolora         Zeta         07/04/1         7-2/0         3/1         4/1         0.66m         2/2           R         R         R         R         07/04/1         7-2/2         6         4/1         1/9         0.6m         2/2           Tau         Dunlip142         07/01/3         7-2/2         6         4/1         1/9         0.6m         2/2           Tau         Dunlip142         07/12/0         7-2/2         7/2         0/2         4/1         1/9         0/01         2           Tau         Dunlip1         7/12/0         7/2/2         7/2         1/3         0/01         2         0/01         2         0/01         2         0/01         2         0/01         2         0/01         2         0/01         2         0/01         2         0/01         2         0/01         2         0/01         2         0/01         2         0/01         2         2         0/01         2         2         0/01         2         2         0/01         2         2         2         0/01         2         2         2         2         2         2         2         2         2         2         2 <t< td=""><td>2 2</td><td>000000</td><td>F</td><td>0.4.0</td><td>-43.0</td><td>10</td><td>c.uz</td><td></td><td>7 00</td><td></td></t<>	2 2	000000	F	0.4.0	-43.0	10	c.uz		7 00																																		
X         DU04         Z         DU04 <thz< th=""> <thz< th="">         Z         <thz< td=""><td>84</td><td>Mekbuda</td><td>zeta</td><td>07 04.1</td><td>9.02+</td><td>3.7</td><td></td><td>Een.</td><td>77 0</td><td>variable star</td></thz<></thz<></thz<>	84	Mekbuda	zeta	07 04.1	9.02+	3.7		Een.	77 0	variable star																																	
K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K	65	51009		1.60 10	+52 45	6.A	4.1	Lyn	ۍ ۱	double star equal magnitude																																	
Main         Kunder         Libb         6.4         Stellar         CMa         1           Taus         ADS.646         07111         +30.2         4.4         35.61         07         2           Taus         ADS.646         07111         +30.2         4.4         1.36         6         2           Taus         ADS.646         07111         +30.2         4.4         1.36         6         3         3         5         3         3         5         2         1         3         6         6         3         3         5         1         3         6         6         3         3         5         1         3         5         1         3         5         1         3         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5	80	¥		0/ 0/.4		م		Cem Cem	77 -	variable star																																	
Gamma         Dunlop 42         07 08.8         7.0.5         4         13.6°         Vol         2           Tau         N035         ABS 58/1         07 12.0         +22 17         8.2         4.1         13.6°         Vol         2           X1035         ABS 58/1         07 12.0         +22 17         8.2         4.1         13.6°         Vol         2           X1035         ABS 58/1         07 13.8         -23 5.3         1.3.3°         Gem         3         2         2         2         2         2         2         2         2         2         2         2         3         3         2         2         4         13.6°         CMa         2         2         3         3         2         2         4         13.6°         2         4         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3	87	M	RV	07 08.1	-11 55	6.4	Stellar	CMa	-	red variable star																																	
Tau         ADS 5846         07111         +20.2         4.4         1.9°         Gen         2           71037         ADS 5871         0711.1         +20.2         1.3°         Gen         2           71037         ADS 5871         071.14         +20.2         1.3°         Gen         2           71037         ADS 5871         071.18         +27.2         1.3°         Gen         2           71040         Fau         5         071.14         -23.19         4.5         2.7°         Gen         2           70022         19         071.18         -23.19         4.5         1.5°         CMa         6           70033         19         722.9         +55.17         5.6         1.6°         Cma         21           70033         HN19, h269°         07.20.3         +50.3         3.3         2.2°         Cma         21           70033         HN19, h269°         07.34.3         -3.3         2.3         2.8         Cma         2           70133         ADS 6117         07.29.3         +50.3         2.3         2.8         Cma         2           70133         ADS 6117         07.33.3         -2.3         2	88	Gamma	Dunlop 42	07 08.8	-70.5	4	13.6"	Vol	2	double star																																	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	89	Tau	ADS 5846	07 11.1	+30.2	4.4	1.9"	Gem	2	double star																																	
1037         ADS 5871         07128         +27.2         7.2         1.3"         Gem         4           0mega         28         07148         56.8         3.9         7         6.0         21           1au         55         07148         7.16.5         21.9         4.5         7         6.0         21           1au         55         07148         7.457         4.5         7         0.0         21         21           1062         19         07187         2457         4.5         1.7         0.0         21         21           2003         MBS 6117         07282         45.17         5.6         15"         0.0         21           21033         ABS 6117         07282         43.3         23.28         5.1         10"         10"         21           21033         ABS 6117         07365         5.6         1.8         10"         21         21           21033         ABS 6117         07365         5.4         3.3         22         0.0         21         21           1121         07365         5.4         3.3         7.9         1.0"         21         21         21	90	<b>∑1035</b>		07 12.0	+22 17	8.2	4"	Gem	3	double star equal magnitude																																	
Ömega         Zä         Öff 14.8         Zä 8.8         3.9         6.7         Cmi         21           Raufi         h.3948         07.16.6         -23.19         4.5         27         CMia         5           Tau         h.3948         07.16.6         -23.19         4.5         15"         CMia         5           Tau         h.3948         07.18.2         +51.153         3.5         6"         Gem         21           21062         19         07.22.1         +51.153         3.5         6"         Gem         21           21082         ADS 6117         07.30.2         +51.0         0.7         20.1         21         21           21082         ADS 6117         07.30.2         +51.0         0.7         21         21         21           21081         ADS 6117         07.30.2         +51.0         0.7         4.3         2"         2"           21081         ADS 6117         07.33.3         +50.0         0.7         4.4         15"         CMia         4           21081         ADS 6117         07.34.3         -3.2.2.8         5.1         10"         4         4           211121         07.35.5<	91	51037	()	07 12.8	+27.2	7.2	1.3"	Gem	4	double star challenge																																	
In3945         In3946         O7166         2319         4.5         27°         CMa         6           Tau         5         07187         -2457         4.4         15°         CMa         6           Delta         55         07223         +2457         5.6         15°         CMa         6           Delta         55         07223         +36317         5.6         15°         CMa         6           Canona         ADS 617         07223         +36317         5.6         15°         CMa         6           Sigma         ADS 617         07232         +3631         2.3         2.7         CMa         6           Sigma         ADS 617         07335         +33.3         2.3         2.7         CMa         6           V         Alpha         07346         +31.9         2.1         10°         Pup         21           Vision         69         07345         +31.9         2.7         118°         6         4           Vision         69         07345         +34.4         5.1         10°         Pup         21           Vision         07339         43.1         07         14.4	92	Omega	i	07 14.8	-26.8	3.9	*	Cma	21	star																																	
Tau         h 3948         07187         2457         4.4         15*         0.00         6           55         55         07201         +2159         55         5         6         000         5           51083         40         07282         +033         3.5         6         6         0         21           51083         ADS 6117         07282         +033         3.5         6         5         0         21           508ma         ADS 6117         07343         -3.328         5.1         10°         21         21           71083         ADS 6117         07343         -3.328         5.1         10°         21         21           71081         ADS         07343         -7.328         -7.3         28         10°         21           7141         07343         -7.453         -7.1         10°         21         21           71138         2         07344         +24.2         3.3         7.10°         21         21           71149         7         5         14         1.1         25         7.10°         21           71149         7         5         1.4         <	03	h3045	2	07 16 6	-23 10	4.5	-27	CMa	iu	colored double star																																	
Delta         55         77 201         +21 59         3.5         6'         0etm         9           71082         19         07 229         +55 17         5.6         15'         1,yn         6           Gamma         4         07 229         +55 17         5.6         15'         1,yn         6           Gamma         ADS 6117         07 2303         +50 0.0         8.8         0.8'         1,yn         6           Sigma         ADS 6117         07 2303         +50 0.0         8.8         0.8'         1,yn         4           Sigma         ADS 6117         07 343         +31 9         2         18'         19'''         1         2           Sigma         07 345         +31 9         2         11 2''         10'''         19''         1         2           V12121         07 343         +31 4 2         3.1         1''''         10'''         10'''         10'''         10'''         10'''         10'''         10''''         10''''         10''''         10''''         10''''         10''''         10''''         10''''''         10'''''''''         10''''''''''''''''''''''''''''''''''''	04	Tau	h 3048	07 18 7	-24 57	4 4	15"	CMa	<u>ب</u>	triple star																																	
Value         No	10	0400	11	1 00 20	101 50	r u F c	2 - 4			double stor meanitude contract																																	
Gamma         4         0         0.22.2         +0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3         0.3 <th0.3< th=""> <th0.3< td="" th<=""><td>30</td><td>VIDEO</td><td>00</td><td>0.02.00</td><td>21 23</td><td>0.0</td><td>- u</td><td>ee l</td><td>n u</td><td>triple star magimure conneast</td></th0.3<></th0.3<>	30	VIDEO	00	0.02.00	21 23	0.0	- u	ee l	n u	triple star magimure conneast																																	
Animat         4         07.28.2         4.5.3         3.3         27         0ml         21           Sigma         "HNI9, h569"         07.35.3         +50.0         8.8         0.08"         Lym         2           Castor         Alpha         07.35.3         +50.0         8.8         0.08"         Lym         2           Castor         Alpha         07.35.9         +51.3         2.1         1.8"         Cem         4           Vision         69         07.35.9         +51.3         2.1         1.8"         Cem         4           Vision         69         07.35.9         +56.9         7.9         7         9         7           Vision         63         07.35.9         +56.9         7.9         7         9         7           Vision         7.38.8         -14.29         7.9         7         9         7         9           Vision         7.38.8         -14.23         3.7         7         9         9         2           Vision         V         07.45.5         +64.03         7         7         9         9         2           Vision         V         07.45.5         +64.03 <td>000</td> <td>70017</td> <td><u>,</u></td> <td>6.77 10</td> <td>1 004</td> <td>0.0</td> <td>2.</td> <td></td> <td>- č</td> <td></td>	000	70017	<u>,</u>	6.77 10	1 004	0.0	2.		- č																																		
Signat         ADS 6117         07.29.2         +43.3         5.3         2.2"         Pup         2           Casto         Alpha         07.343         +53.2         5.1         10"         Pup         2           Casto         Alpha         07.343         +53.2         5.1         10"         Pup         3           Casto         Alpha         07.35.9         +56.9         5.1         10"         Pup         3           V1121         69         07.35.9         +56.9         5.1         10"         Pup         3           Y1121         61         07.38.6         -74.4         3.7         7"         Pup         3           Y1127         0.73.86         -74.4         +2.3         3.7         7"         Pup         3           Y1137         0.73.86         -74.4         +2.3         0.4         5"         9"         3           Y1149         V         07.38.4         -63.14         6.1         17"         Pup         3           Y1149         V         07.45.5         -64.01         6.7         7"         9"         2"           Y1149         V         07.58.1         -5.2	97	Gamma	4	0/ 28.2	+08.9	4.3		Ē		star																																	
n         103         HDS 6117         07 30.3         +50.0         8.8         0.0.8"         Lyn         4           n         "HMS.h569"         07 34.6         +31.9         2.1         10"         Lyn         4           Castor         Alpha         07 34.6         +31.9         2.1         10"         Pup         3           Vision         69         07 34.6         +31.9         2.1         1.8"         Gem         4           Vision         Alpha         07 34.6         +31.9         7.1         2"         Pup         3           Proxyn         Alpha         07 34.4         +32.23         3.7         7"         Pup         3           V         07 34.5         -14.41         6.1         1.7"         Pup         3           V138         2         07 44.1         6.1         1.7"         Pup         3          V         07 45.5         4.33         7.7"         Pup         3         3           V138         2         07 44.1         6.1         7.7"         Pup         2         2           Visit         V         07 45.5         4.33         7         2         2	98	Sigma		07 29.2	-43.3	3.3	22"	Pup	2	double star																																	
Interface         Construct         Thill, h269 <sup>2</sup> 0734,3         -3.3,28         5.1         1.0 <sup>1</sup> Pup         3           Castor         Thild         69         0735,9         +33,28         5.1         1.0 <sup>1</sup> Pup         3           Vision         69         0735,9         +35,8         4.1         2.5 <sup>5</sup> Gem         4           Vision         0738,6         -14,29         7.9         1.1         Pup         3           K1121         0738,6         -26,43         3.4         10 <sup>7</sup> Pup         3           Foroyon         Alpha         0738,6         -26,43         3.7         7         110 <sup>7</sup> Pup         3           Visition         0738,5         -14,41         6.1         17 <sup>7</sup> 9         9         3           S1142         V         0745,5         -14,41         6.1         17 <sup>7</sup> 9         9         3           S1143         V         0745,5         -14,41         6.1         17 <sup>7</sup> 9         9         2           S1143         V         0755,1         -30,01         5.7         6         7         2         7         2 </td <td>66</td> <td>Σ1093</td> <td>ADS 6117</td> <td>07 30.3</td> <td>+50.0</td> <td>8.8</td> <td>0.8"</td> <td>Lyn</td> <td>4</td> <td>double star challenge</td>	66	Σ1093	ADS 6117	07 30.3	+50.0	8.8	0.8"	Lyn	4	double star challenge																																	
Castor         Alpha         07 34.6         +31.9         2         1.8"         Gem         4           Upsilon         69         07 36.6         +34.9         2         1.1         25"         Gem         4           Y121         07 36.6         +34.9         7.9         7.9         Pup         3           Y121         07 36.6         +34.9         7.9         7.7         Pup         3           Y121         07 38.8         +54.4         0.4         Stellar         7.9         Pup         3           Y138         2         07 44.4         +24.23         3.7         7"         Pup         3           Y1128         2         07 47.5         +64.43         7.1         1.9"         Pup         3           Y1128         2         07 47.5         +64.03         7         5"         Cam         2           Y1149         Y         07 45.4         +22.03         3.5         4"         9"         2           Y149         Y         07 45.4         +22.03         3.5         5"         Cam         2           Y149         Y         07 45.4         +22.03         3.5         4"	00	c	"HN19, h269"	07 34.3	-23 28	5.1	10"	Pup	e	double star equal magnitude																																	
Upsilon         69         07.35,9         +26,9         4,1         2,5°         Gem         1           Y1121         0738,6         -26,48         3,8         10°         Pup         3           X1121         0738,6         -26,48         3,8         10°         Pup         3           Procyon         Alpha         0738,6         -26,48         3,8         10°         Pup         3           Procyon         Alpha         0738,5         -46,41         6,1         17°         Pup         3           Y1132         2         0745,5         -64,41         6,1         17°         Pup         3           Y1149         V         0755,1         -64,01         6,1         17°         Pup         3           Y1149         V         0755,1         -63,013         7,9         22°         Cmi         2           Y         0755,1         -53,00         3,5         46°         Pup         3         2           Unlop59         Chi         0755,1         -53,00         3,5         4°         Cmi         2           Nul         V         0755,1         -53,00         3,5         4°         Cmi <td>01</td> <td>Castor</td> <td>Alpha</td> <td>07 34.6</td> <td>+31.9</td> <td>2</td> <td>1.8"</td> <td>Gem</td> <td>4</td> <td>double star challenge</td>	01	Castor	Alpha	07 34.6	+31.9	2	1.8"	Gem	4	double star challenge																																	
Xi121         0736.6         -14.29         7.9         7.0         Pup         3           Frozyon         Alpha         0738.8         -14.29         7.9         7.0         Pup         3           Frozyon         Alpha         0738.8         +65.4         0.4         Stellar         Pup         3           Frozyon         Alpha         0738.8         +65.4         0.4         Stellar         Pup         3           7137         Z         0744.4         +44.23         3.7         1''         Pup         3           7147         Q         0745.0         +64.03         7         5''         Cam         9           7143         V         0743.2         +22.00         8.7         6'''         Cam         2           7149         V         0745.1         +22.00         8.7         6'''         Cam         2           10         V         0756.8         -63.1         5.2         Stellar         6'''         Cam         2           10         V         0756.8         -63.1         5.2         Stellar         6'''         Cam         2           10         V         0756.8         -63.1	02	Upsilon	69	07 35.9	+26.9	4.1	2.5°	Gem	1	red variable star																																	
Kic         0738.8         256.48         3.8         10"         Pup         3           Procyon         Alpha         0738.8         256.48         3.8         10"         Pup         3           05/179         Kapha         07.44.3         4.24.23         3.7         7"tellar         CMi         21           05/179         Kapha         07.44.4         4.24.23         3.7         7"tellar         CMi         21           01138         2         07.45.5         -14.41         6.1         17"         Dup         3           01149         V         07.45.5         -14.31         7.9         22"         Cmi         2           01         V         07.55.4         +03.13         7.9         22"         Cmi         2           01         V         07.55.2         6.5.0         6.5         4"         21         22           01         V         07.55.2.59         8.9         2         24         21         22           13         7.8         2.3         4.6         9.9         2         23         23         23         23         23         23         24         24         24 <td< td=""><td>03</td><td>Σ1121</td><td></td><td>07 36.6</td><td>-14 29</td><td>7.9</td><td>7"</td><td>Pup</td><td>б</td><td>double star equal magnitude</td></td<>	03	Σ1121		07 36.6	-14 29	7.9	7"	Pup	б	double star equal magnitude																																	
Procyon         Alpha         07.38.3         +16.14         0.4         Stellar         CMi         21           0.7179         Kappa         07.44.4         +56.14         6.4         Stellar         CMi         21           7.173         2         07.44.4         +61.03         7         5         Cam         6           7.1127         1149         V         07.44.4         +61.03         7         5         Cam         6           7.1127         0.74.5.         +14.4         6.1         17"         Pup         3           7.1127         0.74.5.         +14.4         6.1         7         5         Cam         6           7.1139         V         07.55.1         +22.00         8.5         Cmi         21           0.1149         V         07.55.1         +22.00         8.5         Cmi         21           0.010         5.5         +63.1         6         4.9"         Cam         21           0.1         0.15.5         +63.1         6         4.9"         Cam         21           0.1         0.10.00.5         5.4         4.9"         Cam         21           0.10	04	×		07 38.8	-26 48	3.8	10"	Pup	3	double star equal magnitude																																	
OX173         Käppa         07 44.4         +34.23         3.7         7*         Gem         9           Y1138         2         07 45.5         +14.1         6.1         1.7         Pup         3           Y1138         2         07 45.5         +50.3         7         7         5*         Cam         9           Y1138         2         07 45.5         +60.3         7         5*         Cam         6           Y1149         V         07 45.1         +203.13         7.9         22**         Cam         6           U         V         07 56.8         53.00         3.5         4*         Car         21           Dunlop59         07 56.8         53.00         3.5         4*         Pup         2           RU         07 56.4         -63.00         6.5         16*         Pup         2           Shlab         2         4*         -0.0         2         -0.0         2         -0.0         2           RU         RU         Rumber 7         08 07.5         -22.9         8.9         7         -0.0         2         -0.0         2           RU         RU         Rumber 7	05	Procyon	Alpha	07 39.3	+05 14	0.4	Stellar	CMI	21	star																																	
Y1138     2     07 45.5     -14 41     6.1     17"     Pup     3       Y1127     0.7 47.0     0.7 45.0     -14.41     6.1     17"     Pup     3       Y1127     0.1     0.7 47.0     0.7 47.0     -10.91     3     7     5"     Cam     6       Y1147     V     0.7 55.1     +22.00     8.2     Stellar     Gem     22       U     V     0.7 55.1     +22.00     8.2     Stellar     Gem     22       Dunlop59     0.7 55.2     -50.0     6.5     16"     Pup     21       Naos     Zeta     08.02.5     -46.31     6     49"     Cam     21       Naos     Zeta     08.05.4     -38.8     8.5     4"     Vel     21       RT     0.07.5     -38.1     8.5     4"     Vel     21       RT     0.007.5     -38.3     8.5     4"     Vel     21       Rumker 7     0.807.5     -47.3     1.9     4"     Vel     22       Rum     Dunlop.65     08.09.5     -47.3     1.9     4"     Vel     22       Rum     Rumker 8     08.12.2     -41.7     23     4"     24     24       Ru	06	02.179	Kappa	07 44.4	+24 23	3.7	7"	Gem	თ	double star magnitude contrast																																	
Titz     Control	07	S1138	~	07 45 5	-14 41	61	17"	Ding	e	double star equal magnitude																																	
Tita         Tita         Total         T	08	51127		07 47 0	+64.03	7	2.	e C		trinle star																																	
United to the second se	00	51140		07 49 4	+03 13	7 0	20"			double star																																	
Chi         Chi <td>10</td> <td></td> <td>&gt;</td> <td>07 55 1</td> <td>100 00</td> <td>C 8</td> <td>Stellar</td> <td>meg</td> <td>- CC</td> <td>variable star</td>	10		>	07 55 1	100 00	C 8	Stellar	meg	- CC	variable star																																	
Dunlop59         Dunlop59         Dunlop59         Dunlop59         Dunlop59         Dunlop59         Dunlop59         Dunlop59         Dunlop55         Hoi         Z21         Hoi         Z21         S21	1	id		07 56 8	-53.0		4°	Car	2	star																																	
State         State <th< td=""><td></td><td>Distanta</td><td></td><td>07 50 2</td><td>20.02</td><td>n u o u</td><td>1e"</td><td></td><td>4 c</td><td>double star</td></th<>		Distanta		07 50 2	20.02	n u o u	1e"		4 c	double star																																	
Nation         Zeta         0.002.5         40.0.1         2.3         4.5         Value         2           Nation         Zeta         0.007.5         -3.03.6         -40.0.0         2.3         -4.5         Puplic         2           RT         0.007.5         -3.88         8.5         -4         Puplic         22           RU         0.007.5         -38.8         8.5         -7         Puplic         22           RU         0.007.5         -38.8         8.5         -4         6'         Vulic         22           Rumker         0.007.5         -47.3         1.9         41''         Vel         22         22           Camma         Dunlop 65         08.05.5         -47.3         1.9         41''         Vel         2         2           Zeta         Rumker 8         08.15.3         -62.9         5.3         4''         Car         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         <	4 5	5 hoe		3 00 00	1.00-	0.0	- 04		4 0																																		
Naus         Leta         0.003.0         -34.0         L.3         -4         Pup         21           RT         RT         0.003.0         -34.0         L.3         -4         Pup         22           RU         Runker 7         0.807.5         -22.9         8.9         -         Pup         22           Epsion         Runker 7         0.807.5         -22.9         8.9         -         Pup         22           Gamma         Dunkp 65         08.09.5         -47.3         1.9         41"         Vel         22           Zeta         Dunker 8         08.15.2         +17.39         4.7         0.6"         Cnc         2           C         C         Runker 8         08.15.2         +10.7         35         4"         Cnc         2           Reta         17         08.16.5         +10.2         3.5         4"         Cnc         21         8           Reta         17         08.16.5         +10.2         5.4         65"         Cnc         21         7         7         7         7         7         7         7         7         7         7         7         7         7         7	2	Doll-D	7.110				0 0		1 2																																		
RU         0.005.4         -35.0         6.0         -30.0         22           RU         Runker 7         0.807.5         -35.0         8.0         -         Pup         22           Epsilon         Runker 7         0.807.5         -52.0         8.0         -         Pup         22           Gamma         Dunhop 65         0.803.5         -47.3         1.9         41"         Vel         2           Cata         Runker 8         0.815.3         -62.9         5.3         41"         Vel         2           Cata         Bata         17         0.815.3         -52.9         5.3         41"         Cata         8           Kappa         17         0.816.5         +10.7         5.3         6.1         -         Cata         2         -           Reta         17         0.816.5         +10.7         5.4         65"         Vel         22         -           Kappa         0.819.8         -71.5         5.4         65"         -         -         22         -	+ -	NaUS DT	7619	00 00.0	0.04-		t +			Stat																																	
Rol         Runker 7         08 0/.5         -63.5         6.4         6'         Vulp         22           Gamma         Dunlop 65         08 09.5         -47.3         1.9         41"         Vel         22           Camma         Dunlop 65         08 09.5         -47.3         1.9         41"         Vel         2           Zeta         Runker 8         08 12.2         -47.3         4.7         0.6"         Cnc         8           Zeta         17         08 15.2         -62.9         5.3         4"         Cnc         8           Beta         17         08 16.5         +10.2         3.5         -         Cnc         21         2           R         08 16.5         +10.2         5.3         5.4         65"         Vol         22         2           Kappa         08 19.8         -71.5         5.4         65"         Vol         22         2         2         2         2         2         2         2         2         2         2         2         2         3         4         5         5         5         3         4         5         2         2         2         2         2				1 20 00	0.00-	0 0			77																																		
Epilon         Runker 7         08 07.9         -68.6         1.4         6"         Vol         2           Gamma         Dunlop 65         08 07.5         -68.6         4.4         6"         Vol         2           Zeta         Dunlop 65         08 09.5         -17.39         1.9         4.1"         Vel         2           Zeta         Rumker 8         08 15.2         +17.39         5.3         4"         Cnc         8           Ea         17         08 16.5         +62.9         5.3         4"         Cnc         21           Beta         17         08 16.6         +11.7         6.1         -         Cnc         21           Kappa         08 19.8         -71.5         5.4         65"         Vol         2	16	ואנ	ſ	G. 10 80	6°22-	α.4 •		dn :	77	variable star																																	
Gamma         Dunlop 65         08 09.5         -47.3         1.9         41"         Vel         2           Zeta         Rumker 8         08 15.3         +17.39         1.9         41"         Vel         2           Zeta         Rumker 8         08 15.3         +57.39         5.3         4"         Cerc         8           C         Rumker 8         08 16.3         +61.2         5.3         4"         Cerc         2           R         17         08 16.5         +10.7         6.1         Cerc         21         7           R         17         08 16.5         +11.5         6.1         6.1         Cerc         21         7           Kappa         08 19.8         -71.5         5.4         65"         Volc         22         7         0         22         7         0         22         7         0         22         7         0         22         7         0         22         7         0         52         54         65"         7         0         22         7         0         52         54         55         55         55         55         55         55         55         55         <	17	Epsilon	Kumker /	08 07.9	-68.6	4.4		No	.7	double star																																	
Ceta Rumker 8 08 12 - 17 0.6" Cnc 8 C E Rumker 8 08 15.2 +17 39 -1.7 0.6" Cnc 8 Beta 17 08 16.5 +09.2 3.5 + Cnc 21 R R - 08 16.5 +09.2 3.5 + Cnc 21 Kappa 08 198 -71.5 5.4 65" 7.01 22 Cnc 22 - 10 08 198 -71.5 5.4 65" 7.01 22 0.01 28 -71.5 5.4 65" 7.01 22 Cnc 22 - 10 0.01 28 -71.5 5.4 65" 7.01 22 Cnc 22 - 10 Cnc 22 - 10	18	Gamma	Dunlop 65	08 09.5	-47.3	1.9	41"	Ve	2	double star																																	
c Rumker 8 08 15.3 -52.9 5.3 4" Car 2 Beta 17 08 16.5 +0.2 3.5 - Cnc 21 R 08 16.6 +11.7 6.1 - Cnc 21 Kappa 08 19.8 -71.5 5.4 65" Vol 2 08 19.8 -71.5 5.4 65" Vol 2	19	Zeta		08 12.2	+17 39	4.7	0.6"	Cnc	8	triple star challenge																																	
Beta 17 08.16.5 +10.2 3.5 * Cnc 21 R R R 10.08.16.5 +10.2 5.1 * Cnc 22 Kappa 08.19 -11.7 5.1 * Cnc 22 Nappa 08.19 -11.5 5.4 65* 7.0 22	20	U	Rumker 8	08 15.3	-62.9	5.3	4"	Car	2	double star																																	
R 08 16.6 +11.7 6.1 * Cnc 22 Kappa 08 19.8 -71.5 5.4 65" Vol 2 00 09.3 -71.5 5.4 65" Vol 2	21	Beta	17	08 16.5	+09.2	3.5	*	Cnc	21	star																																	
Xappa 019.8 -71.5 5.4 65" Vol 2 2 02.02 1.5 1.4 65" Vol 2	22	ĸ		08 16.6	+11.7	6.1	*	Cnc	22	variable star																																	
	23	Kappa		08 19.8	-71.5	5.4	65"	Vol	2	double star																																	
AC 08.22.7 -15.9 8.9 * Pub	P C	AC.		L CC 00	0 1	0	,		00																																		
c Mag Sep Con	2 4.3 15° Lyn 1 3.8 6° Vol	6.5 8" Pup	7.1 6.3	5.5 3.6" Vel 2		6 10" Cnc 2	4.4 * Hya 21	3.7 * Pyx 21	2.1 2.6" Vel 2	6.4 5" Hya 2	4 30" Cnc 5	3.4 3" Hyd 9	1.0 4 Lyn	ла л" Cnc 22	4.8 1° Uma 21	6.9 8" Cnc 3	2.2 Stellar Vel 21	4.8 4" Uma 9	6.7 5.7 Val	5.2 6" Vel 9	8.1 18" Uma	4.3 5' Car 21	8.6 * Uma 22	0.9 0 Lyn 66 1" Lyn	3.1 * Lyn 21	2.5 * Vel 21	7.2 21" Hya 2	4.5 2.1" Leo 6	7.5 2.3" Hya 2.5 Stoller Hya	5.9 0.5" Leo 4	7.8 61" Vel 2	8.3 14" Leo 3	5.8 8" Ant 2	3.1 * Vel 21	3 3.8 23" Uma 9 4.3 * 1.50 31	2,5 Fe0	6.4 25" Uvn 24	3.0 * Hva 21	3.1 5" Car 2	4.4 Stellar Leo 1	9 * Sex 22	8.3 * Hya 22	* 00
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De			7 +2432 7 +2656		5 -44 44 4 -39 04																																					51.1 -23.0	52 R ±26.0

ST381         MDS/T/A4         <			
Atbs/ruta         Zeta         10.6.3         +17.7           Addistand         Zeta         10.6.3         +17.7           Addistands         Mu         10.6.3         +17.7           Adjera         Gamma         10.50.0         +19.8           Adjera         Mu         10.22.3         +11.5           Adjera         Mu         10.22.3         +11.5           Amia Australis         Mu         10.22.6         +09.8           Amo         47         10.22.6         +09.3           Amo         47         10.22.6         +09.3           Amo         10.22.6         +09.3         +14.5           Amo         10.22.6         +09.3         +14.4           Amo         10.25.6         +09.3         +14.4           Amo         10.25.6         +14.4         +14.4           Amo         10.25.6         +10.25.6         +14.4           Amo <td></td> <td>Car 22</td> <td>variable star</td>		Car 22	variable star
Adhatera         Zeta         1015.1         413.4           M4306         Gamma         10.15.1         64.7           M4306         Gamma         10.20.3         441.5           Alpha         42         10.22.3         441.5           Alpha         10.22.6         50.8         56.8           Alpha         10.22.1         64.7         64.7           Alpha         10.22.6         50.8         56.8           Alpha         47         10.22.8         40.8           Alpha         47         10.22.8         50.8           Par         10.22.6         50.8         50.8           Par         47         10.22.8         50.8           Qamma         10.22.6         50.8         50.8           Qamma         10.22.6         50.8         50.8           Qamma         10.35.7         51.6         50.8           Qamma         10.35.6         70.8         4.4           V         10.44         50.8         50.6           V         10.41         10.45.8         50.4           V         10.41         10.45.6         50.4           V         10.41         1	-		double star challenge
M306         M306         M311         M306         M311         M306         M311         M306         M311         M306         M311         M3111         <	, o.o.	Leo 2	double star
Algebra         Gamma         10.32.1         69.7           Tania Australis         Mu         22.3         441.5           Min         42         10.27.6         49.8           Alpha         42         10.27.6         49.8           Alpha         47         10.27.6         49.8           Alpha         47         10.27.6         49.8           Alpha         47         10.25.0         49.3           Pit         10.27.6         40.8         40.7           Pit         10.25.0         49.3         40.7           U         0.025.6         35         10.35.6         53.6           U         0.025.6         35         10.34.4         40.44           VY         0.045.1         40.33.5         78.8           U         0.035.2         35.78         10.34.4         44.4           Nu         0.045.1         10.34.4         46.7         10.34.4           Nu         0.035.6         35         10.34.4         46.7           Nu         0.045.1         10.34.4         46.7         16.7           Nu         0.045.1         10.34.4         46.7         16.6.2			
Tanita Australis         Maina         Function         Maina         Function			
Multi Actionation         4.0         10.22.1         16.8           Alpha         4.7         10.22.6         -13.1           Alpha         4.7         10.22.6         -30.36           Belta         HN 50         10.22.6         -30.36           Alpha         4.7         10.22.6         -30.36           Alpha         4.7         10.22.6         -30.36           Pelta         HN 50         10.25.6         -30.36           Alpha         10.25.6         -30.36         -30.36           Dunbop55         x         10.25.6         -33.4           U         U         10.25.6         -33.6           Stat         0.0         10.35.5         -33.6           Stat         0.0         10.45.1         -60.0           V         V         10.45.4         -60.0           Via         0.75.7         0.45.1         -65.0           Stat         0.45.1         10.45.3         -64.0           V         Nu         11.8.5         -63.3.1           Stat         0.44.6         11.18.2         -63.1.5           Stat         0.44.6         11.18.2         -63.1.5           Stat <td></td> <td></td> <td></td>			
April         April <t< td=""><td>*</td><td></td><td>oldi otor</td></t<>	*		oldi otor
Africat         M. SO         1027.16         491.1           P         47         10.22.6         491.3           P         10         10.22.6         491.3           P         10.22.6         493.3         493.3           Q         0         10.22.6         493.3           Q         0         10.22.6         493.3           Q         0         10.35.2         -39.6           Q         0         10.35.6         493.3           Q         0.035.6         35         778.6           Q         0.035.6         37.8         49.1           Dunbp85         x         10.35.6         -13.4           XI         0.045.1         461.4         444.4           V         0.045.1         461.4         461.4           N         0.045.1         40.1         40.1	*		oldi otor
Deta         HN 50         10.2.0         -30.36           P         47         10.2.0         -30.36           Rho         47         10.2.0         -30.36           Rho         47         10.2.5.0         -30.36           Rho         17         10.2.5.0         -30.36           Qamma         10.35.2         -30.8         -90.33           U         0         0.35.5         -73.6         -90.33           U         0         0.35.5         -73.6         -90.33           U         0         0.35.5         -73.6         -90.33           U         0.35.5         -73.6         -73.6         -73.6           U         0.35.5         -73.6         -73.4         -73.4           Nu         0.40.1         0.40.1         -13.4         -40.4           VY         0.40.1         0.40.1         -14.4         -65.6           VIT         0.40         0.45.1         -10.38         -16.5.0           Nu         0.41.18.2         -10.45.8         -16.5.0         -01.38           Nu         111.16.5         -63.1.5         -63.1.5         -63.1.5           Nu         111.16.2			atal double ator
Delta         Introduction         10.2.0         61.7           Rio         47         10.3.2.0         61.7           Bio         47         10.3.2.0         61.7           U         0.3.1         10.3.5.         738.6           J         0.3.1         10.3.5.         738.6           J         0.3.1         10.3.5.         738.6           J         0.3.1         10.3.5.         738.6           Dunlop55         x         10.3.5.         738.6           N         N         10.3.5.         738.6           Dunlop55         x         10.45.8         40.1           N         N         10.45.6         73.4           N         N         10.45.6         74.4           SAO251342         ADS 8119         1117.2         63.1           SAO251342         ADS 8119         1117.2         63.1           Nu         1117.2         63.3         71.3           Alla         ADS 8119         1117.2         63.1           Nu         1117.2         63.1         63.1           Nu         1117.2         63.3         73.1           Nu         1117.2         64.			double star monstrude contract
Rio         47         10.35.0         -0.17           49         0         0.35.0         -0.13           49         0         0.35.0         -0.13           0         0.017.6         -73.6         -0.13           0         0.077.6         -73.6         -0.13           0         0.077.6         -73.6         -0.13           0         0.077.6         -73.4         -0.13           0.077.6         0.037.6         -73.4         -0.13           0.077.6         0.037.6         -13.4         -0.13           0.074         0.037.6         -13.4         -0.13           0.045.7         0.04.0         0.04.5         -0.16           0.041         0.04.5         -0.13         -0.13           0.042         0.04.5         -0.13         -0.13           0.042         0.04.5         -0.13         -0.13           0.043         0.04.6         -0.13         -0.13           0.043         0.04.6         -0.13         -0.13           0.043         0.04.6         -0.13         -0.13           0.043         0.04.6         -0.13         -0.13           0.043         0.04			
4/1         4/1         4/1         4/2         10.3.2         3.9.6           Un         0.3         3.5.6         -13.4         -13.4           Un         0.35.2         -39.6         -13.4           Un         0.35.2         -39.6         -13.4           Un         0.35.5         78.6         -13.4           Un         0.44.6         35.5         78.6           N         N         0.44.4         -13.4           N         N         0.44.4         -14.4           N         N         0.44.4         -10.44.4           N         N         0.44.1         -16.2           N         N         0.44.1         10.45.6         -31.5           SAO251342         ADS 7979         0.45.1         +51.4           SAO251342         ADS 8119         11.11.8.2         +31.5           Alua         Nu         11.11.8.2         +31.5           Alua         Nu         11.11.8.2         +31.5           Alua         Nu         11.11.8.2         +31.5           Alua         Nu         11.11.8.2         +31.5           Alua         11.12.3.4         +0.6         0.0 <td></td> <td></td> <td>star</td>			star
U         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.			atal daukto star akallanaa
Gamma         0.35.2         53.6         7.84           Unlop55         x         10.35.6         7.84           Dunlop55         x         10.34.6         13.4           Dunlop55         x         10.34.6         13.4           VY         Dunlop55         x         10.34.6         13.4           VY         Dunlop55         x         10.34.5         7.84.8           VY         Delta         40         10.45.6         13.4           VY         Delta         40         10.45.1         +67.4           VY         Delta         Alua Borealis         10.45.1         +67.1           SAO251342         ADS 8119         11.16.2         -63.1.5         -63.1.5           SAO251342         ADS 8148         11.17.2         -63.1.5         -63.1.5           Alua Borealis         Nu         11.18.2         +63.1.5         -63.1.5           Alua Borealis         Nu	N *	A = 4	
Valuation         Continuation         Continuation <td></td> <td></td> <td>variable star</td>			variable star
Dunlop35         x         10.37.6         13.4           VY         10.45.6         35         10.45.4         40           R         7.1466         35         10.45.4         40           VY         0.45.1         667.4         40         67.4           R         7.1466         68.8         60.5         71.44           R         7.147         40         10.45.1         60.5           Vu         Aut         ADS 7979         10.45.2         63.5           SAO251342         ADS 8119         1117.5         63.5         63.5           SAO251342         ADS 8119         1118.2         63.1.5         63.5           Value Borealis         Nu         1118.2         63.1.6         63.5           Aut         113.2.3         113.4         64.3         63.6           Na         113.2.3         113.4         64.0         63.3           Na         113.2.3         113.4         64.3         63.4           Na         113.4         113.4         64.3         65.5           Na         113.4         113.4         64.3         65.5           Na         113.4         113.4         <			star
Dunlop35         X         10.43         55.6           V X         10.44.6         55.6         55.6           V X         10.44.6         68.8         44.4           V X         10.44.6         68.8         80.5           V X         10.45.1         67.4         64.4           V X         10.45.6         68.6         68.4           V N         10.45.6         69.5         64.1           Nu         10.45.6         16.6         74.8           SAO251342         ADS 7979         10.45.6         63.5           SAO251342         ADS 8119         1118.2         63.15           SAO251342         ADS 8149         111.82         63.3           Viua Borealis         Nu         1118.2         63.0           Vita Borealis         Nu         113.2.4         65.0           Vita Borealis         Nu         113.4         65.0		Hya 22	variable star
NY         35         10.43.4         +04.44           R         VY         10.45.1         +67.4           VY         0.45.1         +67.4         +67.4           VY         0.45.1         +67.4         +67.4           VY         0.45.1         +67.4         +67.4           VY         0.45.1         +67.4         +67.4           Var         ADS 7379         10.45.5         +67.4           SAO251342         ADS 8119         1117.5         +63.5           SAO251342         ADS 8119         1118.2         +33.1           Aula Borealis         Nu         1117.5         +63.6           Na         1118.2         +33.1         +63.1           Na         1113.4         +10.3         8           Na         113.4         +113.4         +65.0           Tau         8         x         113.4         +10.3           Na         113.6         113.4         +14.4         +10.5           Na         8         x         113.4         +10.3         8           Na         113.6         113.6         +10.4         4         10.3           Nausaver         113.4 <td>52"</td> <td></td> <td>double star</td>	52"		double star
R         0.44.6         +68.8           V V         10.44.6         +68.8           V V         10.45.1         +68.4           V V         10.45.1         +68.4           Nu         10.45.5         +0.0           Y S         10.45.6         +68.8           Nu         10.45.6         +68.6           Nu         10.45.6         +54.8           SAO251342         ADS 8119         1115.2         +53.5           SAO251342         ADS 8119         1115.5         +53.15           Alua Borealis         Nu         1112.4         -65.0           Alua Sorealis         Nu         1112.4         -63.3           V1432         ADS 8148         112.2.4         -63.3           Y1529         ADS 8148         112.3.4         +65.0           Inas7         X         X         -40.6           Just         X         -112.3.4         +65.0           Inas7         X         113.4.6         +14.3.4           Bausar         X         113.4.6         +14.3.4           Nu         113.4.6         113.3.6         -70.5.5           Nu         113.4.6         113.4.6         +1			double star
VY         I0.45.1         +67.4           Delta         10.45.6         +67.4           Nu         0.45.6         +80.5           Stars         54         40         10.45.6         +61.2           SAO251342         ADS 7379         10.45.6         +61.2         -63.5           SAO251342         ADS 8119         1117.5         -63.5         +31.5           SAO251342         ADS 8119         1118.2         +33.1         -63.5           SAO251342         ADS 8119         1118.2         +33.1         -63.5           SAO251342         ADS 8148         112.4         -65.0         -63.5           Diata         Driata         AN         113.4         -65.0         -63.5           Sausart         Lambda         112.7.8         +10.5         -63.2           Diata         X         Nu         112.7.8         +10.5         -62.3           Sausart         Lambda         112.7.8         +10.5         -62.5         -63.3           Diata         X         Lambda         112.7.8         +10.5         -62.5         -63.4           Sausart         Lambda         113.1.4         +113.4         +10.5         -62.5	*		variable star
Della         10.45.8         80.5           21476         40         10.49.3         -80.5           Nu         Nu         10.49.3         -60.3           Nu         0.49.1         10.55.6         -53.5           SAO251342         ADS 7979         10.45.6         -63.3           SAO251342         ADS 8119         11.16.2         -63.3           Xi         Alla Borealits         Nu         11.17.5         -63.3           Alla Borealits         Nu         11.17.5         -63.3         -01.38           Y1529         ADS 8148         11.12.4         -60.0         01.38           Y1540         83         11.12.4         -60.0         01.38           Y1540         83         11.23.4         -60.3         01.38           Y1540         83         11.23.4         +60.3         01.38           Riabar         11.33.6         11.33.6         -03.4         01.43           Nu         Nu         11.33.6         +00.6         -40.6           Nu         Nu         11.34.9         +60.3         -40.6           Nu         Nu         11.34.6         +13.4         -40.6         -40.6         -40.6	•		variable star
Nu         10         10         9.0         0.0           Nu         ADS 7979         10.49.6         -6.2           SAO251342         ADS 7979         10.49.6         -6.2           SAO251342         ADS 8119         11.17.5         -63.5           SAO251342         ADS 8119         11.17.5         -63.5           Xi         ADS 8119         11.18.5         -63.5           Yi529         Nu         11.18.5         -63.5           Yi529         Nu         11.18.5         -63.1           Yi529         ADS 8148         11.18.5         -63.3           Yi529         ADS 8148         11.18.5         -63.1           Yi520         83         ADS 8148         11.23.4         -60.3           Yunex         11.23.4         -60.3         -62.9         -62.9           Gausar         Lambda         11.37.4         -69.2         -62.9           Gausar         Lambda         11.37.4         -69.2         -62.9           No         8         X         11.37.4         -69.2         -62.9           No         8         X         11.37.4         -69.2         -62.9           No         8<			double star
Nu         Nu         Fig. 2           54         ADS 7979         10.49.6         -16.2           54/0251342         ADS 7979         10.56.6         -16.2           54/0251342         ADS 8119         111.16.5         -53.5           5155         AUla         0.05.6         -13.5           71539         Nu         111.8.2         -53.5           71530         AUla         111.8.2         -53.1           71530         ADS 8148         111.8.2         -63.0           11182         ADS 8148         111.2.3.4         -65.0           71540         83         112.3.4         -65.0           71540         83         112.3.4         -69.3           713         8         X         113.2.4         -69.3           7141         84         112.2.4         +0.6           71573         8         X         113.2.4         +0.6           7153         8         X         113.2.4         +0.6         5           7153         8         X         113.2.4         +0.6         5           7153         8         X         113.2.4         +0.6         5           71	2.5"		double star
54         ADS 7979         10 55.6         +24.8           SAO251342         ADS 8119         1117.5         63.5           XIu         Nu         1117.5         63.5           XIus Borealis         Nu         1118.5         63.5           Yus Borealis         Nu         1118.5         63.5           Yus Borealis         Nu         1118.5         63.5           Yus Borealis         Nu         1122.9         401.38           National         Lambda         112.1         419.2           National         Lambda         113.4         419.2           National         X         113.2.9         406.5           National         X         113.4         418.2           National         X         113.4.7         418.2           National         National         113.4.7         416.2           National         National         113.4.6         418.2           National         National         114.5.1			star
SAO251342         ADS 8119         1117.5         63.5           X         Alula Borealis         Nu         1118.2         63.5           X1528         Alula Borealis         Nu         1118.2         63.5           X1528         Alula Borealis         Nu         1118.2         63.5           X1528         Alula Borealis         Nu         1118.2         63.5           X1529         Alula Borealis         Nu         1124.4         65.0           X1540         B3         1128.6         410.5         63.0           Y121.9         H3         1127.9         40.6         6           X1552         1133.6         1133.6         40.6         5           X1552         X133.6         1133.6         40.6         5           X1572         Beta         1145.1         416.3         46.5           X1573         65         1133.6         -70.5         22         72.2           X1573         65         1156.1         416.2         -73.2         2           X1573         65         1156.1         416.2         -73.2         2           X1573         26.3         20.3         20.3         20.3	"8 <del>9</del>		double star
Xi Martine         ADS 8119         1118.2         +31.5           Alua Borealis         Nu         1118.5         +33.1           715.40         B3         1118.5         +33.1           715.40         B3         1118.5         +33.1           715.40         B3         1118.5         +33.1           715.40         B3         1123.4         -01.38           101432         ADS 8148         1123.4         -01.39           1014         B3         1123.4         -01.38           113.1         B3         113.1.6         +49.2           114.5         113.1.6         +14.3         -34.4           113.1.8         113.1.6         +14.3         -34.6           1113.2         113.3.6         -24.6         -33.4           1113.2.9         113.3.6         -24.6         -34.6           1113.2.9         113.3.6         -40.6         -33.4           1113.2.9         113.3.6         -33.4         -34.2           1113.2.9         113.3.6         -33.4         -34.2           1114.5         113.5.6         -33.4         -34.2           1114.5         115.6.1         -40.6         -33.4 </td <td></td> <td></td> <td>double star manufulde contrast</td>			double star manufulde contrast
Alula Borealis         Nu         1118.5         +33.1           Yilo2         Alula Borealis         Nu         1118.4         +01.38           Yilo2         ADS 8148         1123.4         -65.0           Diaz         ADS 8148         1123.4         -65.0           Yau         1127.9         +10.5         -01.38           Yau         84         1127.9         +10.5           Yau         8         1127.9         +10.2           Gausar         Lambda         1127.9         +02.9           Gausar         Lambda         113.1.4         +65.3           Gausar         113.1.8         +14.2         8           No         X         113.1.4         +16.4           No         113.1.4         +16.4         4           No         113.2.3         -0.6.5         114.1         +14.3           Nu         114.5.1         +16.4         4         -0.7.2           Nu         114.5.1         114.5.1         +14.2         -0.6.5           Nu         Nu         114.5.1         +14.2         -0.6.5           Nu         Nu         114.5.1         +14.3         -0.6.5           <		Uma 4	double star challenge
Y1528     11194     -0138       M4432     ADS 8148     1123.4     -0138       Iota     ADS 8148     1123.4     -65.0       Dia     B3     1123.4     -65.0       Y1540     83     1123.9     +03.00       Tau     84     1123.9     +03.00       Tau     84     1123.4     +69.3       Giausar     Lambda     1121.8     +14.21       Na     Xambda     1131.4     +14.21       Inss78     1133.6     -40.6       Nu     Beta     1145.9     +06.5       Vines78     1133.6     -40.6       Nu     Beta     1145.9     +16.4       Sinss2     1145.1     +114.4       Nu     Beta     1145.1     +118.4       Sinss2     1155.1     +40.6       Denobola     Beta     1142.9     +21.5       Sinss2     1155.1     +418.4     -72.2       Denobola     Beta     1125.8     +21.5       Sinss2     2     115.1     +418.4       Sinss2     2     12.0.3     -22.5       Denobola     Beta     12.0.3     -22.6       Sinss2     2     12.0.3     -21.5       Siston     12.			double star
In4432         In23.3         -65.0           1043         ADS 8148         1123.4         -65.0           1144         ADS 8148         1123.3         -10.5           11au         B4         1127.9         +0.2.9           11au         B3         1125.2         +114.21           1121.4         +69.3         -114.1         +14.21           1121.8         1131.8         +14.21         +14.21           1131.8         1131.8         +14.21         +14.21           1131.8         1133.6         -0.6         -0.6           1132.3         -114.4         +14.21         +14.21           1133.6         -0.6         -1133.6         -0.6           1133.6         -114.3         -14.2         +14.3           1133.6         -114.3         -14.2         +14.3           1133.6         -114.3         -14.2         +14.3           1133.6         -115.6         -114.3         +14.3           1133.6         -115.6         -114.3         +14.3           1133.7         -115.6         -114.3         +14.3           1133.6         -115.6         -114.3         +14.3           1133.6 <td>10"</td> <td></td> <td>double star</td>	10"		double star
Iora         ADS 8148         1123.9         +10.5           21540         83         1126.8         +0.3           Tau         83         1126.8         +0.3           Tau         84         1127.9         +0.3           Glausar         Lambda         1131.4         +68.3           R8         x         1131.4         +148.3           R8         x         1133.6         +16.4           Innes78         1133.6         +16.4           Nines78         1133.6         +16.4           S1552         1134.7         +16.4           Nines78         1145.1         +14.2           Beta         1145.1         +14.2           S1572         65         1155.1         +16.2           S1573         65         1155.1         +16.2           S1573         65         1155.1         +16.2           S1573         5150         1155.1         +16.2           S1573         5151         1155.1         +16.2           S1573         5153         20.3         22.6           S1573         215.1         20.3         50.2           S1604         12.0.1		Mus 2	double star
21540     83     1126.8     +03.00       Tau     84     112.19     +03.00       Tau     84     113.18     +14.21       Glausar     Lambda     113.18     +14.21       R8     x     113.2.3     -90.6       N     113.2.4     +68.3       S1552     113.1.8     +14.21       N     113.2.4     +68.3       S1552     113.4.7     +16.48       Nu     1145.1     +16.48       Nu     1145.1     +14.34       Beta     1145.1     +14.34       Beta     1145.1     +14.34       Beta     1145.1     +14.24       Nu     1145.1     +14.24       Denebola     Beta     1145.1     +14.24       S1579     65     115.1     +14.24       Cista     1156.1     +13.4     29       S1579     65     115.64     +14.24       Cista     1156.6     1156.6     +24.55       S1579     65     1156.4     +16.45       S1579     21a     2.04.3     +21.5       S1604     12.03.5     -02.26       S1604     12.03.5     -1151       Epsilon     12.04.5     -1151       <	1.3"	Leo 4	double star challenge
Tau         84         1127.9         +02.9           Glausar         Lambda         1131.4         +02.9           Glausar         Lambda         1131.4         +02.9           B         x         1131.4         +14.21           B         x         1131.4         +14.21           Innes/8         1133.5         -90.6           Innes/8         1133.5         -40.6           N1552         1143.7         +16.48           N         1145.9         +16.48           N         1145.1         +14.34           Beta         1145.1         +14.34           Beta         1145.1         +14.84           S1579         65         1155.1         +46.29           O2112         65         1155.1         +46.29           S1579         65         1155.1         +46.29           S15810         h4486         12.03.5         -02.26           S1593         2         1155.1         +46.29           S1604         12.03.5         -02.15         57.5           Delta         2         12.03.5         -02.6           Existon         12.03.6         -115.7         58.7			triple star
Giausar         Lambda         1131.4         +68.3           8         x         1131.6         +14.21           8         x         1131.8         +14.21           8         x         1133.6         -40.6           1153.6         1133.5         -40.6           1153.6         1134.5         +14.21           1133.5         29.16         -40.6           1133.6         1134.5         +06.5           1134.5         1134.5         +06.5           1144.1         1144.9         +19.4           2051.2         65         1156.1         +19.4           215.1         1152.6         -33.9           2143.6         1156.1         +13.4           2143.7         1155.6         -02.5           2143.7         1156.6         -115.1           2143.7         1156.6         -10.7           2143.7         12.04.3         +215.7           2143.7         12.04.3         -10.7           2144.7         12.16.1         -45.7           2144.7         12.16.1         -40.7           2144.8         12.16.1         -40.7           2144.7         12.16.1			double star
88         x         1131.8         +14.21           N         1         133.8         +14.21           Innes78         1133.8         +14.21           Innes78         1133.6         -40.6           S1552         1133.6         -40.6           Nu         1143.4         +16.48           Nu         1145.9         +06.5           Denebola         Beta         1145.9         +06.5           Bata         1145.6         +14.34           Denebola         Beta         1145.1         +14.34           Bata         1145.6         13.46         -33.9           OX1579         65         115.6         +13.4           OX160         H48.6         115.6         +14.2           S1579         65         115.6         +14.2           S1500         H44.86         1156.6         -33.9           S1530         204.3         203.5         -02.26           S153         213.6         1156.6         -157.7           S164         12.03.5         -1157         -156.7           S164         12.16.4         12.16.4         -45.7           Runker14         12.16.1		Dra 1	red variable star
Instructure         112.3         29.16           Inser28         1133.6         -29.16           S1552         1134.5         -40.6           S1552         1134.5         +16.48           Nuc         Beta         1145.9         +06.5           Denebola         Beta         1145.9         +14.48           N1572         65         1154.6         +19.4           S1573         65         1154.6         +19.4           S1573         65         1155.1         +46.28           S1573         65         1155.1         +46.28           S1573         52         20.32         -02.15           S1573         53         20.5         -02.56           S1533         2         1155.1         +46.28           S1604         12.03.5         -02.5         02.7           S1604         12.03.6         -02.5         02.7           S1604         12.03.6         -02.6         65.6           S1604         12.03.6         -02.5         02.6           S1604         12.03.6         -02.6         65.6           S1604         12.16.1         -45.7           S1610         <			double star
Innes/8         1133.6         -40.6           Y1552         1134.7         +16.48           Y1552         1134.7         +16.48           Nu         1134.7         +16.48           Nu         1145.1         +13.4           Denebola         Beta         1145.1         +14.34           Beta         1145.1         +14.34           Beta         1145.1         +13.4           Coll         65         1155.1         +13.4           S1579         65         1155.1         +13.4           Z153         51.79         65         12.03.5         -02.26           Z1593         2         12.03.5         -02.26         21.5           Z164         12.03.5         -102.15         20.226         21.5           Z163         2         12.03.5         -11.51         50.5           Z164         12.01.1         22.6         60.1         45.7           Delta         ADS 8489         12.15.1         45.7           Delta         ADS 8489         12.16.1         45.7	-6	Hvd 3	double star equal magnitude
X1552     1134.7     +16.48       Nu     1134.7     +16.48       Denebola     Beta     1145.9     +06.5       Denebola     Beta     1145.1     +14.34       Denebola     Beta     114.61     +14.34       Denebola     Beta     1156.6     +33.9       OS13     OS14     1156.6     +34.8       Y1579     65     1156.1     +46.29       S1593     A486     1156.1     +46.29       S1593     2     12.03.5     -02.26       Z133     2     12.03.5     -02.26       Z143     2     12.03.6     -1157       Delta     12.03.6     -1157     -52.7       Delta     ADS 8489     12.15.1     -56.7		Cen 4	double star challenge
Nu         1145.9         +06.5           Denebola         Beta         1149.1         +14.34           Beta         112.9         -33.9           OX112         65         115.6         +46.29           Denebola         Beta         115.6         -33.9           Denebola         Beta         115.6         -33.9           Denebola         Beta         115.6         -33.9           Dista         115.6         -18.2         -33.9           Dista         05.1         115.6         -446.29           Dista         115.6         115.6         -78.2           Dista         2         12.03.5         -02.26           Dista         2         12.03.5         -02.26           Dista         2         12.03.5         -115.1           Dista         12.03.6         -115.1         -22.6           Epsilon         12.01.1         12.03.5         -115.1           Dista         2         12.03.6         -115.1           Epsilon         12.01.1         -22.6         -115.1           Dista         2         12.16.1         -45.7           Dista         12.16.1         -45.7 <td></td> <td></td> <td>triple star</td>			triple star
Denebola         Beta         11.49.1         +14.34           Beta         11.55.1         +13.4           Derebola         65         11.55.1         +46.29           D31579         65         11.55.1         +46.29           D31570         65         11.55.1         +46.29           D31570         h4486         11.55.1         +46.29           T15910         h4486         12.03.5         -02.26           D143         2         204.3         +21.5           D143         2         12.03.5         -02.26           D143         2         12.03.5         -11.51           D1604         12.03.6         -11.51         -50.7           D143         2         12.03.6         -11.51           Epsilon         12.16.1         -45.7         -45.7           Deta         ADS 8489         12.16.1         -45.7           Deta         2.16.1         -40.7         -45.7			star
Beta         1122         33.9           05112         65         115.1         448.2           115.1         145.6         115.1         448.2           5         115.1         145.6         78.2           5         115.1         145.6         78.2           5         115.1         145.6         78.2           5         115.1         145.6         78.2           5         1203         2         78.2           5         2613         2         78.2           5         1203         1204.3         50.7           5         1204.3         50.7         516.6           5         116.4         1204.3         50.7           5         116.4         120.4         45.7           6         120.4         120.4         45.7           6         1216.1         45.7         66.7           7         1216.1         126.1         46.7           8         1216.1         46.7         58.7           7         2         1216.1         46.7         56.7           8         1216.1         46.7         46.7         76.7	Stellar		star
02112         11 54.6         +19.4           21579         65         11 55.1         +48.29           Fpsion         h448.6         11 55.1         +46.29           21533         h448.6         11 55.1         -62.26           21533         2         12 03.5         -78.2           2         12 04.3         +21.5         -02.26           2         12 06.4         50.7         5           2         12 08.5         -11 51         -52.6           2         12 09.4         50.1         5           2         12 09.5         -11 51         -42.6           2         12 09.1         12 09.5         -11 51           2         12 10.1         -22.6         8           2         12 10.1         -45.7         -45.7           2         ADS 8489         12 15.1         -58.7           2         ADS 8489         12 16.1         -60.7		Hva 5	colored double star
Y1579         65         1155.1         +46.29           Fisilon         hd486         1155.1         +46.29           Fisilon         hd486         1155.1         +46.29           Zeta         21.5         -02.26         -02.26           Zeta         2         12.03.5         -02.26           Delta         2         12.08.5         -11.51           Filod         12.08.5         -11.51         -22.6           Bulkerl 4         12.14.1         -22.6           Bulkarl 4         12.14.1         -45.7           Delta         ADS.8489         12.15.1         -45.7			double star
Epsilon         h4486         1159.6         -78.2           5153         2153         -278.2           2153         2         12.03.5         -02.26           2153         2         12.03.5         -02.26           215         2         12.03.5         -02.26           215         2         12.03.5         -02.5           216         2         12.03.5         -15.1           216         2         12.03.5         -11.51           216         2         12.10.1         -25.6           Rumker14         12.10.1         -25.6         -45.7           Delta         ADS 8489         12.15.1         -58.7	4		double star
Xi593         Xi593         202.26           Zeta         2         12.03.5         -02.26           Zeta         2         12.04.3         +21.5           Delta         2         12.03.5         -11.51           S1604         12.03.5         -11.51         -11.51           Epsilon         12.01.1         -22.6         -22.6           Runker14         12.10.1         -45.7         -45.7           Delta         ADS 8489         12.15.1         -58.7			colored double star
Zeta         2         12.04.3         +21.5           Delta         -0.1         -60.7         -50.7           S1604         12.06.4         -50.7         -11.61           S1604         12.06.1         -11.61         -11.61           Epsilon         12.10.1         -22.6         -11.61           Burker14         ADS 8489         12.15.1         -58.7           2         ADS 8489         12.16.1         -58.7			double star challenge
Delta         12 08.4         -50.7           Dielta         11.51         -50.3           Epiliou         12 09.5         -11.51           Epiliou         12 10.1         -22.6           Rumker14         12 10.1         -45.7           Delta         12 15.1         -58.7           2         ADS 8489         12 15.1         -58.7			double star
X1604         12         08.5         -11.51           Explore         12         0.0         -22.6           Rumker14         12         14.0         -45.7           Delta         ADS 8489         12         15.1         -46.7		Cen 2	double star
Epsilon 12 10.1 -22.6 Rumker14 12 16.1 -22.6 Delta ADS 8489 12 15.1 -58.7 2 ADS 8489 12 15.1 -40.7			trinla etar
Rumkeri4 12.14.0 45.7 Delta ADS 8489 12.15.1 -45.7 2 15.1 -40.7		Crv 21	star
Delta ADS 8489 12 15.1 -58.7 2 ADS 8489 12 16.1 +40.7	2 9"		double star
2 ADS 8489 12 16.1 +40.7			etar
	11.5"		colored double star
Epsilon 12.17.6 -68.0			red variable star
Σ1627 12 18.1 12 18.1	20"	Vir 3	double star equal magnitude
R -10.3			

21633         1220.6         +27.03         6.3         9           Mad         Winnecke         1221.4         +50.4         3.6         -           T/7         ADS 8531         1221.4         +50.3         5.5         -         -           T/7         ADS 8531         1221.4         +50.4         3.6         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -	
Epsilon         Winnecks 4         12.21.4         -6.0.4         -3.6         -         Cru           17         ADS 8539         12.22.4         -6.6.3         6.5         21°         Vir           17         X         ADS 8539         12.22.6         -6.6.3         6.5         21°         Vir           5         X         ADS 8539         12.24.6         -49.6         9.2         -         Cru           5         X         ADS 8539         12.24.6         -49.4         9.2         -         Cru           5         X         ADS 8539         12.24.6         -49.4         9.2         -         Cru           6         Acrux         Alpha         12.29.1         -10.0         12.8         -         Cru           7         Acrux         Alpha         12.29.1         -19.2         12.8         -         Cru           300213         Delta         12.23.1         -13.1         1.6         10°         Cru           300213         Delta         12.31.6         -13.1         1.6         10°         Cru           2014         Gamma         12.31.6         -13.1         1.6         10°         Cru     <	
Transmert         Total         Montement         Total         Montement         Total         Montement         Total         Montement         Total         Montement         Total         Montement         Total         Total <thtotal< th="">         Total         Total</thtotal<>	
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S         RV         12 24.6         -49.4         9.2         Cen           SS         RV         12 26.6         -63.4         9.2         Cen           Actux         Apha         12 26.6         -63.4         9.2         Cen           Actux         Apha         12 28.9         -10.2.0         12.8         Vir           Actus         Delta         12 28.9         -16.5         3         2.4         Vir           S1649         Absa         12 31.6         -11.1         8         15"         Vir           Z14         Absa         12 31.6         -11.1         8         15"         Vir           Z1649         Absa         12 31.6         -11.1         8         15"         Vir           Z14         Absa         12 31.6         -11.1         8         15"         Vir           Z164         Absa         12 31.6         -11.1         8         15"         Vir           Absa         12 31.6         -12 31.6         -11.4         8         -15"         Vir           Absa         23         12 41.5         -11.4         16"         -14"         Vir           Absa         7	
Size         Kun         12.25.5         +101.4         12.25.5         +101.4         6         Sellar         Vir           Agorak         Delta         12.25.5         +101.4         1         4         4"         Vir           Agorak         Delta         12.25.5         +101.4         1.6         1.0"         Cru           Agorak         Delta         12.25.5         +101.4         1.6         1.0"         Cru           Si649         Delta         12.31.5         +11.1         1.6         1.0"         Cru           Zi649         Delta         12.31.5         +11.3         5.3         Cru         Vir           Zi649         Delta         12.31.5         +11.3         5.3         Cru         Vir           Zi669         12.31.5         +18.23         -13.3         1.2.41.5         -13.7         Vir           Disa         Disa         12.31.5         -13.3         -13.01         5.3         Cru           Zi669         Disa         Disa         12.41.5         -14.5         Vir         Vir           Portima         Gamma         12.41.5         -14.4         Vir         Vir         Vir           Por	
SCUA         Applie         12.29.1         +0.21         1.2         +.4         VIU           Algoraby         Delta         12.29.1         +02.0         1.8        4         VIU           S1649         ADS 8585         12.31.2         +11.1         8         15"         VIU           S1649         ADS 8585         12.31.6         +11.1         8         15"         VIU           S1649         ADS 8585         12.31.6         +11.1         8         15"         VIU           Z14         ADP         12.37.2         -69.1         2.7         5         1.3"         Mus           Z1669         H553         12.41.5         -49.0         2.2         1.4"         Mus           Z1669         H553         12.41.5         -49.0         2.7         5.5         1.4"         Mus           Parima         RV         RV         12.45.1         +45.26         7.4         2.7         Cru           R         Nu         12.45.1         +45.26         7.4         2.7         Cru           Bata         RV         12.45.1         12.45.2         6.0         7.4         2.7         Cru           Nu	
Agoin         Delta         12.29.9         16.5         3         24         Civ           Agoin         Delta         12.31.5         -11.1         8         15         Civ           2.4         Abs865         12.31.5         -11.1         8         15         Civ           2.16.3         Abra         12.37.2         -27.1         5.5         1.3"         Mus           Abra         12.37.7         -27.1         5.5         1.3"         Mus           Abra         Abra         12.37.7         -27.1         5.5         1.3"         Mus           Abra         Abra         12.31.7         -27.1         5.5         1.3"         Mus           Abra         Abra         12.41.5         -49.0         2.7         1.4         Mus           Abra         Abra         12.45.1         -45.26         5.7         1.4         Mus           Abra         Abra         12.45.1         -45.26         5.3         2.2"         Cru           Barma         Abra         12.45.1         -11.4         1.4         Mus           Minosa         Beta         12.45.1         -13.0         1.4         Mus	
Gactorx         Gamma         12312         571         1.6         10°         Ctu           24         ADS.8585         1233.6         +18.73         5         27°         Vir           24         ADS.8555         1233.1         +18.73         5         27°         Vir           24         ADS.8555         1233.1         +18.73         5         7.7         Vir           ADS.8612         1237.7         29.1         5.7         5.9         7.8         Vir           ADS.8612         1237.7         59.1         12.4         5.3         5.7         Vir           ADS.8613         1241.7         014         3.5         7.4         Nus         Vir           Portima         Comma         12.41.5         014         3.5         5.7         5.9         Vir           Portima         Comma         12.41.5         014         3.5         5.7         014         Vir           Portima         Minrosa         12.45.6         +10.3         5.7         0.7         Vir           Portima         Beta         12.45.5         +13.2         5.7         0.7         Vir           Nu         Minrosa         12.45.	
Zi (64)         ADS 8585 $1231.6$ $11.1$ 8 $15^{\circ}$ $Vir$ Zi (64)         Alpha         1237.2 $69.1$ $2.7$ $5.5$ $1.3^{\circ}$ $Vir$ Alpha         1237.2 $69.1$ $2.7$ $5.5$ $1.3^{\circ}$ $Vir$ Alpha         1237.2 $69.1$ $2.7$ $5.5$ $5^{\circ}$ $CV$ S1665         1241.5 $49.0$ $2.2$ $1^{\circ}$ $Vir$ Porrina         Gamma $1247.7$ $53.6$ $124.7$ $55.6$ $74.7$ $2.7$ $7.7$ Portina         RV $1245.7$ $59.7$ $1.3$ $1.3^{\circ}$ $1.7^{\circ}$ Portina         Beta $1247.7$ $59.7$ $1.3^{\circ}$ $1.3^{\circ}$ $1.7^{\circ}$ S1687 $35.5$ $1247.7$ $59.7$ $1.3^{\circ}$ $1.3^{\circ}$ $0.1^{\circ}$ Numosa         Beta $1247.7$ $59.7$ $1.3^{\circ}$ $0.1^{\circ}$ $0.1^{\circ}$ S1687 $35.5$ $1.3^{\circ}$ $1$	
Apha         12.35.1         418.23         5         20°         CVn           Apha         12.37.7         27.1         5.5         1.3°         Hya           X168612         12.37.7         27.1         5.5         1.3°         Hya           X16861         12.37.7         27.1         5.5         1.3°         Hya           X1680         14539         12.41.5         -49.0         2.2         1°         Hya           Portima         Gamma         12.41.7         -10.4         3.7         1.4°         Vir           Portima         Gamma         12.41.7         -10.4         3.7         1.4         Nin           Bist         A         12.45.6         61.0         4.7         2.7         Cru           Minosa         Bela         12.47.7         59.7         1.3         1.4         Min           X1684         3.5         12.33         4.31.5         5.7         2.7         Cru           Minosa         Bela         12.47.7         59.7         1.3         1.4         Mins           X1684         3.5         12.33         4.31.5         5.7         2.7         Cru           Mino	
ABSRia         12.37.2         681         2.7         1.3         Mus           Tobssi         12.37.2         681         1.3         1.4         Wus           S1669         1453         12.41.3         12.37.2         681         1.3         1.4           Porrima         Gamma         12.41.5         -49.0         5.3         5.°         Crv           Porrima         Gamma         12.41.5         -49.0         3.7         1.4         Wus           Porrima         Gamma         12.41.5         -01.4         3.5         5.°         Crv           Portima         Mas         12.45.5         -61.0         4.7         2.7         Crv           Nic         RV         12.45.5         -61.0         4.7         2.7         Crv           Nice         12.45.5         -61.2         4.7         2.7         Crv           Nice         12.45.3         5.1         3.7         1.4         Crv           Nice         12.45.3         5.1         3.7         1.4         Crv           Nu         Nu         Nu         Nu         Nu         Nu         Nu           Nu         Nu         2.7	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	
Mode         M4539         12415         4400         2.2         1         Continuation           Portima         Gamma         M4547         1245.6         6110         2.2         1         Continuation         Continuation           Portima         Gamma         1241.7         645.6         6110         3.5         3.5         Vir           Portima         Gamma         1245.6         6110         4.7         2.8         Nir           Beta         1245.7         59.7         1.3         3.7         1.4         Mus           Nimosa         Beta         1247.7         59.7         1.3         3.7         2.7         Cu           S1687         3.5         1245.7         5.3         2.1         4.3         2.7         Cu           Nu         Dunlop 126         1256.6         57.2         3.3         3.7         2.7         Cu           Detta         Dunlop 126         1256.6         57.2         3.3         3.7         5.7         Cu           Price         Nix         Nix         17.5         3.4         Nix         Nix           Portin         1256.6         57.2         3.3         1.7         0	
Y         Command         13.1.7         0.0.4         3.5         3.1         Vitter           Y         Nav         12.45.1         14.1.7         0.0.4         3.5         3.1         Vitter           Nav         Nav         12.45.1         12.45.1         13.7         1.4         Stellar         Vitter           Nav         12.45.1         12.45.1         58.1         3.7         1.4         Nus           Nimosa         Beta         12.45.1         58.1         3.7         1.4         Nus           Nimosa         Beta         12.45.1         58.1         5.3         2.2*         Com           Nimosa         Beta         12.55.6         5.3         2.7*         Com           Nu         Dunlop 126         12.55.6         5.3         3.5*         Com           Nu         Dunlop 126         12.55.6         4.3         3.4         Vit           Nu         Dunlop 126         12.55.6         5.3         3.5*         Com           Nu         Dunlop 126         12.55.6         4.3         3.4         Vit           S1650         Nu         12.56.4         4.66.0         6.8         Vit	
Y         RV         1245.1         +45.26         7.4         Stellar         CVn           lota         h447         1245.6         61.0         47         27         Cu           Beta         h447         1245.6         61.0         47         27         Cu           Beta         1245.7         59.7         1.3         27         Cu           S1687         35         1247.7         59.7         1.3         27         Cu           S1687         35         1253.2         +211.4         51         22°         Cu           S1684         35         1255.6         57.2         4.3         35°         Cu           Nu         Delta         1255.6         57.2         4.3         35°         Cu           RV         1255.6         57.2         3.8         1.5°         Cu           Delta         1255.6         57.2         3.8         1.5°         Cu           RV         1255.6         57.2         3.8         1.5°         Cu           S169         27.3         4.3         5.7         Cu         Cu           RV         1255.6         57.2         3.8         1.5°<	
Iota         IH547         1245.6         -61.0         4.7         2.7         Cru           Bera         12.45.7         59.7         3.7         1.4         Mus           Nimeas         Beta         12.45.7         59.7         3.7         1.4         Mus           Y1687         3.5         12.47.7         59.7         1.3         1.4         Mus           Y1687         3.5         12.47.7         59.7         1.3         1.4         Mus           Y1687         3.5         12.54.6         57.2         5.3         4.3         2.7         Cu           Nu         Dunlop 126         12.54.6         57.24         4.3         3.5         Cu           Delta         Dunlop 126         12.56.6         438.3         3.4         1.9°         Vir           R         Cor Carioli         Alpha         12.56.6         438.3         3.4         1.9°         Vir           R         Cor Carioli         Alpha         12.56.6         438.3         3.4         1.9°         Vir           R         Cor Carioli         Alpha         12.56.6         438.3         3.4         1.9°         Vir           S16.8	
Beta         12.45.3         -68.1         3.7         1.4         Mus           Mimosa         Beta         12.45.3         -58.1         3.7         1.4         Mus           Y1687         35         12.49.2         +53.5         5.3         2.7         1.3         7         1.4         Mus           Y1687         35         12.49.2         +53.5         5.3         2.7         1.3         2.7         Ctu           Y1687         35         12.55.6         +53.3         +7.1.4         5.3         2.7         Cu           Mu         Delta         Dunlop.126         12.55.6         +53.3         3.4         -7         Cu           Concreatoli         Alpha         12.55.6         +53.3         3.4         -7         Vir           Concreatoli         Alpha         12.55.6         +68.0         6.8         8         0.7           Concreatoli         Alpha         13.08.1         +55.5         8.8         15.7         0.7           Concreatoli         Alpha         13.10.0         +17.2         8.8         0.7         0.7           Concreatoli         13.10.0         +17.5         5.3         4.4         7	
Timosa         Beta         12,47.7         59.7         1.3         *         Cru           T1684         35         12,42.7         59.7         1.3         *         Cru           T1684         35         12,43.2         53.2         12,43.2         53.2         Cu           Nu         Dunlop 126         12,54.6         57.2         4.3         35°         Cu           Nu         12,55.6         +03.4         3         4         °         Vir           Delta         Unlop 126         12,55.6         +03.3         3         19°         Cu           RV         12,55.6         +03.4         3.4         °         °         Vir           RV         12,55.6         +03.4         3.4         15°         Cu           State         12,55.6         +03.4         3.4         15°         Com           State         30.2         -17.13         3.6         8         15°         Com           State         53.3         5.7         3.6         8.7         5.7         Som           State         53.3         5.7         5.7         5.8         Mus         15°         Com	
Tiest         32         12 53.3         +13 2b         5.3         22'         Cam           Nu         Dunlop 126         12 54.6         -57.2         4.3         22'         Cam           Delta         Dunlop 126         12 54.6         -57.2         4.3         35'         Cru           Delta         Dunlop 126         12 54.6         -57.2         4.3         35'         Cru           Delta         Alpha         12 56.0         +38.3         3         +19'         Orin           Ro         Cor Carcoli         Alpha         12 56.6         +38.3         3         +10'         Orin           Text         12 56.6         +38.3         3         +17'         Don         Orin           S1639         13 30.2         -71.5         3.6         8''         Mus           Theta         13 0.0         -65.32         4.4         7''         Or           S1724         51.1         13 13.4         -18.50         6.8         7'''         Or           Mus         13 0.2         -71.53         6.8         7''         Or         Or           Mizat         Zata         13 22.6         -11.2         10'''	
Mutual         Dunlop 126         1.2.5.3.5         5.7.1         3.1         5.7.         0.1         0.001           Delta         Delta         12.55.6         +57.1         3.1         5.7         0.01           Concratoli         Alpha         12.55.6         +60.3         3.4         5.7         0.01           Concratoli         Alpha         12.55.6         +60.3         3.4         5.7         0.01           Concratoli         Alpha         12.56.0         +57.2         8.8         1.5°         0.01           Theta         Runker16         13.08.1         -65.3         5.7         5.3°         Muss           Theta         Runker16         13.08.1         -65.3         5.7         5.3°         Muss           Theta         T3.09.9         -65.3         5.7         5.3°         Muss           Alpha         51.1 Theta°         13.00.9         +17.3         5.7°         Vin           Alpha         51.1 Theta°         13.10.0         +17.3         5.7°         Vin           Alpha         13.10.9         +17.3         5.7°         Vin         Vin           Mizer         Zeta         13.2.5.7         +14.3         1.	
Delta         Computer         155.6         +03.4         3.4         •.0         Vir           RY         RY         125.6.         +68.0         3.4         •.0         Vir           RY         125.6.         +68.0         3.4         •.0         Vir           RY         125.6.         +68.0         6.8         1.5*         Vir           RY         125.6.         +58.0         6.8         1.5*         Com           Delta         Runker 16         13.02.3         +27.28         8.8         1.5*         Com           Dilta         Runker 16         13.08.1         -65.32         4.4         7*         Vir           Alpha         71.5.5         5.7         0.57         Vir         0.6         0.6         0.6         0.6           Alpha         13.10.0         -17.5         3.2         6.10         4.7         0.7         0.7           J         J         J         13.10.0         -17.5         0.7         0.6m           Alpha         13.10.0         -17.5         1.8         0.7         0.7         0.7           J         J         J         -18.50         6.8         0.7	
Cor Cartoli         Alpha         12.66.0         +38.3         3         19"         Cvn           R         V         12.66.4         +48.0         6.8         1.9"         Cvn           S1699         12.56.4         +56.0         6.8         1.5"         Con           S1699         12.56.4         +57.28         8.8         1.5"         Con           S17244         51.1. Theta         13.02.3         -7.1.5         3.6         8.8         1.5"         Con           Alpha         51.1. Theta         13.08.1         -67.1.3         5.6         5.7"         Wus           Alpha         51.1. Theta         13.08.1         -67.1.3         5.6         5.7"         Vir           Alpha         51.3         13.1.3         -11.3         5.6         5.7"         Vir           Jar         Dunlop 133         13.2.2.6         -61.6         2.3         1.1"         Um           Mizar         Zeta         13.2.5.2         -11.2         1.1"         Um         Mir           Mizar         Zeta         13.2.3.2         -11.2         1.1"         Um         Mir           Spica         Apha         13.2.5.2         -11.2	
RY         TSV         1256.4         +765.0         6.8         ·         Dra           Σ16.9         Σ16.9         1256.5         +765.0         6.8         15'         Cma           Delta         Runker16         13.02.3         -71.5         3.6         8'         Mus           Theta         Runker16         13.02.3         -71.5         3.6         8'         Mus           2.17.4         '51.Theta'         13.02.0         +17.32         5.3'         Mus           5.4         Dunlop 133         13.1.0         +17.32         5.3'         Vir           5.4         Dunlop 133         13.2.6         -61.0         4.7         7'         Cen           Mizar         Zeta         13.2.2.6         -61.0         4.7         1''<	
Delta         Runker 16         12.28.1         +1.2.28         8.8         1.5.         Com           Delta         Runker 16         13.08.1         -65.3         5.7         5.3         Mus           Theta         Runker 16         13.08.1         -65.3         5.7         5.3         Mus           Y1724         '51.Theta"         13.09.9         -65.3         5.7         5.3         Mus           Alpha         '51.Theta"         13.09.9         -65.3         5.7         5.7         Vir           Alpha         '51.Theta"         13.09.9         -16.5         5.7         Vir         Vir           Alpha         13.10.0         +17.32         5         0.5"         Com           J         J         13.23.6         +54.56         2.3         14"         Uma           Mizer         Zeta         13.23.6         +54.56         2.3         14"         Uma           Mizer         Zeta         13.25.7         +11.2         1         Cen         Vir           Spica         Alpha         13.25.7         +21.2         6.7         6.9         Vir           OSYI23         V         13.23.3         +36.8 <td< td=""><td></td></td<>	
Theta         Runker 16         13.02.4         1.1.3         5.3         6.1         8.4         7.         wuss           Theta         "51, Theta"         "51, Theta"         13.02.9         -05.32         5.7         5.3         Muss           Alpha         "51, Theta"         13.03.9         -05.32         5.4         7"         Vir           Alpha         13.10.9         -05.32         5.7         5.7         5.8         Vir           J         J         Dunlop 133         13.10.9         -18.50         6.8         5.°         Vor           J         J         Dunlop 133         13.22.6         -61.0         4.7         1'         Cen           Mizar         Zeta         13.22.6         -61.0         4.7         1'         Cen           Mizar         Zeta         13.22.6         -11.2         1<'''	
Xi Treat         Number to         13.00.1         65.32         3.1         3.3         Muss           Xi Theta         "51, Theta"         13.09.1         -65.32         3.1         7.1         Vir           Alpha         "51, Theta"         13.09.1         -65.32         5.4         7.         Vir           54         13.13.4         -11.32         5.4         7.         Vir           54         13.13.4         -11.8.0         6.8         5.°         Vir           51         Dunlop 133         13.23.5         -54.56         2.3         14"         Uma           Mizar         Zeta         13.25.2         -11.12         1         °         Vir           Spica         Alpha         13.25.2         -11.12         1         °         Vir           0 25.123         V         13.25.2         -23.17         4         Stellair         Vir           0 25.125         V         13.22.3         -23.17         4         Stellair         Vir           5         Y         33.23.3         -23.17         4         Stellair         Vir           5         Alba         13.32.3         -33.17         4         4.4" </td <td></td>	
Alpha         Dunlop 133         1310.0         +17.32         5         0.5'         Com           54         Dunlop 133         13.10.0         +17.32         5         0.5'         Com           1         J         Dunlop 133         13.2.13.4         -18.50         6.8         5'         Vir           J         Dunlop 133         13.2.3.5         -61.0         4.7         1'         Com           Mizer         Zeta         13.2.3.9         +54.56         2.3         14"         Uma           Splica         Alpha         13.2.5.1         +1.1.2         1         Vir         Vir           OSS123         V         13.2.5.2         +1.1.2         1         Vir         Vir           Splica         Alpha         13.2.5.1         +1.1.2         1         Vir         Vir           OSS123         V         13.2.6.7         -23.17         4         Stellar         Hyd           X1755         ADS 8934         13.3.2.3         +36.8         7         4.4*         Cyn           S         7         A.3.3.0         -07.2         6         Vir         Vir	
54         13.13.4         -18.50         6.8         5'         Vir           J         J         J         Dunlop133         13.3.2.6         6.1.0         4.7         1'         Cen           Mizar         Zeta         13.2.2.6         6.1.0         4.7         1'         Cen           Mizar         Zeta         13.2.2.6         6.1.0         4.7         1'         Cen           Spica         Alpha         13.2.5.2         -1.1.2         1         '         Vir           OST2123         V         13.2.5.7         -1.1.2         1         6'         Vir           R         V         13.2.1         -23.17         4.7         Seilar         Hyd           S         1755         ADS 8934         13.3.2.3         +3.8.8         7         4.4'         Crn           S         1755         ADS 8934         13.3.2.3         67.2         6''         Vir	
J         Dunlop 133         13.2.6         -61.0         4.7         1'         Cen           Miar         Zeta         13.2.3.9         +54.56         2.3         1.4"         Uma           Spica         Alpha         13.2.5.9         +54.45         2.3         1.4"         Uma           Spica         Alpha         13.2.5.1         +64.43         6.7         69"         Dra           CVT123         V         13.22.1         +64.43         6.7         69"         Dra           R         V         13.22.1         -23.17         4         Stellar         Hyd           S1755         ADS 8934         13.32.3         +39.68         7         4.4"         Cvn           S         33.0         -07.2         6         *         Vir	
Mizar         Zeta         13.23.9         + 54.56         2.3         1.4"         Uma           Spica         Alpha         1.3.5.2         -1.45         2.3         V         Vir           Spica         Alpha         1.3.5.2         -1.43         6.7         69"         Vir           0.Σ.Σ123         V         13.27.1         +64.4.3         6.7         69"         Dra           R         V         13.29.7         -23.17         4         Stellair         Hyd           Σ1755         ADS 8934         13.32.3         +3.95.8         7         4.4"         Cvn           S         13.33.0         -0.7.2         6         *         Vir	
Spica         Alpha         13.2.2.         -11.4         1         69'         Vir           O \$\Sum 13.2.1         13.2.1         14.4         1         69'         Dia           R \$\Sum 13.2.1         13.2.1         46.4         36'         Dia         Dia           R \$\Sum 13.2.1         13.2.1         -23.17         4.7         Stellar         Hyd           Y \$\text{165}         ADS \$\text{8934}         13.32.3         +36.8         7         4.4''         Cyn           \$\text{33.3.3.3.456.8         7         3.4.9''         6.7'         5'''         Vir           \$\text{55}         43.3.3.0         -07.2         6         '''<'''	
Z 2017 2017 2017 4 Stellar Hyd 2017 2017 2017 4 Stellar Hyd 21755 ADS 8934 13 32.3 +36.8 7 4.4" Cvn 13 33.0 -07.2 6 * Vir	
21755 ADS 8934 13 32.3 +56.8 7 4.4 CVI S 13 33.0 -07.2 6 • Vir	22 variable star
S 13.33.0 -07.2 6 • Vir	
25 ADS 8974 13 37.5 +36.3 5 1.8" Cvn	
21763 ADS 8972 13 37.6 -07.9 7.9 2.8" Vir	
testion 13.39.9 -53.5 2.3 * Cen	
Dulutad 1 13 40.7 +13 27 3.7 2 Dulu	9 double star magnitude conitast
T T T T T T T T T T T T T T T T T T T	
Alkaid Eta 13.47.5 +49.3 1.9 * Uma	
Σ1785 ADS 9031 13 49.1 +27.0 7.6 3.4" Boo	
2 13 49.4 -34.5 4.2 * Cen	
Upsilon	star
3 k 1351.8 -33.0 4.5 8" Cen	
1242 1355 -47.3 2.6 5 Cen	
Hadar         Beta         14 U3.8         -60.4         U.b         -         Cen           Di         14 0.4         2.5         7         1         Lin	

+19.10 +19.10 59.9 5.3 * -59.9 5.3 * +48.5 8.1 1.3" -66 -67 -68 -58.5 5 9"	-20.320.419.58 - 6.419.58 - 6.4 + -75.7 - 4.3	-62.7 10.7 *	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
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ig Sep Con Code	2.2" Lup 2 double star	Lib 5	Lib	21	Crb 2	Crb 4	22		22	Sco 21	21	Sco 21		Sco 21	8	Sco 21	" Her 5	7	Oph 21	Aps	6	Oph 2 Och 23	Nor 2	Tra 2		Oph	Dra 22	9	Oph	Sco 22	5 2	21	21	Sco 21	1.4" Dra 4 double star challenge * Sco 22 variable star	21	Ara	Ara 21	Dra	Cp1 +	Her 3	ოთ
Mag	4.7	3.6	5.8	3.7	2	4 0	5.7	4.1	5.2	4 0.°	4.2	2.9	2 Y Y	2.3	4.2	2.5	t 0	4	2.7	4.7	2.9	5.3	4.8	5.3	7.7	4.2	6.7	5.1	4.2 2.6	8	с, с	9 8 9 8	2.3	- 1 m	5.1	3.2	3.1	4,1	4.9	t i	m	3.2 3.2
Dec	-45.0	-28.1	-42.6 -08.47	-29.8	+36.6	+26.3	+28 09	+18.1	+15.1 -33 58	-29.2	+26.9	-26.1	+25 55 -38 24	-22.6	-11 22	-19.8	+17 03	-19 28	-03.7	-78.7	-25 35	-23.5	-47.6	-64.1	+18.4	+02.0	+66.8	+52 55	-10.6	-32.4	+31.6	-59.0	-34.3	-38.0	+65.0	+09.4	-56.0	-53.2	+54 28 -15 7	+14.4		+24 50
RA	15 35.9	15 37.0	15.38.7	15 38.7	15 39.4	15 42.7	15 48.6	15 48.7	15 50.7 15 56 a	15 56.9	15 57.6	15 58.9	15 59.5 16 00 1	16 00.3	16 04.4	16 05.4 16 06 8	16 08.1	16 12.0	16 14.3	16 20.3	16 21.2	16 25.6	16 27.2	16 28.0	16 28.9	16 30.9	16 32.7	16 36.2	16 37.2	16 40.6	16 41.3	16 49.8	16 50.2	16 52.3	16 56.6 16 56.6	16 57.7	16 58.6	16 59.6	17 05.3	17 14.6	17 15 0	
Other		ADS 9705		40	Zeta	Gamma	V	35		2J	13	9:	V Rmk 21			Beta	מ		"17 Sizmo"		H 121	ADS 10049	h4853	Dunlop 201	ADS 10075	ADS 10087			13		ADS 10157	Alpna	26	ç	20	27			Ц	Alpha	-	
Name	h4788	Upsilon	Vmega 5.1962	Tau	<u>2</u> 1965	21967 Houtedhai	R	Kappa	R ix	Rho	Epsilon	ā	Eta	Delta	Xi	Graffias	Kappa	Nu	Yed Prior	Delta	Sigma	Rho V	Epsilon	lota	<u>22052</u>	Lambda	Я	16	л Zeta	SU	Zeta	Eta	Epsilon	Mu	22118 RR	Карра	Zeta	Epsilon1	Mu Sahik	Rasalgethi	Delta	
Number	ST545	546	548	549	550	551	553	554	555 556	557	558	559	560	562	563	564 SEF	566	567	568	20	71	72	574	575	77	78	62	80	82	83	84 of	86	87	88 8	50	91 91	92	593	594	960	597	

39.         1718.0         24.17         52.         10°         001         5           Tera         75., Ruor         75.3         55.7         55.7         55.7         66.4         3.2         10°         001         5           Rem         75., Ruor         75.5         56.4         3.2         5.7         6.6         4.2         7.5         6.6         4.2         7.4         2.1           Stamma         49         7.5.5         56.4         3.2         7.0         6.6         2.2         7.03         2.1           Stamp         78.3         57.7         5.7         5.7         3.7         7.7         7.3         7.7         7.3         7.7         7.3         7.7         7.3         7.3         7.7         7.3         7.7         7.3         7.7         7.3         7.7         7.3         7.7         7.3         7.7         7.3         7.7         7.7         7.3         7.7         7.3         7.7         7.7         7.7         7.7         7.7         7.7         7.7         7.7         7.7         7.7         7.7         7.7         7.7         7.7         7.7         7.7         7.7         7.7         7.7 </th <th>Number</th> <th>Name</th> <th>Other</th> <th>RA</th> <th>Dec</th> <th>Mag</th> <th>Sep</th> <th>Con</th> <th>Code</th> <th></th>	Number	Name	Other	RA	Dec	Mag	Sep	Con	Code	
	ST600	39		17 18.0	-24 17	5.2	10"	Oph	5	colored double star
SZIGI         75, RHo <sup>-</sup> 172.37         557.03         4.2         4.4         1.4         2.7         Alter         2.7           Ramma         4         173.84         56.4         3.3         4.7         0.0         2.7           Namba         7.8         173.04         172.37         557.0         4.2         0.0         2.7           Namba         7.8         173.04         173.04         57.7         2.4         0.0         2.7           Namba         173.16         173.04         57.7         2.4         0.0         2.7           Apba         173.18         57.7         2.4         0.0         2.7         0.0         2.7           Statis         57.1         4.3         2.7         5.7         0.0         2.7         0.0         2.7           Statis         57         5.7         5.7         5.7         0.0         2.7         0.0         2.7           Statis         61         77.45         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5		Theta		17 22.0	-25.0	3.3	*	Oph	21	
Main         And         And <td></td> <td><u>22161</u></td> <td></td> <td>17 23.7</td> <td>+37 09</td> <td>4.2</td> <td>* 4</td> <td>Her</td> <td>0</td> <td>e</td>		<u>22161</u>		17 23.7	+37 09	4.2	* 4	Her	0	e
Signal         49         172.65         46.1         4.3         4.5         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2         0.01         21.2 <th< td=""><td></td><td>Gamma</td><td></td><td>17 25 4</td><td>-56.4</td><td>5. C</td><td>*</td><td>Ara</td><td>24</td><td>star etar</td></th<>		Gamma		17 25 4	-56.4	5. C	*	Ara	24	star etar
Ividation         Dividiop 2(6)         17.20.0         4.50.1         2.27.1         Main         2.27.1         Main </td <td></td> <td>Sinna</td> <td>40</td> <td>17 26 5</td> <td>+00+</td> <td>6.4</td> <td>4°</td> <td>had</td> <td>2</td> <td>star</td>		Sinna	40	17 26 5	+00+	6.4	4°	had	2	star
T2173         T2173         T17         T2173         T17         T2173         T17         T2173         T17         T2173         T17         T2173         T2173 <tht2173< th=""> <tht2173< th=""> <tht2173< th=""></tht2173<></tht2173<></tht2173<>		h4949	Dunlon 216	17 26.9	-45.9	9	2.2"	Ara	. ~	double star
Immutation         TS		<u>52173</u>		17 30.4	-01 04	9	1.1"	Oph	4	double star challenge
Iteath         Upsion         17.30.8         37.3         2.7         *         Soo         21           Nu         Tasahlague         Juha         Tasahlague         Juha         Tasahlague         Juha         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3         27.3 <td>8</td> <td>Lambda</td> <td>76</td> <td>17 30.7</td> <td>+26.1</td> <td>4.4</td> <td>*</td> <td>Her</td> <td>21</td> <td>star</td>	8	Lambda	76	17 30.7	+26.1	4.4	*	Her	21	star
Mpha         17318         49.8         3         *         Ara         21           Shaula         Jambia         17336         57.1         1.6         35'         500         21           Rasalingue         Alma         17335         57.1         1.6         35'         500         21           Vapa         7335         57.1         1.6         35'         500         21           Vapa         17425         530         2.4         2.5'         500         21           Vapa         17455         546         3         2.7         0ph         21           Vapa         17455         546         3         2.6         0ph         21           7         17455         546         9         2.7         0ph         21           7         17456         56         95         2.6         0ph         21           7         17456         516         517         32         500         21           7         17456         53         646         95         26'         700         21           7         17456         516         517         95         501 <t< td=""><td>0</td><td>Lesath</td><td>Upsilon</td><td>17 30.8</td><td>-37.3</td><td>2.7</td><td>*</td><td>Sco</td><td>21</td><td>star</td></t<>	0	Lesath	Upsilon	17 30.8	-37.3	2.7	*	Sco	21	star
Nul         17.322         455.11         4.9         62'         Dia         3           Staatlague         Kinha         17.345         +7.24         21         10         21           Vaal         Baatlague         Kinha         17.345         +7.24         21         21         21           Vaal         Baatlague         Kinha         17.345         +7.20         4.9         30'         Dia         21           Vaal         Baatlague         Kinha         17.445         +2.2         57         5.1         5.1         90'         21           Vaal         Baatlague         Baatlague         17.446         +2.2         36'         5.1         90'         21           Vaal         17.446         +2.3         4.0         1         7.46         21'         20'         21           Sizo         17.446         +2.3         4.0         1         7.2         50'         21'           Sizo         5.7         5.5         5.6         5.7         5.7         5.0'         21'           Sizo         5.7         5.7         5.7         5.7         5.0'         5.0'         5.0'         5.0'         5.0'	0	Alpha	-	17 31.8	-49.9	б	*	Ara	21	star
Rasultation         Lambda         17.33.6         -37.1         1.6         35'         500         21           Value         Sin         73.15         +46.0         3.8         -         Her         21           Value         Sin         17.345         +32.1         17.345         5.39.0         2.8         500         21           Value         Sin         17.445         +33.6         5.7         2.6         5.0         21           Value         Sin         17.445         +33.6         5.7         2.8         500         2.1           Value         Sin         17.445         +36.7         3.8         2.7         500         2.1           Sin         17.456         +36.8         -         0.0         2.1         0.0         2.2           Sin         5         5.7         3.5         3.6         3.6         0.0         2.2           Sin         5         5.7         3.6         3.6         3.6         5.0         5.0         2.1           Sin         5         5         5.7         3.6         3.6         3.6         5.0         5.0         5.0         5.0         5.0	-	N		17 32.2	+55 11	4.9	62"	Dra	e	double star equal magnitude
Appla         17.34.9         +12.34         2.1         •         Oph         2.1           Iosasiliaque         Psi         17.34.9         +42.34         2.1         •         Oph         2.1           X2241         Psi         17.41.5         +32.0         4.8         0.0         Psi         17.41.5         +32.0         2.8         0.0         2.1           X2241         Beta         17.44.5         +32.0         4.8         0.0         0.0         2.1           X2002         61         17.44.5         +32.3         5.2         2.1         0.0         2.1           X2022         61         17.44.5         -3.8         6.2         2.1         0.0         2.1           X2023         61         17.44.5         -3.8         6.2         2.1         0.0         2.1           X1745         51         61.5         51.7         6.3         2.2         500         2.1           X1745         51.7         7.3         3.2         2.2         500         2.1         2.1           S2038         44-41         18.00.0         +61.3         5.0         1.4         4         2.1           S214	2	Shaula	Lambda	17 33.6	-37.1	1.6	35'	Sco	21	star
Dida         BS         17335         +46.0         3.8         °         Her         21           X2241         Pai         17.435         530.0         2.4         2.5°         500         2.4         2.6°         2.7         2.7         2.7         500         2.1         2.0         2.1         2.0         2.7         2.6°         2.7         2.7         500         2.1         2.0         2.7         2.7         5.0         2.7         2.7         5.0         2.7         5.0         2.7         5.0         2.7         5.0         2.7         5.0         2.7         5.0         2.7         5.0         2.7         5.0         2.7         5.0         2.7         5.0         2.7         5.0         2.7         5.0         2.7         5.0         2.7         5.0         2.7         5.0         2.7         5.0         2.7         5.0         2.7         5.0         2.7         5.0         2.7         5.0         5.0         5.0         2.7         5.0         5.0         5.7         5.7         5.0         5.0         5.0         5.0         5.0         5.0         5.0         5.0         5.0         5.0         5.0         5.0 <t< td=""><td>3</td><td>Rasalhague</td><td>Alpha</td><td>17 34.9</td><td>+12 34</td><td>2.1</td><td>*</td><td>Oph</td><td>21</td><td>star</td></t<>	3	Rasalhague	Alpha	17 34.9	+12 34	2.1	*	Oph	21	star
X2241         Pai         17413         +7203         49         30°         Dra         2           V         Cebalical         Bela         17435         +7203         49         30°         Dra         2           X         Cebalical         Bela         17435         +57         57         57         57         57         57         57         57         57         57         50°         20°         22           X         17456         -18.6         -0.2.34         5.2         -9         0ph         21           X         17456         -18.6         -0.2.3         -7         2.2         50°         20°         22           X         17456         -18.6         -0.7.0         3.2         27         50°         27         22           X         17556         -0.0.1         17.65.         -0.0.1         21         21           Biauridis Siar         17.51.8         +04.3         9.5         50°         10°         22           Soundis         56         -0.0         57         20°         10°         22         21           Biauridis Siar         1751.1         1751.8         1751.8	4	lota	85	17 39.5	+46.0	3.8	*	Her	21	star
Kappa         17425         590         24         25°         500         21           V         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y	5	<u>5</u> 2241	Psi	17 41.9	+72 09	4.9	30"	Dra	2	double star
Vertion         17433         57.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7	9	Kappa		17 42.5	-39.0	2.4	2.5°	Sco	21	star
X22022         611         17.435         +04.45         2.8         *         Oph         21           X2022         61         17.45.6         +03.46         2.8         *         Oph         21           X202         61         17.45.6         +03.46         +03.46         5         2.1*         Oph         21           X         17.45.6         +13.5         +56.3         8         *         Oph         22           X         17.45.6         +51.5         -2.7         8.5         50.0         20         22           Fibi03         Xi         17.55.6         +56.3         3         *         Oph         21           Fibi03         40-41         17.85.6         +68.3         3         *         Oph         21           Fibi03         40-41         17.85.6         +68.3         4         4         21         22           Fibi03         40-41         17.85.6         +03.24         52         500         22           Town         ADS 11005         18.03.1         +00.15         52         67         44         4           Town         ADS 11005         18.03.1         +00.12 <t< td=""><td>7</td><td>. &gt;</td><td></td><td>17 43.3</td><td>-57.7</td><td>5.7</td><td>*</td><td>Pav</td><td>22</td><td>variable star</td></t<>	7	. >		17 43.3	-57.7	5.7	*	Pav	22	variable star
X2202         61         17446         +0234         62         21'         Oph         3           XZ         11475         -55.7         85         22         22         22           X         11475         -55.7         85         -         500         22           X         11475         -55.7         85         -         500         22           X         117256         -615         3         8         -         000         22           X         1752.6         -615         3         8         -         000         22           Rumium         XI         1755.8         +616         3.1         26         000         22           Rumics Star         -         1757.8         +04.34         95         51         001         21           Bannics Star         -         -         0.015         57         20''         001         21           S223         -         100         1817.6         -21.3         001         4           Tau         -         -         16         -21.8         001         4           Tau         -         -         16	8	Cebalrai	Beta	17 43.5	+04.6	2.8	*	Oph	21	star
SZ         1145.0 $\cdot 18.6$ 9         ·         Sgi         22           SX         1749.5 $\cdot 56.7$ $\cdot 8.5$ $\cdot 6.5$ $- 6.5$ $- 6.5$ $- 6.5$ $- 6.5$ $- 6.5$ $- 6.5$ $- 6.5$ $- 6.5$ $- 6.5$ $- 6.5$ $- 6.5$ </td <td>6</td> <td>52202</td> <td>61</td> <td>17 44.6</td> <td>+02 34</td> <td>6.2</td> <td>21"</td> <td>hao</td> <td>e</td> <td>double star equal magnitude</td>	6	52202	61	17 44.6	+02 34	6.2	21"	hao	e	double star equal magnitude
XX         17.47.5         55.7         8.5         *         Soc         22           Y         X         77.53.6         -61.5         -7.7         -8.5         -8.5         -8.5         -8.5         -8.5         -8.5         -8.5         -7.0         22         -8.6         -2.2         -8.6         -2.2         -8.6         -2.1         -7.1         -2.1         -2.1         -7.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1         -2.1	0	SZ		17 45.0	-18.6	0	*	Sar	22	variable star
G         1749.9         37.0         3.2         2°         Sco         21           Flanin         Xi         1752.6         -66.2         6         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5 <td< td=""><td>5</td><td>SX</td><td></td><td>17 47.5</td><td>-35.7</td><td>8.5</td><td>*</td><td>Sco</td><td>22</td><td>variable star</td></td<>	5	SX		17 47.5	-35.7	8.5	*	Sco	22	variable star
Y         V         1752.6         -162.2         6         -         Oph         22           Gurnium         Xi         1756.5         +51.5         -50.3         8         -         0ph         22           Ettantin         Garma         1756.5         +51.5         2.2         -         Dra         21           Bannards Star         -         1756.5         +51.5         2.2         -         Dra         21           Bannards Star         -         1757.8         +50.1         5.7         2.0°         Dra         21           Star         5         67         18.00.5         +80.0         5.7         2.0°         Dra         21           Tau         ADS 11005         18.01.5         +80.0         5.7         1.8°         Dra         21           Tau         ADS 11005         18.01.5         +20.0         Dra         21         21         21         21         21         21         21         21         21         21         21         21         21         21         21         21         21         21         21         21         21         21         21         21         21         21 <td>0</td> <td>U</td> <td></td> <td>17 49.9</td> <td>-37.0</td> <td>3.2</td> <td>2°</td> <td>Sco</td> <td>21</td> <td>star</td>	0	U		17 49.9	-37.0	3.2	2°	Sco	21	star
Elumin         Xi         17.53.5         +56.9         3.8         ·         Dra         21           Fundum         Xi         17.57.8         +0.43         9.5         5         0         2         0         2         2         1         2         2         1         2         2         1         2         2         2         1         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2	0	7		17 52.6	-06.2	9	*	Oph	22	variable star
Handin         Gamma         1756.6         +51.5         2.2         ·         Dra         21           Barnards Star         17.59.1         +00.13         5.7         5.8         Harn         201         5.1         5.0         5.1         5.0         5.1         5.0         5.1         5.0         5.1         5.0         5.1         5.0         5.1         5.0         5.1         5.0         5.1         5.0         5.1         5.0         5.1         5.0         5.1         5.0         5.1         5.0         5.1         5.0         5.1         5.0         5.1         5.0         5.1         5.0         5.1         5.0         5.1         5.0         5.1         5.0         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1 </td <td>4</td> <td>Grumium</td> <td>xi</td> <td>17 53.5</td> <td>+56.9</td> <td>3.8</td> <td>*</td> <td>Dra</td> <td>21</td> <td>star</td>	4	Grumium	xi	17 53.5	+56.9	3.8	*	Dra	21	star
Barnards Star         17.57.8         +04.34         9.5         Stellar         Oph         21           h5003         40.41         18.01.5         +0.01.5         5         6"         5         5"         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5	5	Eltanin	Gamma	17 56.6	+51.5	2.2	*	Dra	21	star
N5003         1759.1         -2015         5         6"         Sgr         5           S2038         40-41         1001.0         +80.15         5.2         0"         Ner         5           S5         ADS         1100.5         +80.15         +0.23         6"         Ner         5         1         1         3.7         2"         Ner         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3         3<	9	Barnards Star		17 57.8	+04 34	9.5	Stellar	Oph	21	star
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	7	h5003		17 59.1	-30 15	5	6"	Sgr	5	colored double star
B5         18.01.5         +21.36         4.3         6"         Her         3           Tata         ADS 11005         18.01.5         +21.36         4.3         6"         Her         3           22276         70         18.05.5         +02.3         5.2         1.8"         Oph         4           22276         7.0         18.05.5         +02.30         5.2         1.8"         Oph         4           22280         100         18.05.6         +36.7         7.3         1.6"         Her         3           X         18.06.6         5.9         14"         Her         3         1         2.1         2.1           X         18.16         +36.7         7.3         1.4"         Her         3           X         18.16         +36.1         4.3         1.4"         1.4"         2.1           X         18.21.0         -7.3         5.1         1.4"         1.4"         2.1           X         33         -8         -7.5         4.4         -7         5.9"         2.1           X         33         -9.1         1.1"         1.1"         2.1         2.1         2.1	8	Σ2038	40-41	18 00.0	+80.0	5.7	20"	Dra	3	double star equal magnitude
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	6	95		18 01.5	+21 36	4.3	6"	Her	е	double star equal magnitude
T2276         70         18.05.5         +02.30         4         1.5'         Oph         4           Theta         100         18.07.8         +26.06         5.9         14"         Her         21           Yu         22280         100         18.07.8         +26.06         5.9         14"         Her         21           Yu         11.4         18.14.9         +36.7         7.3         •         Lyr         22           Kappa         1         18.14.9         +36.1         4.3         •         Lyr         21           Xass Media         Delta         18.10.9         +36.1         4.3         •         Lyr         21           Zaus Media         Delta         18.10.9         +36.1         4.3         •         Lyr         21           Zaus Media         Delta         18.21.0         +59.8         7.9         1.0"         Scr         21           Zaus Media         Delta         18.27.2         +60.1         5.5         4.4         *         Pav         21           Zaus Morealis         Lambda         18.25.2         +60.1         5.5         4.4         *         Scr         21           <	0	Tau		18 03.1	-08.2	5.2	1.8"	Oph	4	double star challenge
Theta         100         18.06.6         -50.1         3.7         *         Ara         21           W         Y2280         100         18.06.6         -50.1         3.7         *         Her         2           W         100         18.17.8         +36.7         7.3         *         Lyr         22           Kappa         1         18.17.8         +36.7         7.3         *         Lyr         22           Kappa         1         18.17.6         +36.1         4.3         *         Lyr         22           Kappa         1         18.17.0         +56.8         2.1         *.0         Lyr         22           Xis         Gale 2         18.21.0         +56.8         2.7         *         Lyr         21           Xis         Gale 2         18.21.0         +56.4         4.4         *         57         21           Xis         Gale 2         18.27.0         +61.0         3.5         6''         7.4         21           Xis         Borealis         Lambda         18.27.0         +61.0         3.5         6''         7.4         21           Xis         Soci         18.27.0	-	<u>22276</u>	70	18 05.5	+02 30	4	1.5"	Oph	4	double star challenge
V.Z280         100         18.07.8         +36.76         5.3         14'         Her         3           W.X.         Kapa         1         18.07.8         +36.76         5.3         14'         Her         3           Kapa         1         18.17.6         -56.8         3.1         •         59'         21           Kapa         1         18.17.6         -56.8         3.1         •         59'         21           Kapa         1         18.17.6         -56.8         3.1         •         59'         21           Yzaok         Gale 2         18.2.2         -61.5         4.3         •         59'         21           Yzaok         Gale 2         18.2.2         -61.5         4.4         •         59'         21           Z1         ADS 11325         18.2.2         -66.0         3.5         6''         78'         21           Z1         ADS         113.27.0         -66.0         3.5         6''         78'         21           Z1         ADS         18.2.7.0         -66.0         3.5         6''         21         21           Z1         ASa         18.2.7         -66.0	2	Theta		18 06.6	-50.1	3.7	*	Ara	21	star
W         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N		<u>2280</u>	100	18 07.8	+26 06	1.9	14"	Her	m 6	double star equal magnitude
Kapa         1         1817.9         -56.6         -3.1         -         sgr         21           Kapa         1         1817.9         -56.6         -3.1         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -	4 1	×.		18 14.9	+30.7	5.7		LVI.	77	variable star
Kappa         I         18.15.9         -5.8.1         -7.3         -         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4 <th< td=""><td>0</td><td>E1a</td><td>,</td><td>9.11.81</td><td>-30.8</td><td> ۲.</td><td></td><td>sgr</td><td>5</td><td>star</td></th<>	0	E1a	,	9.11.81	-30.8	 ۲.		sgr	5	star
Xaus Media         Defia         18 27.10         -2.9         10°         Sgr         21           X13         Gale 2         18 27.10         -2.9         10°         Sgr         21           X13         Gale 2         18 27.10         -5.9         10°         Sgr         21           Y13         Gale 2         18 27.0         -61.5         4.4         *         Pav         21           Y13         Gale 2         18 27.0         -60.15         3.5         6'         Tel         21           X13         Gale 2         18 27.0         -60.10         3.5         6'         Tel         21           X14         Naus Borealis         Lambda         18 27.0         +60.0         3.5         6'         Tel         21           Sus Borealis         Lambda         18 28.0         -25.4         2.8         -         Sgr         22           Sus Borealis         Lambda         18 28.0         -25.4         2.8         -         Sgr         22           Data         18 27.0         45.9         5         11'         Tel         21           Aus         18 3.18         45.9         5         21'         11' <td>0 1</td> <td>Kappa</td> <td></td> <td>18 19.9</td> <td>+36.1</td> <td>4.3 5.1</td> <td></td> <td>Ż</td> <td>5</td> <td>star</td>	0 1	Kappa		18 19.9	+36.1	4.3 5.1		Ż	5	star
Xi         Gale 2         18.22.2         -1.0         5.7.4         0         5.67         2           Xi         39         18.22.2         -15.0         5.64         1.9         567         2           Zi         22323         39         18.22.2         -15.0         5.64         1.9         567         2           Zi         Alpha         Alb         J1325         18.27.0         -66.0         3.5         6''         Tel         21           Zi         Alpha         18.27.0         -66.0         3.5         6''         Tel         21         21           Sis         Lambda         18.27.0         -66.0         3.5         6''         Ser         5           Sis         Lambda         18.27.0         -10.12         5.2         4''         Ser         5           Sis         Lambda         18.28.0         -25.14         2.6         22         22           Belta         18.30.4         -16.9         5         1''<''<'''''''''''''''''''''''''''''''		Naus Media		0.12.01	10.27-	1.1	-01	- Do	7	Star
Xi         Oate Z         10.23.2         -0.13         4.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4         -1.4		22300		7.22.01	CO CI -			50	4	
Zizzzo         Just         Dist         Just         Dist         Dist <thdist< th="">         Dist         Dist         <t< td=""><td></td><td>N N</td><td>Gale Z</td><td>10 23.2</td><td>C.10-</td><td>4 4</td><td>Ę</td><td>AB C</td><td>7</td><td>star minte etce</td></t<></thdist<>		N N	Gale Z	10 23.2	C.10-	4 4	Ę	AB C	7	star minte etce
AD         MUS 113z0         18 Z5.3         -4.0.3         4.9         1.8         3.9         4           59         18 Z5.3         -4.0.3         4.9         1.8         7.8         7.8         7.8         7.8         7.8         7.8         7.8         7.8         7.8         7.8         7.8         7.8         7.8         7.8         7.8         7.8         7.8         5.7         5.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1		22323	39	18 24.0	+58 48	4.9 9	- <del>6</del>	Dra	۰ م	triple star
Signation         District		21-1-2	AUS 11325	18 25.3	G.UZ-	4 c	2.1	Jo P	4	double star challenge
Naus Borealits         Lambda         18.27.         -5.01         2.0.2         -8.01         2.0.2         -8.01         2.0.2         -8.01         2.0.2         2.01         2.0.2         2.01         2.0.2         2.01         2.0         2.01         2.0.2         2.01         2.0         2.01         2.0         2.01         2.0         2.01         2.0         2.01         2.0         2.01         2.0         2.01         2.0         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01         2.01		Apria		0.12.01	-40.0	0 U	0	e ;	7	star selected derively stars
Saus Borealis         Lambda         18.28.0         -16.3         2.8         *         Sgr         2.1           Saus Borealis         Lambda         18.28.0         -16.3         9         *         Sgr         2.1           Delta         18.31.8         -16.3         5         11'         Tel         2         2           Delta         18.31.8         -45.9         5         11'         Tel         2         2           A222         Kappa         18.32.3         -38.4         5         11'         Tel         2           A222         Kappa         18.33.3         -38.4         5         2         1'         1         1           A222         Kappa         18.33.2         -38.4         5         2'         1         1         1           A223         A34         5         6.2         6.2         0'''         Her         4           Appa         18.35.5         +22.3         6.8         0.7''         Her         4           O2368         ADS 11483         18.35.9         +17.0         6.8         1.6'''         4         4           Vega         ADS         18.35.9         +17.0		: 1 80		2.12.81	71.00+	7.0	4	Ser	0	colored double star
S.S         Band         Fib.9         5         11         22           Delta         18.30.4         -10.3         5         1         5         1         5         2           T         T         18.30.4         -10.3         5         1         7         5         1         5         2           X222         Kappa         18.32.3         +37.0         7.8         -         1         1         2           X223         Kappa         18.32.3         +57.18         6.9         21"         CrA         3           Alpha         18.35.4         +57.18         6.9         26"         Dra         2           Alpha         18.35.5         +23.36         6.3         0.7"         Her         4           O2358         ADS 11483         18.35.9         +17.0         6.8         1.6"         Her         4           Vega         Alpha         18.35.9         +17.0         6.8         1.6"         Her         4	4 1	Kaus Borealis	Lambda	18 28.0	-25.4	2.8		zgz	12	star
T T T T T T T T T T T T T T T T T T T		0		18 30.4	- 10.9 	ות		202	77	variable star
122         Kappa         18.32.3         -83.40         1.8         2.1         Lyr         1           22348         Xapba         18.32.3         -83.40         1.8         2.1         Lyr         1           22348         2         2.2         6.5         2.1         CrA         3           2348         18.33.9         +52.18         6         2.8         CrA         3           Alpha         18.35.5         +52.18         6.3         2.8         21         21           02358         ADS 11483         18.35.5         +23.36         6.3         0.7'         Her         4           02358         ADS 11483         18.35.9         +17.0         6.8         1.6''         Her         4           Vega         Alpha         18.35.9         +17.0         6.8         1.6''         Her         4	91	Delta		18 31.8	-45.9	، ۱ ک	11.	E.	7	double star
A222         Kappa         18.33.4         -38.44         5.9         21"         CrA         3           Y2348         18.33.4         -52.18         6         26"         Dra         2           Alpha         18.35.9         +52.18         6         2.6"         Dra         2           O3359         Albra         18.35.5         +23.36         6.3         0.7"         Her         4           O3358         ADS 11483         18.35.9         +17.0         6.8         1.4"         4           Vega         36.9         +17.0         6.8         1.4"         4	2	F		18 32.3	+37.0	7.8		Lyr	-	red variable star
April         2         4         2         2         5         2         5         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2 <th2< th="">         2         <th2< th=""> <th2< th=""></th2<></th2<></th2<>	8	<u>A222</u>		18 33.4	-38 44	5.9	21"	CrA		double star equal magnitude
Alpha         18 35.2         -08.2         3.9         *         Sct         21           02359         ADS 11483         18 35.5         +23 36         6.3         0.7"         Her         4           02358         ADS 11483         18 35.5         +23 36         6.8         1.6"         Her         4           02358         ADS 11483         18 35.9         +38 47         0.         Stellar         Lyr         21           Vega         Alpha         18 36.9         +38 47         0.         Stellar         Lyr         21	6	22348		18 33.9	+52 18	9	26"	Dra	2	double star
02359 02359 18.35.5 +23.36 6.3 0.7" Her 4 02358 ADS.11483 18.35.9 +17.0 6.8 1.1" Her 4 Vega Alpha 18.36 +18.47 5.1	0	Alpha		18 35.2	-08.2	3.9	*	Sct	21	star
OΣ358 ADS 11483 18 35.9 +17.0 6.8 1.6" Her 4 Vega Alpha 18 36.9 +38 47 0 Stellar Lyr 21	1	0Σ359		18 35.5	+23 36	6.3	0.7"	Her	4	double star challenge
Vega Alpha 18 36.9 +38 47 0 Stellar Lyr 21	2	O∑358	ADS 11483	18 35.9	+17.0	6.8	1.6"	Her	4	double star challenge
	~	Vena	Alabo							

					)	L)))			
ST655	HK		18 42.8	+37.0	9.5 0	*	۲ کړ	22	variable star
س	22398	:	18 43.0	+59.6		13"	Dra	~ 1	double star
S1657	Zate	Epsilon	18 44.3	+39 40	4.7		Lyr		quadruple star
S1058	2013F		18 44.8	+3/ 30	4.4	- 44	-Ar		double star
01000	02022	u	10 40.0	00 20	7 0	101	04	, c	uoubre stat equal magnitude
	570 B	0 >	3 24 01	00 00-	0.0	C+ollor	100		urpre stat voriabla star
CTEED	0,00	>	0 11 01	75 00.	р ц т с	47"	1.1	3 0	double stat double stor meanitude contract
ST663	Deld	ADS 11796	18 50 3	-07 0	n a	4/ 14 3"	ry S c	n c	double star magnitude contriast
	52404		a 02 at	10.50			200	1 0	double star
STREE	V2420	Omicron	18 51 2	150 22	0.0	35"	er C	10	double star
ST666	Delta2	ADS 11825	18 54 5	+36.9	4.5	) *	Cv0	- 52	star
-	07525		18 54 9	+33.58	e e	45"		i c	colored double star
ST668	Nunki	Sigma	18.55.3	-26.3	•	*	Sor	24	star
ST669	13	2	18 55.3	+43.9	3.9	4	Lvr	21	star
0	<b>52417</b>	"63. Theta"	18 56.3	+04 11	4.1	22"	Ser	2	double star
ST671	ADS11871		18 57.0	+32.9	5.4	1"	Lvr	4	double star challenge
ST672	<u>52422</u>	ADS 11869	18 57.1	+26.1	8	0.7"	Lvr	4	double star challenge
			18 58 6	+14.4	98	*	Anl	22	variable star
ST674	52426		19 00 0	+12.53	7.1	17"	An	د	colored double star
ST675	BreO14		10 01 1	-37.03		1.0"	er.	o «	double star adual manufuda
	45000		10.02	-10.14	200	2 = 1	Cor Cor		triple star
ST677	1	01	10.04	-05.41	99	Ctollor	000	•	rupte stat red verieble stor
	u,		1000	1000	0 V	20"			colored deutle star
0/0/0	0,0000		0.00 01	20 40-	+ 1	9 e		n e	double ator sound mornitude
	camma	20	12 00.4	-5/ 00			be		double star equal magnitude
	20,00	AV	19 00.4	+00 14	0.0	oreliar	Aq	_ (	
	2.2449		19 00.4	80 /0+	2.7		Aq.		double star
S1682	22474		19 09.1	+34 35	6.5	16"	L <sub>Y</sub> r	2	double star
	2.24.86		19 12.1	+49 51	6.6 1		cyg		double star equal magnitude
4 ı	021/8	0	19 15.3	1.01+	2.4	. OA +	Aq	~	double star
	lau	60	C.CL 81	+/3.4	4.5 0		D Ia	57	star
1 0	1	*	0.01 21	-00.04	0	- Teller	- Bo	77	
	0	>	19 18.8	+19.3/	0.0	Stellar	sge	77 8	variable star
51088	V 1942		19 19.2	-10.9	0.4		vgr	77 .	
5	Xn	22:	19 21.6	+/6 34	5.G	Stellar	Dra	-	red variable star
S1690	KK Noror		0.02.91 19.00.01	14241	1.1	Stellar	Lyr X	77 0	variable star
	2,25,25	AUS 12447	9.02.61	5.12+	0.1 0		n -		double star
	114 1-1-1		2.12.91	- 54.3	2.6		16	N 0	double star
	Alpha		1.02.01		t t		n c	V 1	sidi Antare destribute ates
01034 01006	Abireo	Dela	10.24.4	+ 20.0	0 4	c? *	ر م	o 5	
0 4		20	10 24 2	-16.4	5 T	*	Sor	22	otat variabla etar
ST607	ž		0 35 01	10.1		*	500	22	variable star verieble ster
a	HNRA		10 30 4	16 34	6.4	28"		4 L	rauaute stat
CTEOD	54	A DC 10767	10 40 7	-16.2	10	= ac	ogo vor	) c	
	TT TT		10 40 0	9.01-	1 0	oo *	500	20	uouure stat variabla star
ST701	16		10.41.8	102.0	2 4	30"	200	1 ~	double star aqual magnitude
CT702	V7670	"10 Dolto"	10 45 0	100 00	0,0	=0	200	0 0	double star monitude contrast
1 0	055191	H V 137	19 45 9	+35.01	) i c	39"		о IC	colored double star
ST704	Tarazed	Gamma	19 46 3	+10.6	2.7		Anl	24	star
ST705	52580 52580	17	19 46.4	+33 44	2 i	26"	Cva	īσ	double star magnitude contrast
ST706	Delta	2	19.47.4	+18.5	3.8		Sde	21	star
ST707	Ensilon		19 48.2	+70.16	3.8		Dra	6	double star magnitude contrast
	52583 52583	ä	19.48.7	+11.8	6.1	1.4"	Agl	4	double star challenge
ST709	Zeta		19 49.0	+19 09	5	-6	Sae	2	double star
			2121					1	

Con Code		21	22	Adi 2 double star	0		22		5 5		22	on (		35	m	22			21	22		- 2	22			9 6	2	6	27.72		5	4	~ (	7 7	Aqr 4 double star challenge Can 21 star	8	4	ю	5 0	Acr 2 double star	21	5	Cap 39 stellar planetary nebula	77
Sep	Stellar	*	* "JC	30 13"		*		*	29"	*	*	7"	¥ .	*	3"	*	* 5"	*	44"	*	Stellar 7"	4"	• *	3,		3"	19"	۰. ۵		.9	10"	0.9"	*	16"	• • •	1"	1.5"	З"	57"	ۍ م د	× د	29"	* •	
Mag	3.3	0.8	3.4	3.7	4.9	5.4	9	0.0 8.5	7.6	7	7	4.4	α 7.4	9.5	6.8	6.5	7.1	0.0	4.2	9	°,	9	5.9	3.4	4.4	5.3	6.1	5.5 1 1	1.1	4.2	4.3	4.9	4.4	6.7	4 1	5.2	6.1	7.4	91	4.7	3.7	5.2	4.5	2.0
Dec	+32 55	+08 52	+01.0	+06.4	+52 26	-29.2	-41.9	+211	+38 19	+20.7	+17.7	+77 43	0 98 +	+20.3	+00 52	+38.7	+53 07	-21.3	-12.5	-39.1	+38 02	+55 23	+47.9	-14.8	+32.2	-30.7 -18 13	-18 35	+32 18	+48.2	+30.7	+16 07	+36.5	-05.0	-18 11	0.00-	+04 18	+56.7	+07 11	-43.0		+43.9	+38 39	-25.0	
RA	19 50.6	19 50.8	19 52.5 40 54 5	19 55.3	19 55.6	19 55.9	19 58.7	20.02.4	20 03.6	20 05.1	20 07.6	20 08.9	20 03.9	20 11.9	20 12.6	20 13.4	20 13.6 EAE" 20 12 E		20 17.6	20 17.7	20 17.8	20 18.4	20 19.6	20 21.0	20 23.9 20 25 6	20 27.3	20 29.9	20 41.0	20 41.3	20 45.7	20 46.7	20 47.4	20 47.7	20 48.4	20.51.8	20 59.1	21 02.1	21 02.2	21 02.2	7.20 12	21 04.9	21 06.9	21 07.1	
Other	>	Alpha	55	Beta			<b>C</b> 7	7				Kappa	Ineta				0 10551 11	AUG 13334, V 0						Beta	39	Aprila	SHJ 324	49	Alaha	52		ADS 14296		A DO 4 1000	18 18	-	ADS 14575	2	01111000	AUS 14556	62	61	ADS 14632	
Name	Chi	Altair	Eta 57	9/ 05532	Psi	RR	RU	RF	h1470	×	ZM	<u>22675</u>	2.403/ RV	S S	Σ2644	RS	22658 Omisson 1	RT	Alpha	RT	P Arto	52671	5	Dabih	39 Descock	pi	Omicron	<u>2</u> 2716	> C	52726	Gamma	Lambda	3	S763	4 Omera	Epsilon	Σ2751	Σ2742	Dunlop236	Lambda	z ix	<u>2</u> 2758	24	
Number	ST710	ST711	ST712 6T712	ST714	ST715	ST716	ST717	ST719	ST720	ST721	ST722	51723	51/24 ST725	ST726	3T727	T728	1729	T731	T732	3T733	1734	5T736	1737	1738	T740	T741	T742	T743	T745	T746	T747	T748	T749	1750	T752	T753	ST754	3T755	1756	10/ IC	5T759	3T760	ST761	

Pieta         M258         2135         413         410         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7					8	<b>R</b> 2	200	5	0000	
$1558$ $21139$ $535$ $45$ $6^{\circ}$ $10d$ $2$ $11$ $21243$ $697$ $83$ $7$ $7$ $7$ $2124$ $700$ $22$ $11$ $21362$ $7133$ $56$ $7$ $703$ $22$ $21420$ $535$ $56$ $713$ $200$ $222$ $21420$ $535$ $56$ $710$ $200$ $222$ $21420$ $535$ $56$ $710$ $200$ $222$ $1570$ $21432$ $630$ $712$ $200$ $222$ $1570$ $21432$ $593$ $51$ $710$ $222$ $1570$ $2143$ $21610$ $4227$ $593$ $222$ $1570$ $21510$ $4227$ $51601$ $222$ $51611$ $222$ $1570$ $2164$ $223$ $317$ $214$ $222$ $2222$ $222223$ $222223$ $2222233$ $2222233$ $22223$	ST765	Delta		21 14.5	+10 00	4.6	48"	Equ	6	double star magnitude contrast
RY         TO		Theta	h5258	21 19.9	-53.5	4.5	9	pul	2	double star
N         Z 223		RY		21 20.3	-10.8	80	*	Aqr	22	variable star
Beta         RV         7128.7         +173         33         131         Cop         9           238/6         KV         2128.7         +163         33         33         131         Cop         9           238/6         KV         2128.7         +163         33         133         131         Cop         9           S3         23         212.8         +63         56         12         00         21           Harsheis Gannet Star         Mu         214.43         +162.6         56         12         00         22           Lambias Lan         Mu         215.61         +12.5         56         5         56         57         56         57         56         57         56         57         56         22         56         22         56         22         56         57         56         57         56         22         56         57         51         57         57         57         57         57         57         57         57         57         57         57         57         57         57         57         57         57         57         57         57         57         57		~		21 24.3	-69.7	8.6	•	Рау	22	variable star
State         RV         7136         +1/3         7.4         Stallar         Cop         1           V480         53         7.4         7.33.0         +1/3.5         5.6         1.7         Cop         5           V480         53.7         5.3.5         5.6         7.4         5.7         5.6         5.7         5.6         5.7         5.6         5.7         5.6         5.7         5.6         5.7         5.6         5.7         5.6         5.7         5.6         5.7         5.6         5.7         5.6         5.7         5.6         5.7         5.6         5.7         5.6         5.7         5.6         5.7         5.6         5.7         5.6         5.7         5.6         5.7         5.6         5.7         5.6         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7         5.7 <t< td=""><td></td><td>Beta</td><td></td><td>21 28.7</td><td>+70 33</td><td>3.3</td><td>13"</td><td>Cep</td><td>6</td><td>double star magnitude contrast</td></t<>		Beta		21 28.7	+70 33	3.3	13"	Cep	6	double star magnitude contrast
Y23816         Y23816 <thy23816< th=""> <thy23816< th=""> <thy23816< td="" th<=""><td></td><td>s</td><td>RV</td><td>21 35.2</td><td>+78 37</td><td>7.4</td><td>Stellar</td><td>Сер</td><td>-</td><td>red variable star</td></thy23816<></thy23816<></thy23816<>		s	RV	21 35.2	+78 37	7.4	Stellar	Сер	-	red variable star
V460         X1421         4355         5.6         6         0.00         22           RV         Harschirki Gamet Stat         Mu         21432         4363         5.6         6         0.00         22           Herschirki Gamet Stat         Mu         21433         4380         7.1         6         0.00         22           AG         Market         7143         543         4380         7.1         6         0.00         22           Za40         Market         2150         472.6         6         2         0.00         22           Za40         275.0         456.7         5.4         479.7         6         2         0.00         22           Za41         ADS 157.6         275.0         458.7         5.1         14*         0.00         22           Za41         ADS 157.6         270.8         46.8         7.2         4*         Adt         2           Za43         5.15.6         45.6         7.1         1.4*         0.00         2           Za44         ADS 157.6         27.0         4.6         7         4*         Adt         2           Za44         ADS 157.6         27.0		<b>∑2816</b>		21 39.0	+57 29	5.6	12"	Cep	9	triple star
SS         SS<		V460		21 42.0	+35.5	5.6	*	Cva	22	variable star
RV Mode         L         21         43.3         +38.0         7         7.1         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·     <		SS		21 42.7	+43 35	8.2	Stellar	CVa	22	variable star
Fieldsheits Garrent Start         Mu         21445         +64 47         34         Stall         Color         12           Epilon         h5278         21435         +66 47         5.4         33'         010         2           X2441         ADS 15431         21500         +27         5.4         19'         000         2           X2441         ADS 15431         21500         +57         5.4         19'         000         2           X2431         ADS 15431         21500         +57         5.8         19''         000         2           Y2333         22063         +10.4         4.2         2.4         000         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2<		RV R		21 43 3	+38.0	7 1		240	22	variable star
Epsilon         Trans         21442         4057         55         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96         96		Harschal's Garnet		21 43 5	158 47	3.4	Stallar		-	red variable star
Linnom         InSZT8         271 50.9         2027         5.4         3.9         0.54         2.2           S2441         ADS 15431         21 56.0         857.7         5.4         3.9         0.54         2.2           S2441         ADS 15431         21 56.0         857.4         5.4         7.1         1.4'         5.9         0.54           S2843         ADS 15431         21 56.0         27.5         5.4         1.4'         5.9         5.6         2         2         5.6         2         2         5.6         2         2         5.6         2         2         5.6         1.4'         2         5         5         2         2         5.6         1.4'         2         5         5         2         2         5         5         2         2         5         5         5         5         5         2         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5         5<		Energion		0 4 4 0	100 50	100	83"	200	- 0	double star magnitude contrast
Admona         Matrix         215,0.0 $\pi$ and $\pi$ bits			5070	24 50 0	103 24	0.7	8=0	na Leg	љ с	double star magninude connuast
Xieth         Xieth <t< td=""><td></td><td>Lambda</td><td>0 / 7 CU</td><td>21 20.9</td><td>1.20-</td><td>4. C</td><td>n *</td><td>50</td><td>N 00</td><td></td></t<>		Lambda	0 / 7 CU	21 20.9	1.20-	4. C	n *	50	N 00	
Σ2840         ADS 15431         2152.0         +50.4         18         Coep         2           XX         2873         8.206         216.4         +52.1         18         Coep         2           Z873         5.203         5.827         5.8         1.9"         Peg         2           Z873         5.203         5.827         5.8         1.9"         Peg         2           Z9565         7.17.X1"         22038         +64.38         4.3         8"         Coep         2           C05461         ADS 15601         22038         +66.38         4.3         8"         Coep         2           AMbia         Alpha         22038         +66.38         4.3         8"         Coep         2           Almoid         Alma         22031         +66.58         1.1         Coep         2           Almoid         Alma         2204.3         4.3         8"         Coep         2           Almoid         Alma         2203.3         +61.56         4.5         4.5         4.4         2           Alma         Alma         2210.4         4.5         5         10.4         5         2           <		AG		0.1612	9.21+	- م		beg.	77 -	variable star
X2841         ADS 15431         Z164.3         +19.7         6.4         -22°         Peg         2           Z2873         8.276         216.4         +28.51         7.1         1.4°         Cep         2           Z3873         8.276         216.4         +28.51         7.1         1.4°         Cep         2           Z385         -15.661         22035         +66.58         7.2         1.1°         Cep         2           Z385         -15.601         22035         +66.3         3.5         6         7.1         1.4°         Cep         2           Lambda         ADS 15560         22033         +83.6         1.7         51         1.1°         Cep         2           Lambda         ADS 15560         2203.1         +35.3         57         51         1.1°         Cep         2           Z1146         ADS 15750         2213.9         +33.7         4.1         57         516         2         2           A1746         ADS 15750         2213.9         +37.4         6.1         57         100         2         2           A114         ADS 15570         2216.0         +37.46         6.1         167		22840		21 52.0	+55 47	5.5	18"	Сер	2	double star
RX         ZI56.4         +22.9         B         ·         Peq         22           Z863		<b>∑2841</b>	ADS 15431	21 54.3	+19.7	6.4	22"	Peg	7	double star
Zz873         Zz873 <thz273< th="">         Zz873         Z</thz273<>		RX		21 56.4	+22.9	8	*	Pea	22	variable star
Ea         8.276         23.27         5.8         1.9'         Par         2.9           2.8         7.1         2.003         2.82.7         5.8         1.1."         0.60         2           2.8         7.1         2.033         +61.58         1.7         2         2         2           2.80         7.1         2.033         +61.58         1.7         2         2         2           2.80         7.8         4.5         1.1.1'         0.60         2           2.81         2.033         +61.58         1.7         2         4         2           2.81         2.031         +65.2         3.4         -         6         1.1         5         6         2           2.81         2.133         -3.91         4.5         5         1.1         5         1.0         2           1         2.81         2.14.3         -3.74         5         4         6         2         2           1.1         1.1         2.15.4         -3.74         5         4         2         2         2         2         2         2         2         2         2         2         2		52873		21 58 4	+82.51	7.1	14"	Cen	e	double star equal magnitude
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$		Et a	R 276	22 00 R	-28.27	8	1 a"	Dea		double star
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$		200	0000	22 00 6	10 21	2 0		Acr	4 0	double stor sound meanitude
22863         Tr. Xir         22.03.3         +56.43         4.3         6.1         Cep         2           Al Nair         Alpha         22.06.1         -39.5         4.5         11.1         Cep         2           Al Nair         Alpha         22.06.1         -39.5         4.5         11.1         Cep         2           Y2883         Alpha         22.10.7         +70.07         5.7         15.7         15.7         5         11.1         Cep         2           Y2883         ADS 15758         22.10.3         +39.7         4.5         5         1.4         5         21         2         2         2         2         2         2         2         3         4.5         5         1.4         5         2         2         2         2         4         2         2         4         2         2         4         2         2         4         2         4         2         4         2         4         2         4         2         4         2         4         2         4         2         4         2         4         2         4         2         4         2         4         4 <t< td=""><td></td><td>28</td><td>2 0 0 2</td><td>C.20 22</td><td>00 01 -</td><td>7.1</td><td>4</td><td>Adr</td><td><b>.</b> .</td><td>double star equal magnitude</td></t<>		28	2 0 0 2	C.20 22	00 01 -	7.1	4	Adr	<b>.</b> .	double star equal magnitude
Value         ADS 15601         22.03         45.8         6.7         11.1"         Cep         2           Immode         Al Nair         Alpha         22.03         45.8         1.7         51         15"         Cep         2           Y 22833         Al Nair         Alpha         22.03         45.8         1.7         51         15"         Cep         2           Y 22833         Ab S 15758         22.13         4.3         21.07         4.3         2         61.0         2           Al Nair         Ab S 15758         22.13         4.3         2         1.6         5.7         5.8         1.4         2         2         2         1.6         2         1.1         2         2         1.6         2         1.6         2         2         1.6         2         1.6         2         1.6         2         1         2         1.7         1.6         2         1         1.6         2         1.6         2         1.6         2         1         1.6         1.6         2         1         1.6         1.6         1.6         1.6         1.6         1.6         1.6         1.6         1.6         1         1.6		22863	"17, XI"	22 03.8	+64 38	4.3		Cep	7	double star
Almoda         22.06.1         -39.5         4.5         *         Gu         21           Y2883         Al Nair         Alpha         22.08.7         +70.07         5.7         51.1         51.81         Gu         21           Y2883         X1Nair         Alpha         22.10.2         +50.65         5.7         55         1.7         51.81         51.1         51.1         51.1         51.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1         21.1		O <u></u> 2461	ADS 15601	22 03.9	+59.8	6.7	11.1"	Cep	7	double star
Al Nair         Alpha         22.08.2         -46.58         1.7         Stellar         Gu         21           Yeas         Al Nair         Als 157.58         21.07         +80.207         4.5         27         Gu         21           Zeas         Al T-6         ADS 157.58         22.10.7         +80.207         4.5         28         Aler         2           Zeas         ADS 157.58         22.13.3         +30.7         4.1         5         Cep         21           Alba         ADS 157.58         22.18.5         +50.3         2.9         5         7         Lac         21           Alba         ADS 1597.2         22.18.5         +51.6         6.1         16'         Lac         21           Yuger60         ADS 1597.2         22.18.5         +61.4         5         7         6ru         21           Sa         Delta         ADS 1597.2         22.28.1         +61.7         6.1         16'         2           Sa         Delta         ADS 1597.2         22.28.1         +61.7         4.4         5         6ru         21           Sa         Delta         2         4.4         5         7         0.0 <td< td=""><td></td><td>Lambda</td><td></td><td>22 06.1</td><td>-39.5</td><td>4.5</td><td>*</td><td>Gru</td><td>21</td><td>star</td></td<>		Lambda		22 06.1	-39.5	4.5	*	Gru	21	star
T2883         T2210.7         +70.07         5.7         15°         Cep         2           Zeta         ADS 15758         2210.3         +39.7         4.5         28°         Cep         2           A1         ADS 15758         2210.3         +39.7         4.5         28°         Lac         Cep         2           A1         2214.3         -37.74         5.3         5°         Lac         5°           A1         2218.5         +50.3         2.9         5°         Lac         21           XB84         2218.5         -60.3         2.9         5°         Lac         21           Sa         2228.1         -67.7         4.8         5°         Tuc         2           Sa         2228.1         -67.7         8.8         3°         7°         Cep         2           Sa         2334         2223.3         -65.0         4.5         7°         Cep         2           Sa         234         2223.3         -65.0         4.5         7°         Cep         2           Sa         25.1         457.7         4.8         3°         7°         10°         2           Sa		AI Nair		22 08.2	-46 58	1.7	Stellar	Gru	21	star
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$		<b>52883</b>		22 10.7	+70.07	5.7	15"	Cen	2	double star
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$		7eta		22 10 Q	158.2	3.4		d oc	24	ctar ctar
41         Constrate         22 (4)         23 (4)         5.3         5'         Agr         5           1         1         22 (6) $+37.7$ $+1$ 5'         Lac         21           72884         22 (6) $+37.7$ $+1$ 5'         Lac         21           72884         22 (6) $+37.46$ 6.1         16''         Lac         21           7         22 (6) $+37.46$ 6.1         16''         Lac         21           7         22 (6) $+37.46$ 6.8 $2.7''$ Gru         22           5         5         5.8 $2.7''$ Gru         22           5         5         6.4         3''         Tuc         22           5         5         6.4         3''         Cep         27           5         5         6.4         5''<''		H1746	ADC 15750	22 12 0	1201	4.5	"ac	400		double star
1       1       22 (6) $37.7$ $4.1$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $2.2$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$ $1.4$ $5$		11/40	AU3 13/30	27 13.3	1.001	с с с с	0 = 1	A ar		colored double ator
Alpha         Z2 (8)         Color         Z3 (8)         Gala         Z4 (8)         Gala         Z4 (8)         Z2 (8)         Z4 (8) <thz4 (8)<="" th="">         Z4 (8)         <thz4 (8)<="" th=""></thz4></thz4>		- <del>-</del>		0.41.00	FO 17-		<b>.</b> *	50	0.0	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$				22 10.0	1.104	+ c	ī	Lac	7	5141
P:         Display         Display <thdisplay< th=""> <thdisplay< th=""> <thdispl< td=""><td></td><td>Apria</td><td></td><td>C.01 22</td><td>5.UQ-</td><td>2.4</td><td></td><td>n</td><td>7</td><td>Star</td></thdispl<></thdisplay<></thdisplay<>		Apria		C.01 22	5.UQ-	2.4		n	7	Star
Pl     2233     45.9     5.8     2.7'     6ru     2       533     533     2226.6     -16.45     6.4     3'     700     2       533     belta     5.8     2.7'     6.0     2       53     51     55.0     -16.45     6.4     3'     700     2       5     51     2228.3     -57.7     9.8     3'     700     2       2     2     2228.3     -57.7     9.8     3'     700     2       2     2     2228.5     -47.7     9.8     3'     700     2       2     2     2229.5     -47.7     4.4     5'     1.40     2       5     5     222.95     -47.7     4.4     5'     1.40     2       5     5     223.0     -04.4     5'     1.40     1     1       72312     37     2230.0     -04.4     5'     1.40     1     1       72312     37     2230.0     -04.4     5'     1.40     2       8     2     230.0     -04.4     5'     1.40     2       1     1     5'     22     1.41     5'     5'     1.40       1		2.2894		22 18.9	+3/ 40	0.1	<u>0</u>	Lac	0	colored double star
S     22.26.1     -48.4     6     °     Gru     22       53     Delta     h5334     22.27.5     -66.45     6.4     3'     Aqr     3       Delta     h5334     22.27.5     -66.0     4.5     7'     Tuc     2       Kuqer60     ADS 15972     22.28.1     -60.01     4.5     7'     Tuc     2       Kuqer61     ADS 15972     22.28.1     -60.01     4.3     2'     Aqr     3       Zeta     2     22.29.2     +58.55     3.8     20'     Cep     5       Seta     2     22.29.5     +58.55     3.8     20'     Cep     5       Delta2     22.29.5     +58.55     3.8     20'     Cep     5       Seta     22.29.5     +39.46     5.8     4.1     1'     1       Delta2     22.35.5     +39.46     5.8     4.1     1'     1'       Roe47     22.35.5     +39.46     5.8     4.1     1''     1''     1''       Bata     23.0     -14.4     5.7     2.1     1''     1''     1''     1''       1     Beta     24.1     5.1     4.4     5''     1''     1''       1     Be		ā		22 23.1	-45.9	5.8	2.7"	Gru	2	double star
53         53         53         54         53         64         3'         Aqr         3           Delta         h5334         2226.6         -16.45         6.4         3'         Aqr         3           Kuger60         ADS 15972         2228.1         +57.7         9.8         3'         Tuc         2           Zeta         23         2228.8         +57.7         9.8         3'         Tuc         2           Delta         23         2229.5         +47.7         4.4         15'         Cep         5           Delta         2229.5         +47.7         4.4         15'         Guu         1           22312         53.0         +04.4         5.8         4.7         1.4         15'         Guu         1           22312         5.1         45.3         5.8         5.7         1.4         15'         Guu         1           22947         ADS         164.3         5.8         2.7         1.4         15'         Guu         2           1aut         9         224.0         4.4.3         5.7         2.3'         Aqr         2           1aut         9         2.1 <td< td=""><td></td><td>S</td><td></td><td>22 26.1</td><td>-48.4</td><td>9</td><td>*</td><td>Gru</td><td>22</td><td>variable star</td></td<>		S		22 26.1	-48.4	9	*	Gru	22	variable star
Delta         h5334         22 27.3         65.0         4.5         7*         T/°         T/°         T/°         T/°         T/°         T/°         T/°         T/°         Z           Xuger60         ADS 15972         22281         -00.01         4.3         2*         T/°         T/°         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z         Z		53		22 26.6	-16 45	6.4	3"	Agr	3	double star equal magnitude
Kruger60         ADS 15972         22 28 1         +57.7         9.8         3"         Cop         2           Zata         2         2         4.8         2"         Cop         2           Delta         2         2         4.8         2"         Cop         5           Delta         2228.8         4.3.7         4.4         15"         Cop         5           Delta         2         22.28.5         4.3.7         4.4         15"         Cop         5           Delta         2         22.28.5         4.3.7         4.4         15"         Cop         5           Delta         2         22.28.5         4.3.7         4.4         15"         Cop         5           No         22.28.5         4.3.3         5.8         4.7         14"         15"         Cop         7           Reat         9         22.44.5         5.8         4.3"         Lac         7         2           Tau1         6         2.1         4.4.3         5.7         2.3"         Andr         2         1           Tau1         9         22.44.3         5.8         2.7         4.4.3         5.7		Delta	h5334	22 27.3	-65.0	4.5	7"	Tuc	2	double star
Zera         Zera <th< td=""><td></td><td>Krinder60</td><td>ADS 15072</td><td>22 28 1</td><td>1577</td><td>80</td><td></td><td>Cen</td><td></td><td>double star</td></th<>		Krinder60	ADS 15072	22 28 1	1577	80		Cen		double star
Cata         Z2282         +58 20         -53         -2         -Aqr         -3         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2         -2		7-1-0	1 00 000				5			
5     5     5     5     5     5     5     5     6     5     5     5     5     5     5     5     5     5     5     5     5     5     5     5     5     5     5     5     5     5     5     5     5     5     5     5     5     5     5     5     5     5     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1     1 <td></td> <td>Zeta</td> <td></td> <td>22 28.8</td> <td>10 00-</td> <td>4.3</td> <td>7</td> <td>Aqr</td> <td>4 1</td> <td>double star challenge</td>		Zeta		22 28.8	10 00-	4.3	7	Aqr	4 1	double star challenge
Delta2         2229.5         +3.7         4.4         5'         Lac         21           Y2912         37         2229.5         +3.7         4.4         15'         Guu         1           Y2912         37         2230.0         +04.4         5.8         1''         Peg         4           Y2912         37         2230.0         +04.4         5.8         1''         Peg         4           Y2912         37         2232.5         +39.38         6.5         2''         Lac         7           Rest         2232.5         +39.38         6.5         2''         Lac         7           Tau1         69         224.7         -44.3         2.7         '''         -'''         Cap         2''           Tau1         69         224.0         -14.1         5.7         23''         Cap         2''           Tau2         71         23.4         -14.1         5.7         23''         Cap         2''           Tau2         71         23.6         -13.6         -''         -''         -''         2''           Tau2         71         21.1         5.7         23''         Cap         2''		Delta		27.28.2	428 25	3.8		Cep	9	colored double star
Delta2         2229.8         -43.7         4.1         15'         Gru         1           Y 23912         37         2230.0         -43.7         4.1         15'         Gru         1           Y 23912         37         2230.0         -43.7         4.1         15'         Gru         1           X Re47         37         2235.5         +39.46         5.8         4''         Lac         6           1         2245.5         +39.38         6.5         22''         Lac         7           11         2245.7         -46.9         2.1         1.4         5.7         2.3''         Aqr         2           13u1         69         224.7         -46.9         2.1         4.1         2         2         1.1         2         2         1.4         5.7         2.3''         Cep         2         2         1         2         2         1         2         2         1.4         2         2         1         2         2         1         2         2         1         2         2         1         2         2         1         2         2         1         2         2         2         1		2		22 29.5	+47.7	4.4	2	Lac	21	star
X2912         37         22 30.0         +04.4         5.8         1'         Peg         4           R0e47         22 30.0         +04.4         5.8         1''         Peg         4           1         22 35.5         +39.36         6.5         22''         Lac         7           1         22 35.5         +39.36         6.5         22''         Lac         7           1         22 35.5         +39.36         6.5         22''         Lac         6           1         22 45.7         -46.3         2.1         ''         Guu         21           23947         ADS 16291         22 47.7         -46.1         5.7         23''         Aqr         21           23947         ADS 16317         22 49.6         -13.6         4         40''         Aqr         21           2102         ADS 16317         22 51.8         +41.19         7.1         8.7''         Lac         2           1823         ADS 16317         22 51.8         +41.19         7.1         8.7''         Lac         2           1823         ADS 16341         22 51.8         +41.19         7.1         8.7''         Lac         2		Delta2		22 29.8	-43.7	4.1	15'	Gru	-	red variable star
Road7         22         22         5         +33         6         5         43'         Lac         7           1         1         22.35.5         +33.38         6.5         22'         Lac         6           11         22.35.5         +33.38         6.5         22'         Lac         6           11         22.35.5         +33.38         4.5         -'         Lac         6           23.1         22.45.7         -46.9         2.1         -'         Lac         2           11         22.47.7         -46.9         2.1         -'         Aqr         2           23.1         69         22.43.7         -14.1         5.7         2.3'         Cap         2           13.2         71         6.7         2.3'         Cap         2         2           13.2         7.1         8.7         4.1         7.1         8.7'         Lac         7           18.2         7.1         8.7         1.7         8.7'         Lac         7           18.2         7.1         8.7         4.1         7.1         8.7'         Lac         7           18.2         7.1 <td< td=""><td></td><td><b>52912</b></td><td>37</td><td>22 30.0</td><td>+04.4</td><td>5.8</td><td>-</td><td>Pea</td><td>4</td><td>double star challenge</td></td<>		<b>52912</b>	37	22 30.0	+04.4	5.8	-	Pea	4	double star challenge
8         22         235.9         +39         38         6.5         22*         Lac         6           11         1         22         40.5         5.7         5.7         2.1         1.0         6         2         1         2         2.1         1.0         6         2         1         2         2         41.3         2.1         5.7         2.3         1.0         1.0         2         2         1         2         2         1         1         1         2         2         1         2         1         2         1         2         1         2         1         1         1         1         1         1         2         1         2         1         2         1         2         1         2         1         2         1         1         1         1         1         2         1         2         1         2         1         2         1         2         1         2         1         2         1         2         1         2         1         2         1         2         1         1         2         1         2         1         1         1         1 </td <td></td> <td>R0e47</td> <td></td> <td>22 32 5</td> <td>+39.46</td> <td>5.8</td> <td>43"</td> <td>20</td> <td>7</td> <td>auadrunte star</td>		R0e47		22 32 5	+39.46	5.8	43"	20	7	auadrunte star
11         22.405         4.43         4.5         -         Lac         21           Tau1         69         22.47         -46.9         2.1         -         6n         21           Tau1         69         22.47         -46.9         2.1         -         6n         21           Tau2         71         69         22.47         -46.9         2.1         -         6n         21           Tau2         71         69         22.49.6         -13.6         4         40'         Aqr         2           Tau2         71         22.49.6         -13.6         6.1         1.7'         Cep         2           Tau2         71         22.49.6         -13.6         6.1         1.7'         Cep         2           Tau2         71         22.49.6         -13.6         6.1         1.7'         Cep         2           Tau2         73         21.6         7.1         8.1         6.1         1.7'         Cep         2           Tau2         7         22.51.6         -07.6         3.7         9.7'         Par         21           Fambda         7.1         21.7         21.7         1.		a		22 35 0	420.28	2 2	20"		ų	trinle star
Beta         2.2.10.3         4.4.3         2.1.3         5.7         2.4.3         2.1         5.7         2.4.3         2.1         5.7         2.4         2.1         5.7         2.3         6.0         2.1         2.1         2.1         5.7         2.3         6.0         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1         2.1		, ,		20 40 5	00 00 1		4 *	- 40	5	upto ator
Taul         Z243/1         -14.1         5.1         23*         Oru         21           Tau1         69         22.42/1         -14.1         5.7         23*         Oru         21           Tau2         71         ADS 16291         22.49/0         +68.6         7         4.3*         Cep         2           Tau2         71         22.49/0         +68.6         7         4.3*         Cep         2           Tau2         71         22.49/0         +68.6         7         4.3*         Cep         2           Tau2         71         22.49/0         +61.7         6.1         1.7*         Cep         2           Tau2         71         22.44         +61.7         6.1         1.7*         Cep         2           M1823         ADS 16317         22.51.8         +41.19         7.1         82*         Lac         7           Lambda         7.3         22.55.6         -07.6         3.7         Par         21           Fomalhaut         Alpha         22.59.2         +11.7         6.1         0.7*         Pag         21           5.         ANS 16428         22.59.2         +11.7         6.1				C 04 77	144.0	4 c		Cat.	7	5141
Tau2         Z34/1         ABS 16231         Z2 41/1         14.1         5.7         23         Aqr         2           Tau2         71         ADS 16231         22 49/6         -13.6         4         4.3'         Cep         2           Tau2         71         ADS 1631         22 49/6         -13.6         4         4.0'         Agr         21           Tau2         71         22 51.4         +61.7         6.1         1.7'         Cep         2           10823         7.3         22 51.4         +61.9         7.1         82'         Lac         7           10823         7.3         22 51.6         -07.6         3.7         *         Par         21           10834         7.1         82'         -         9.7'         6.1         1.7'         Lac         7           Emabda         7.3         22 52.6         -07.6         3.7         *         Par         21           Fomalhaut         Alpha         22 59.2         +11.7         6.1         0.7''         Peg         21		Deta		22 42.1	-40.9			و <u>د</u> م	7	Star
22947         DS 16291         22 49.0         +68.6         7         4.3"         Cep         2           Tau2         71         22 49.6         +13.6         4         41.7"         Cep         2           P102         ADS 16317         22 51.4         +61.7         6.1         1.7"         Cep         2           P1023         ADS 16317         22 51.8         +41.19         7.1         B2"         Lac         7           Imbda         7.3         22 55.6         -29.7.6         3.7         *         Aqr         21           Fomalhaut         Alpha         22 55.6         -29.7.6         3.7         *         Par         21           5.         ADS 16428         22 55.2         +11.7         6.1         0.7"         Peg         4		lau1	69	22 41.7	-14.1	5.7	.23	Agr	7	double star
Tau2         71         22.49.6         -13.6         4         40'         Aqr         21           Y2950         ADS 16317         22.51.4         +11.7         6.1         1.7'         Cep         2           h1823         ADS 16317         22.51.4         +41.19         7.1         82'         Lac         2           h1823         7         22.51.6         -07.6         3.7         82'         Lac         7           Fumbda         73         22.52.6         -07.6         3.7         *         Par         21           Fomalhaut         AIpa         22.52.6         -07.6         3.7         *         Par         21           52         ADS 16428         22.59.2         +11.7         6.1         0.7''         Peg         4		<b>∑2947</b>	ADS 16291	22 49.0	+68.6	7	4.3"	Cep	2	double star
X2950         ADS 16317         Z2 51.4         +61.7         6.1         1.7"         Cep         2           1823         2         25.1.8         +41.19         7.1         82"         Lac         7           Lambda         73         22.51.8         +41.19         7.1         82"         Lac         7           Fomahaut         Alpha         22.52.6         -29.37         1.2         Paqr         21           52         6.13         1.2         *         Padr         21           52         52.6         -29.37         1.2         *         Padr         21           52         41.17         6.1         0.7"         Peg         4		Tau2	71	22 49.6	-13.6	4	40'	Agr	21	star
h1823         22 51.8         +41.19         7.1         82"         Lac         7           Lambda         7.3         22 52.6         -0.7.6         3.7         -         -         Aqr         21           Fomalhaut         Alpha         22 55.6         -0.3.7         1.2         -         Padr         21           5         -         -         23.7         1.2         -         Padr         21           5         -         -         -         13.7         1.2         -         Padr         21           5         -         -         -         -         21.3.7         1.2         -         Padr         21           5         -         -         -         -         -         21         21         21         21         21         21         21         21         21         21         21         21         21         21         21         21         21         21         21         21         21         21         21         21         21         21         21         21         21         21         21         21         21         21         21         21         21 </td <td></td> <td><u>52950</u></td> <td>ADS 16317</td> <td>22 51.4</td> <td>+61.7</td> <td>6.1</td> <td>1.7"</td> <td>Cep</td> <td>2</td> <td>double star</td>		<u>52950</u>	ADS 16317	22 51.4	+61.7	6.1	1.7"	Cep	2	double star
Equalida 73 22.52.6 -07.6 3.7 • Aqr 21 Formathaut Alpha 22.57.6 -09.37 1.2 • P.sA 21 52. ADS 16428 22.51.5 • 11.7 6.1 0.7* Peg 4		h1823		22 51.8	+41 19	7.1	82"	Lac	7	quadruple star
Fomalhaut Alpha 22.57.6 -29.37 1.2 * P.SA 21 52 ADS 16428 22.59.2 +11.7 6.1 0.7* Peg 4		Lambda	73	22 52.6	-07.6	3.7	•	Aar	21	star
52 ADS 16428 22 59.2 +11.7 6.1 0.7" Peg 4		Fomalhaut	Alpha	22 57.6	-29 37	1.2	*	PsA	21	star
		52	ADS 16428	22 59.2	+11.7	6.1	0.7"	Pea	4	double star challenge
Schoot Boto										

	double star	double star challenge	red variable star	double star	colored double star	double star	star	variable star	star	double star	variable star	double star equal magnitude	red variable star	double star equal magnitude	double star	variable star	colored double star	double star challenge
Code	2	4	-	2	5	2	21	22	21	2	22	9	-	e	2	22	5	4
Con	Pea	Cep	Agr	Agr	Agr	Gru	Agr	And	Cep	Phe	Aar	Aar	Psc	And	Scl	Cas	Cas	And
Sep	-8	1.2"	*	1.5"	13"	27"	*	Stellar	*	4"	Stellar	7"	Stellar	5"	7"	Stellar	3ª	1.5"
Mag	6.3	4.6	4.2	5	5.1	6.5	4.4	8	3.2	6.6	5.8	5.3	6.9	7.8	6.9	4.7	4.9	6.6
Dec	+32 49	+75.4	-06.0	-09.6	-13 28	-53.8	-20.6	+48 49	+77.6	-46.6	-15 17	-18 41	+03 29	+37 53	-27 03	+51 24	+55 45	+33 43
RA	23 07.5	23 07.9	23 14.3	23 19.0	23 19.1	23 23.9	23 26.0	23 33.7	23 39.3	23 39.5	23 43.8	23 46.0	23 46.4	23 51.8	23 54.4	23 58.4	23 59.0	23 59.5
Other		ADS 16538	06						Gamma	Dunlop 251	-		19					
Name	Σ2978	i	Phi	Psi3	94	Dunlop249	. 66	Z	Errai	Theta	Я	107	TX	Σ3042	Lal192	Я	Sigma	X3050
Number	ST820	ST821	ST822	ST823	ST824	ST825	ST826	ST827	ST828	ST829	ST830	ST831	ST832	ST833	ST834	ST835	ST836	ST837

## One-Year Limited Warranty

This Orion IntelliScope Computerized Object Locator is warranted against defects in materials or workmanship for a period of one year from the date of purchase. This warranty is for the benefit of the original retail purchaser only. During this warranty period Orion Telescopes & Binoculars will repair or replace, at Orion's option, any warranted instrument that proves to be defective, provided it is returned postage paid to: Orion Warranty Repair, 89 Hangar Way, Watsonville, CA 95076. If the product is not registered, proof of purchase (such as a copy of the original invoice) is required.

This warranty does not apply if, in Orion's judgment, the instrument has been abused, mishandled, or modified, nor does it apply to normal wear and tear. This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state. For further warranty service information, contact: Customer Service Department, Orion Telescopes & Binoculars, P. O. Box 1815, Santa Cruz, CA 95061; (800) 676-1343.

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