



## April 2024

Grand Strand Astronomers  
Monthly Events

General Membership Meeting:  
Every Last Thursday @ 7:00 pm  
Meeting: VIA Zoom.

Please see email or Facebook for link



Observing Session: April 6, 2024 @ 8:00 pm  
Location: Hampton Plantation  
Gates open @ 6:00 pm

# ASTROGATOR

## Grand Strand Astronomers

An Astronomical Journal of the Grand Strand Astronomers of the Greater Myrtle Beach Area

GSA Founded on September 24, 2020



Messier Object 42 - The Great Orion Nebula - A star nursery.  
Photography By Chris Taylor

**Grand Strand Astronomer's Social Media**

Grand Strand Astronomer's Website 

Grand Strand Astronomer's Facebook 

### GSA Leadership



**Executive Officer**  
Ian Hewitt

Photograph  
not available  
at this time

**Treasurer**  
John Defreitas



**Secretary**  
Gerald Drake

Photograph  
not available  
at this time

**Social Media  
Corrodinator**  
Denise Wright



**Newsletter  
Corrodinator**  
Tim Kelly

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## Photograph of the Month

By Chris Taylor

Messier Object 42 - The Great Orion Nebula - A star nursery.  
Taken from my driveway in Forestbrook, Myrtle Beach  
1340 Light years distant.  
24 Light Year in Diameter.

To the right - The running man nebula.

Taken with a Celestron C6 Telescope at F/2 (Hyperstar)  
QHY183C imager  
120s x 30 exposures.

## Thoughts From A Co-Editor

We hope to have the May 2024 Newsletter dedicated to the solar eclipse which happens on April 8th.

Ohio experienced its last total eclipse in 1806.

The eclipse's totality is expected to impact Cleveland, Dayton, Toledo, Bowling Green and Akron.

See page 11 for solar eclipse path map locations.

We hope several of our club members who plan to attend the eclipse from different locations share their experiences with us. Along with any photographs that may be taken from their relative locations.

We hope all have safe travels and clear skies. Make sure you pack plenty of patients. You will definitely need them.

## Call For Volunteers

Grand Strand Astronomers are looking for volunteers to help with the social media platforms such as Facebook, YouTube and Twitter if the need arises. Presently Facebook needs a new face lift and be brought up to present time activities. Our website can also use some TLC and someone responsible to keep it updated with club activities and astronomy related items. If anyone would like to help in these categories, please contact Ian Hewitt at the email address below.

We are looking for new and older club members to help contribute articles for the GSA Newsletter. You can be a novice level, medium level, or a experienced level astronomer. Knowledge such as types and location of numerous stars, nebula or galaxies to share with other club members. GSA would like to provide topics for all level of members and non-members that are both hands-on projects and educational sharing. You can either write you own or use one already written and published. See Megan's, Chris' and Gerald's contributions for self written articles. See Tim's contributions for an example of non-written subject matter or from a written artical from another person. Please provide the title, name of the originator and website link that the original article can be found. You will not be required to submit articles every month, however every second or third month would be nice and a benifit to all members and non-members. Please send articles to [t.m.kelly349@outlook.com](mailto:t.m.kelly349@outlook.com)

## Grand Strand Astronomers - Membership

Grand Strand Astronomer's welcomes new member Tomas Bagdas.

## Grand Strand Astromers' Membership Dues

The GSA 2024 membership dues are now over due. Please contact our Treasurer for over dues payment.

## GSA Telescope Loaner Program

Did you know our club has telescopes available for loan? They are Dobsonians that were donated to the club when we first started. These are available for club members to use at no charge. All you have to do is take care of them and return them if someone else wants to borrow one. The first one is an Orion XT 8. It's in great shape. It gives beautiful views of the moon, planets, and galaxies. Comes with accessories that include a 2X Barlow, 25mm eyepiece, 9mm eyepiece, and laser collimator tool. The other one is an Orion Skyquest XT 10 with Orion's IntelliScope computerized object locator. It includes more than 14,000 objects in its database so you'll be able to locate those dim galaxies. Should be hours of fun. Accessories are included. Both of these are begging to be used. Send us an email if you're interested in borrowing one.

## Grand Strand Astronomers March 2024 Meeting Recap

By Gerald

The meeting was held on March 21 at 7:00 PM. Ian called the meeting to order and welcomed everyone online and those who will view the meeting later on YouTube. We started with a discussion about the weather. Our Messier Marathon was canceled due to poor weather. Seems that is typical lately. Hoping for better weather in April. Our next dark sky observing session is at Hampton Plantation on the 6th of April; realizing that some will be traveling to see the solar eclipse on the 8th, we'd still like to hold our Hampton outing because the SCDNR will be there with about 33 people. Would love to have some telescopes out there for them to see what we do at Hampton.

Ian shared a presentation he called Sky Stuff. These are some things coming up that we can look at in the sky. There will be a penumbral lunar eclipse on March 25th at 3:12 AM that runs to about 5:30. A penumbral lunar eclipse occurs when Earth's outer shadow falls on the Moon's face. It is easy to miss because most of the Moon is illuminated by sunlight. So there is not much difference in brightness, but it is still observable.

The planet Mercury is visible at dusk on the 24th of March. It will be just below Jupiter in the west and be fairly bright with a pink hue. You cannot see any detail on it with a telescope, so it looks the same with binoculars. You can even observe it with the naked eye.

Comet 12P/Pons-Brooks is a periodic comet with an orbital period of 71 years. It is projected to be fairly bright and fairly close to Andromeda heading into Pieces. Below M31. It is pretty low in the sky and almost due west. Ian challenged the astrophotographers in the group to get a shot of it. You won't need super great equipment for this one.

There are going to be other bright comets this year. C/2011 L4 (PanSTARRS) is visible in March.

Comet Tsuchinshan-ATLAS has the potential to become exceptionally bright and earn the title of a "great comet". In September and October, it might become visible to the naked eye and rival the luminosity of the brightest stars in the sky!

A bright nova has popped up in the N-NW between Cassiopeia and Cephas. It is below M52. A nova (pl.: novae or novas) is a transient astronomical event that causes the sudden appearance of a bright, apparently "new" star (hence the name "nova", which is Latin for "new") that slowly fades over weeks or months. All observed novae involve white dwarfs in close binary systems. This nova will fade, so try to go out and see it.

Of course, the eclipse is April 8. Huge numbers of people are planning to travel to see it in the central US. Be safe and allow time to get there if you are going. One member shared they are going to San Antonino, TX. In past experiences, traffic after the eclipse is horrible. Some are going to take pictures, but one member shared that he is going just to enjoy the event as pictures do not do it justice.

If you are observing the sun now, you will see that solar prominences are very active right now.

A discussion followed about the Seestar S50 All-in-One Smart Telescope. It is 50mm f/5, very small (about 10" long), portable, and cost around \$500. It's getting good reviews from people who share our hobby because it does a lot of things automatically. The pictures some shared are pretty decent. It is controlled with a smartphone, comes with a solar filter, Bluetooth, WIFI, and sits on a small tripod. You could also set it up on a sturdy camera tripod. The battery will last about 6 hours. Would be good for a dark sky sight. Let the club know if you purchase one or have experience with one. Celestron has its version, but it is much more expensive.

At this point, the live stream ended.

Some shared where they were going to see the eclipse and their past eclipse experiences. One member said this will make his 6th total eclipse viewing. One shared how he uses an Astro-Tech 80mm telescope for astrophotography. He'll also use a solar telescope.

We are looking forward to seeing pictures from this event.

Ian shared how he is reprocessing old images using updated software. Some of his old images are about 10 years old and it will be interesting to see if new processing software makes a difference in the images. More to come.

The discussion ended and the meeting was adjourned.

## Galaxy Season

By Chris Taylor

Galaxy Season is a term used by astronomers and stargazers to describe a specific time of the year when conditions are ideal for observing galaxies outside our own Milky Way. The primary reason Galaxy Season is significant is due to the orientation of the Earth in relation to the plane of the Milky Way galaxy.

March through early May is the time of year when the dense center of our galaxy sets along the horizon, it minimizes the amount of obscuring dust and stars between us and the distant universe. During Galaxy Season, the Milky Way's band is less visible, providing a clearer view of distant galaxies for both better observation and photography of other galaxies.

Galaxy Season is the best time for amateur astronomers and photographers to observe and capture images of several famous galaxies and galaxy clusters. Some of the most notable objects visible during this time include:

- The Virgo Cluster: This is a massive cluster of over 1,300 galaxies, including M87 with its notable jet of matter.
- The Leo Triplet: Comprising three spiral galaxies (M65, M66, and NGC 3628), this group is popular for its gravitational interactions visible through telescopes.
- The Whirlpool Galaxy (M51): Known for its distinct spiral arms, M51 offers a clear view of galactic structure and interaction.
- The Sombrero Galaxy (M104): This galaxy is easily recognizable by its bright nucleus and large central bulge, resembling a sombrero hat.

To make the most of Galaxy Season, enthusiasts should consider the following tips:

**Location:** Choose a dark sky location far from city lights to reduce light pollution.

**Equipment:** A telescope with a tracking mount is ideal for observing galaxies. For photography, a DSLR camera or a dedicated astronomy camera can be used.

**Preparation:** Familiarize yourself with the night sky and plan which galaxies to observe or photograph in advance. Mobile apps and star charts can be helpful tools.

In summary, Galaxy Season is a small window for those interested objects outside of our own galaxy, the Milky Way. Whether you're a seasoned observer or a casual viewer, this season provides ample opportunity to witness the beauty and complexity of galaxies far beyond our own.

Regards

Chris

# Meet The 5 Biggest Stars in The Universe

StarLust

Tim Kelly

While the Sun is the largest object in our solar system, it's not a particularly large star. With a radius of 432,000 miles (690,000 km), and a temperature range from ~1.7 million °F (~1 million °C) to more than ~17 million °F (~10 million °C) in its outermost layer, the Sun belongs to a category of stars called the "yellow dwarfs" or "G-type main sequence stars". O, B, A and F type main sequence stars, Giants and Supergiants all have larger radii than the Sun.

If the Sun is a small star, what are the biggest stars in the universe?

When we talk about a star's size, we can either discuss its diameter (radius) or its mass. In both cases, the size of a star is compared to the size of our Sun. There are several methods for calculating stellar angular diameter and different methods may result in different stellar diameters for the same star.

Additionally, a star's size may vary over time. Most stellar radii are expressed as either averages or ranges and lists of largest stars have changed as techniques are refined.

The best way to view these largest stars is with a telescope. This list includes the constellations to give you an idea of where in the sky to look. Let's see what the largest stars are and where to find them.

## 1. UY Scuti

Constellation: Scutum

Radius: 1,708±192 solar radii

Diameter: 1.4766 billion miles / 2.3765 billion km

Distance: 9500 light-years

Celestial Coordinates: RA 18h 28m 49s | Dec -12° 27' 10"

How To Find This Star: UY Scuti is located on the outside of Scutum, ~4.5° southwest from, Alpha Scuti (apparent magnitude 3.85), and ~2° northwest from Gamma Scuti (apparent magnitude 4.69).

UY Scuti is a red hypergiant with an apparent magnitude of 9.31. A hypergiant is a rare type of star with an extremely high luminosity, mass, size and mass loss because of its extreme stellar winds. UY Scuti is also a pulsating semi-regular variable star whose magnitude varies from 11.2 to 13.3 over a period of 740.0 days. Its mass is 23.0 solar masses and it's 47% cooler than the Sun. This star was first cataloged in 1860.

## 2. V766 Centauri Aa

Constellation: Centaurus

Radius: 1,492±540 solar radii

Diameter: 959.8 million miles / 1.5446 billion km

Distance: 4,900 – 11,700 light-years

Celestial Coordinates: RA 13h 48m 43s | Dec -62° 41' 51"

How To Find This Star: V766 Centauri is located outside of Centaurus,  $\sim 2.5^\circ$  southwest from Beta Centauri (apparent magnitude 0.63).

V766 Centauri's primary star (Aa) is a yellow hypergiant with an apparent magnitude of 6.90. It's a semi-regular variable whose magnitude varies from 6.17 to 7.50 over a period of 494.0 days. Its mass is 13.0 solar masses and its temperature is 21% cooler than the Sun. A secondary component is located 9.3 arcseconds away and has an apparent magnitude of 9.89.

### 3. KY Cygni

Constellation: Cygnus

Radius:  $1,420 \pm 284$  ( $-2,850 \pm 570$ ) solar radii

Diameter: 1.227 billion miles / 1.976 billion km

Distance: 5000 light-years

Celestial Coordinates: RA 20h 26m 46s | Dec  $38^\circ 25' 23''$

How To Find This Star: KY Cygni is located below the crossbeam of the Northern Cross asterism,  $\sim 2^\circ$  from Gamma Cygni (apparent magnitude 2.23) and  $\sim 6^\circ$  from Epsilon Cygni (apparent magnitude 2.49). KY Cygni is a red supergiant with an apparent magnitude of 10.87. It's also a pulsating long-period variable star whose magnitude varies from 13.5 to 15.5. KY Cygni was discovered in 1930.

### 4. AH Scorpii

Constellation: Scorpius

Radius:  $1,411 \pm 124$  solar radii

Diameter: 1.219 billion miles / 1.963 billion km

Distance: 1060 light-years

Celestial Coordinates: RA 17h 12m 41s | Dec  $-32^\circ 21' 5''$

How To Find This Star: AH Scorpii is located above the Fishhook asterism,  $\sim 6.5^\circ$  from Lambda Scorpii (apparent magnitude 1.62) and  $\sim 5^\circ$  from Epsilon Scorpii (apparent magnitude 2.28).

AH Scorpii is a red giant with an apparent magnitude of 8.19. This pulsating semi-regular variable star ranges in magnitude from 8.1 to 12.0 over a period of 713.6 days. Its mass is 1.2 solar masses and it's 40% cooler than the Sun.

### 5. VV Cephei

Constellation: Cepheus

Radius: 1,329.62 solar radii

Diameter: 1.150 billion miles / 1.851 billion km

Distance: 163081.67 light-years

Celestial Coordinates: RA 22h 37m 17s | Dec  $+58^\circ 32' 18''$

How To Find This Star: W Cephei is located near the bottom of Cepheus. Draw an imaginary line from Zeta Cephei (apparent magnitude 3.33) to Delta Cephei (apparent magnitude 4.07) then extend this line  $\sim 1^\circ$  to W Cephei. W Cephei is an orange-red supergiant with an apparent magnitude of 7.57. It's also a variable double star. The primary is a pulsating semi-regular star ranging in magnitude from 7.02 to 9.20. The secondary component is 0.4 arcminutes away and has a magnitude of 8.89. The primary has a mass of 13.0 solar masses and is 21% cooler than the Sun. While W Cephei was cataloged in 1896, it wasn't known to be an eclipsing binary until 1936.



## List of the 25 Largest Stars in the Universe

The table below provides some interesting information about the 25 largest stars in the universe.

Rank	Name	Size (solar radii)	Distance (ly)	RA	Dec
1	UY Scuti	1,708±192	9500	18h 28m	-12.5°
2	V766 Centauri Aa	1,492±540	4,900 – 11,700	13h 47m	-62.6°
3	KY Cygni	1,420±284(-2,850±570)	5000	20h 26m	38.4°
4	AH Scorpii	1,411±124	1060	17h 12m	-32.4°
5	W Cephei	1329.62	163081.67	22h 37m	58.4
6	Westerlund 1 W237	1,241±70	8500	16h 47m	-45.9°
7	BC Cygni	1,230.27–1,140±228	2718	20h 22m	37.6°
8	IRC -10414	~1,200	6523	18h 23m	-13.7°
9	PZ Cassiopeiae	1,190±238(-1,940±388)	18120.1	23h 45m	61.9°
10	V1489 Cygni (NML Cygni)	1183	5250	20h 46m	40.1°
11	GCIRS 7	1,170±60–1,368	unknown	17h 45m	-29.0°
12	Westerlund 1 W26	1,165±58–1,221±120	11500	16h 47m	-45.8°
13	RW Cephei	1157.92	2741	22h 24m	56.1°
14	RT Carinae	1,090±218	1431	10h 45m	-59.5°
15	V396 Centauri	1,070±214 – 1,145.31	7389.29	13h 18m	61.7°
16	V602 Carinae	1,050±165	132	11h 14m	-60.2°
17	IM Cassiopeiae	1039.43	2886	1h 33m	62.4°
18	CK Carinae	1,013.42 – 1,060±212	526	10h 25m	-60.3°
19	KW Sagittarii	994.794 – 1,009±142	6200	17h 53m	-28.0°
20	UW Aquilae	946.285	150	18h 58m	-0.5°
21	AZ Cephei	944.221	14267.8	22h 9m	59.7°
22	CD Hydri	920	2198	1h 36m	-76.3°
23	CL Carinae	919.787	213	10h 54m	-61.2°
24	AZ Cygni	911+57	294	20h 58m	46.5°
25	NSV 25875	891	unknown	22h 19m	59.9°

### Supermassive stars

With the help of The James Webb Space Telescope (JWST), a team of researchers discovered evidence suggesting the existence of supermassive stars, termed as ‘celestial monsters,’ that may have been present during the dawn of the universe, just 440 million years after the Big Bang. These stars are believed to be up to 10,000 times the mass of the sun.

The researchers detected these traces by analyzing the light coming from globular clusters in the galaxy GN-z11, located 13.3 billion light-years away from Earth. They observed high levels of nitrogen, which suggests the combustion of hydrogen at extremely high temperatures, something only supermassive stars could achieve.

These stars, burning at extremely high temperatures, generated heavier elements and influenced the composition of later, smaller stars. By the look of it, our current list of the largest stars in the known universe could soon be outclassed by these recent discoveries. Exciting times!

## Sun Spot On March 23, 2024

By Gerald Drake



Photograph taken through 90 mm refractor with solar filter using an Olympus EPM1 Mirroless Camera.

Images stacked using Focus Stacker. Post processing with GIMP. First attempt imaging the sun.

# Solar Eclipse Path - April 8, 2024

By Tim Kelly



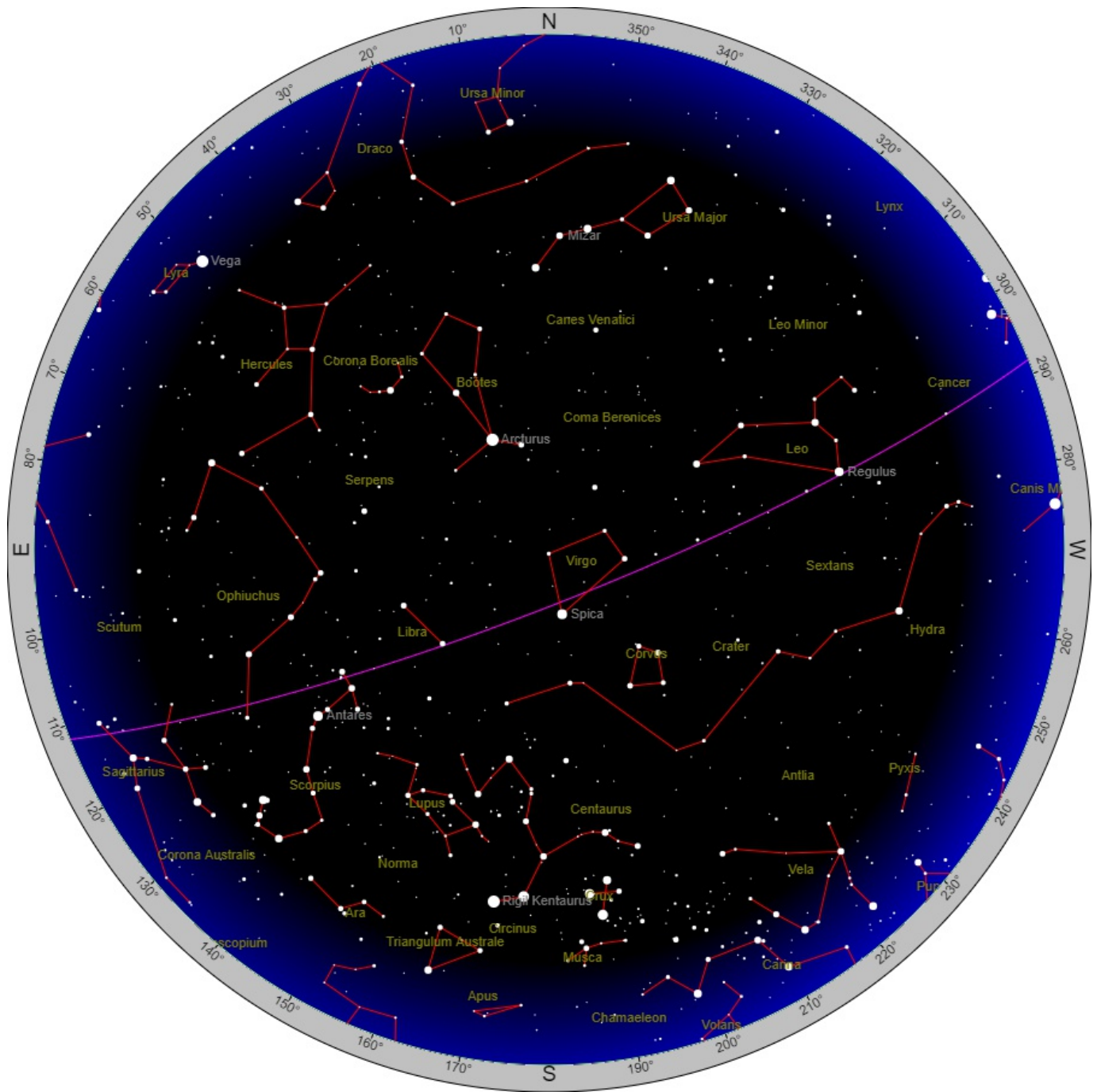
## Total Solar Eclipse Path

Tim Kelly



source: American Astronomical Society

# Heavens Above Sky Chart April 2024



## Sky Chart Parameters

Year	Month	Day	Hour	Minute
2024	April	15	00	01