

ASTROGATOR

Volume 1

Number 10

December 2023

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: December 9th @ 6:00 pm
Location: Hampton Plantation
Gates open @ 6:00 pm



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Grand Strand Astronomer's Social Media

[Grand Strand Astronomers Web Site](#)

[Grand Stand Astronomers Facebook](#)

Header photograph: NASA releases ultra-HD video of the sun | GMA

Thoughts from the Editors

We've had a great year so far. Hope you've been able to get and see night sky with the clear skies we've been having. Our club had a successful viewing at Hampton Plantation on September 16. About 20 people came out and it was near perfect seeing conditions. We also had a public viewing for the partial eclipse at CCU. It was lightly attended and the clouds moved in before the eclipse was over; however, we did get some great views with the Hydrogen Alpha telescope and also with a telescope outfitted with a white light filter. Those who got to see it were impressed.

In November, we had an event with Brookgreen Gardens on the 18th. They had a good place for us to set up and appreciated us being there. Our club participation gets our name out there, so other organizations will reach out to us. So glad for the good participation from our club. When we do these events, we find many people are interested in astronomy and want to get started. Seeing our various telescopes gives them confidence they can do this too. So, bring your scope and share at the next public event.

Thank you to all those who contribute to our newsletter. It is full of information that will help us become better astronomers. Feel free to contribute. You don't have to be a great writer. Simply share your observations is a great help. If anyone is working on an Astronomical League program, share a few words about how that is going. Bought a new telescope or thinking of buying one, feel free to share that too. While we have articles from outsiders, we always prefer to hear from our own club members.

Note that our monthly meeting is shifting to the end of the month rather than the first. Our next indoor meeting is November 30. Our outdoor dark sky observing session is scheduled for December 9. Check our website <https://www.gsastro.org> for updates on events. Hope to see you there.

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.

This newsletter needs contributions of articles related to astronomy. Send articles to t.m.kelly349@gmail.com. Please provide name of author of article to protect Grand Strand Astronomer.

Grand Strand Astronomers - Membership

Grand Strard Astronomer's has no new members this mounth.

For existing members, our GSA 2024 membership dues are due in January 2024 (unless you joined in October, November or December 2023). These will be considered good for 2024.

GSA LEADERSHIP

Executive Officer

Ian Hewitt

Treasurer

John DeFreitas

Secretary

Gerald Drake

Social Media Coordinator

Denise Wright

Newsletter Editors

Gerald Drake

Tim Kelly

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.

Future Meetings and Outings

The next Hampton Plantation observation night is December 9th.

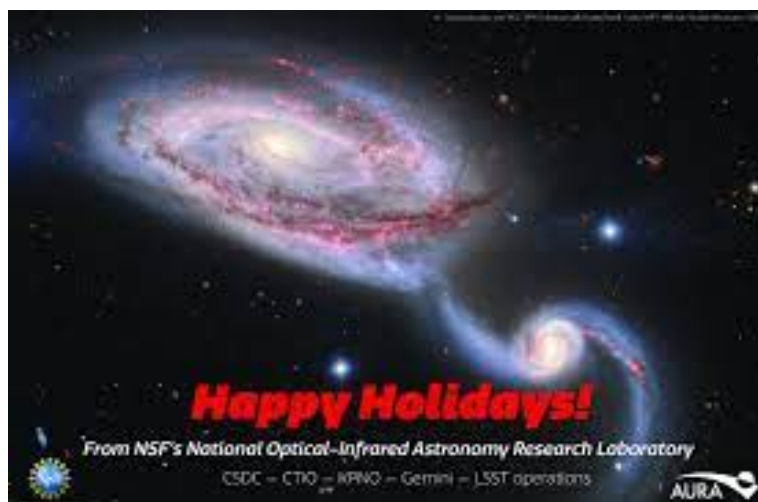
The next indoor Zoom meeting is December 28th.

Grand Strand Astronomer's November 2023 Meeting Recap

Gerald Drake

No November 2023 meeting recap due to the meetings moved to the last Thursday of each month.

**Happy Holidays to all of our readers from
Grand Strand Astronomy**



December 2023 Calendar Of Celestial Events

<http://www.seasky.org/astronomy/astronomy-calendar-current.html>

December 4 - Mercury at Greatest Eastern Elongation. The planet Mercury reaches greatest eastern elongation of 21.3 degrees from the Sun. This is the best time to view Mercury since it will be at its highest point above the horizon in the evening sky. Look for the planet low in the western sky just after sunset.

December 12 - New Moon. The Moon will be located on the same side of the Earth as the Sun and will not be visible in the night sky. This phase occurs at 23:33 UTC. This is the best time of the month to observe faint objects such as galaxies and star clusters because there is no moonlight to interfere.

December 13, 14 - Geminids Meteor Shower. The Geminids is the king of the meteor showers. It is considered by many to be the best shower in the heavens, producing up to 120 multicolored meteors per hour at its peak. It is produced by debris left behind by an asteroid known as 3200 Phaethon, which was discovered in 1982. The shower runs annually from December 7-17. It peaks this year on the night of the 13th and morning of the 14th. This should be a great year for the Geminids. The nearly new moon means dark skies for what should be an excellent show. Best viewing will be from a dark location after midnight. Meteors will radiate from the constellation Gemini, but can appear anywhere in the sky.

December 21, 22 - Ursids Meteor Shower. The Ursids is a minor meteor shower producing about 5-10 meteors per hour. It is produced by dust grains left behind by comet Tuttle, which was first discovered in 1790. The shower runs annually from December 17-25. It peaks this year on the night of the 21st and morning of the 22nd. The waxing gibbous moon will block out most of the faintest meteors this year. But if you are patient, you should still be able to catch a few good ones. Best viewing will be just after midnight from a dark location far away from city lights. Meteors will radiate from the constellation Ursa Minor, but can appear anywhere in the sky.

December 22 - December Solstice. The December solstice occurs at 03:21 UTC. The South Pole of the earth will be tilted toward the Sun, which will have reached its southernmost position in the sky and will be directly over the Tropic of Capricorn at 23.44 degrees south latitude. This is the first day of winter (winter solstice) in the Northern Hemisphere and the first day of summer (summer solstice) in the Southern Hemisphere.

December 27 - Full Moon. The Moon will be located on the opposite side of the Earth as the Sun and its face will be fully illuminated. This phase occurs at 00:34 UTC. This full moon was known by early Native American tribes as the Cold Moon because this is the time of year when the cold winter air settles in and the nights become long and dark. This moon has also been known as the Long Nights Moon and the Moon Before Yule.

December 2023 Star Parties

<http://www.seasky.org/astronomy/astronomy-events.html>

None scheduled for the month of December 2023

The Messier Catalog

<http://www.seasky.org/astronomy/astronomy-messier.html>

Deep Sky Objects

Portrait of Charles Messier, author of the Messier catalog of deep sky objects "The Messier Catalog", sometimes known as the Messier Album or list of Messier objects, is one of the most useful tools in the astronomy hobby. In the middle of the 18th century, the return of Halley's comet helped to prove the Newtonian theory, and helped to spark a new interest in astronomy. During this time, a French astronomer named Charles Messier began a life-long search for comets. Messier found a small cloudy object in the constellation Taurus. He began keeping a journal of these nebulous (cloudy) objects so that they would not be confused with comets. This journal is known today as the Messier Catalog, or Messier Album. The deep sky objects in this catalog are commonly referred to as Messier objects.



Although many deep sky objects can display a wide array of colors in long exposure photographs, the human eye is not sensitive enough to see most of these colors through a small telescope. The photos in this section are presented in black and white to best represent the view that would be seen through a telescope. Many of these photos are copyright protected. Click [here](#) for copyright & source information. Click the link below to open the catalog or use the menus below to help locate a specific object within the catalog.

Five Opportunities To See Jupiter's Moons In Interesting Configurations

Sky and Telescope

Joe Rao

It is always fascinating to watch Jupiter's Galilean satellites change position relative to each other from night to night and even hour to hour. But in the coming months, observers have the opportunity to see some unusual geometries among Jupiter's biggest moons.

Io, the innermost satellite, takes only 1.8 days to make one revolution around Jupiter. Europa takes twice as long at 3.6 days, while Ganymede circles Jupiter in 7.2 days (exactly four times Io's period). Callisto is the farthest out from Jupiter of the Galilean moons and takes 16.7 days to complete one orbit around the giant planet.

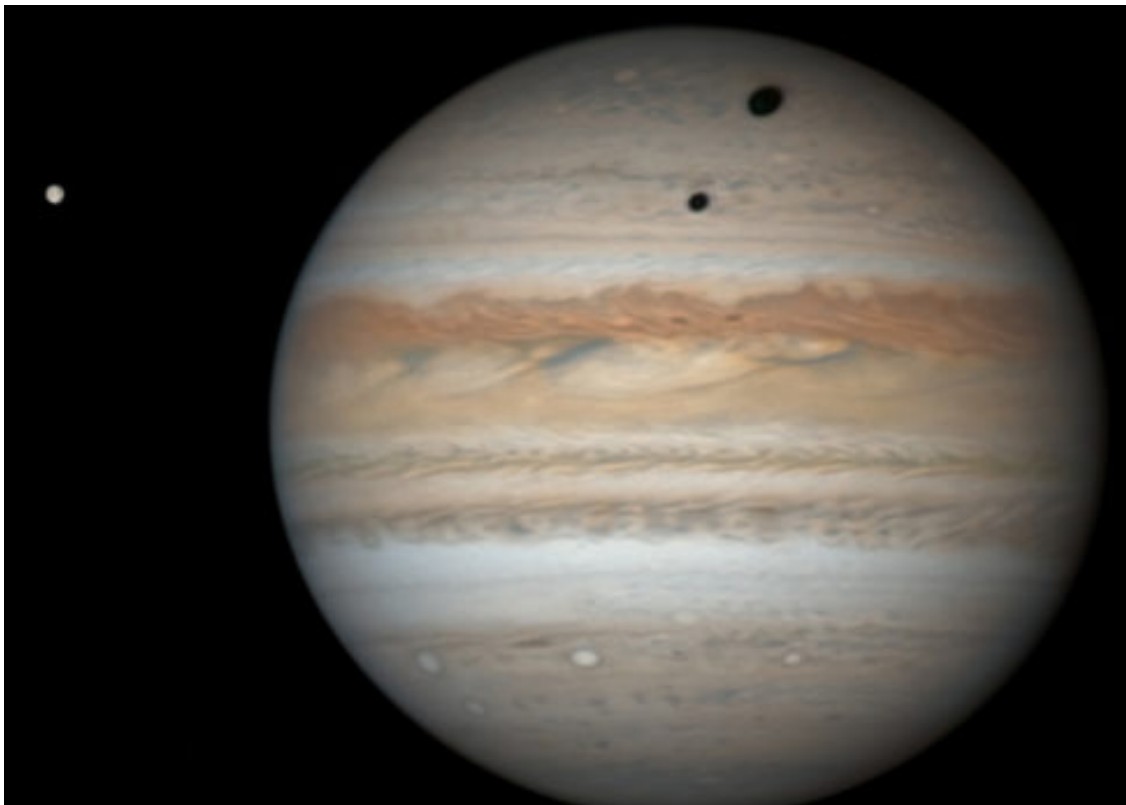
It is obvious that since they are constantly moving at different speeds, the positions of all four satellites at any particular time, is peculiar to that particular moment.

Occasionally three satellites bunch up in a group, as seen on the sky. When they do, there is usually a moment when they appear to form a geometric pattern such as a straight line or triangle. If such an alignment is at a high angle to the plane of their orbits, the view in your eyepiece will be quite at odds with the typical idea of how Jupiter's moons are supposed to look.

Four such lineups will be visible from at least part of North America during the current Jupiter apparition, which stretches from November into next April. When two or three satellites pass near to one another, their motion seems particularly fast, so the event will catch your attention. The human eye is quite sensitive to the trueness of a straight line, so these unusual appearances probably will not last more than several minutes at most.

In addition, there will be some interesting interactions of Jupiter and Callisto with a faint background star in Aries on a night in mid-January. You'll also have a chance to catch the unusual sight of Jupiter accompanied by one lone satellite (again Callisto), also in January.

I cross-checked the times and configurations using different planetarium software (Starry Night Pro 8, Stellarium, Dance of the Planets), but my times may still be off by several minutes because the Galilean satellites have very complex orbital dynamics, and the calculations are still not perfect. Perhaps the best available theory concerning the satellites motion is a 1977 study by Jay H. Lieske of Caltech's Jet Propulsion Laboratory.¹



[This Amazing Video of Europa and Io Orbiting Jupiter](#)

If Betelgeuse Goes Supernova, Earth Will Have Neutrino Rain — That's Just the Start

BY ALBERT ZIJLSTRA AND THE CONVERSATION

JUNE 17, 2023



imagenavi/imagenavi/Getty Images

The bright, red star Betelgeuse in the constellation Orion has shown some unexpected behavior.

The bright, red star Betelgeuse in the constellation Orion has shown some unexpected behavior. In late 2019 and 2020, it became fainter than we had ever seen it — at least in records going back more than a century. Briefly, it became fainter (just about) than Bellatrix, the third brightest star of Orion. This event became known as the “great dimming.”

But Betelgeuse has since become bright again. For a few days this year, it was the brightest star in Orion — brighter than we have ever seen it. Both events led to speculation about whether its demise in the form of an explosion was imminent. But is there any evidence to support this idea? And how would such an explosion affect us here on Earth?

Stars are, by and large, remarkably stable. They shine with the same brightness year after year. But there are exceptions, and some stars — dubbed variable stars — change in brightness. Most famous is Mira, the “star of wonder,” which was discovered as a variable star by the German pastor David Fabricius in 1596 — it is a pulsating star that regularly expands and contracts.

Algol is another well-known example: it is periodically eclipsed by a companion star. There are around 30 such variable stars visible to the naked eye, although it requires care to notice their variation in brightness.

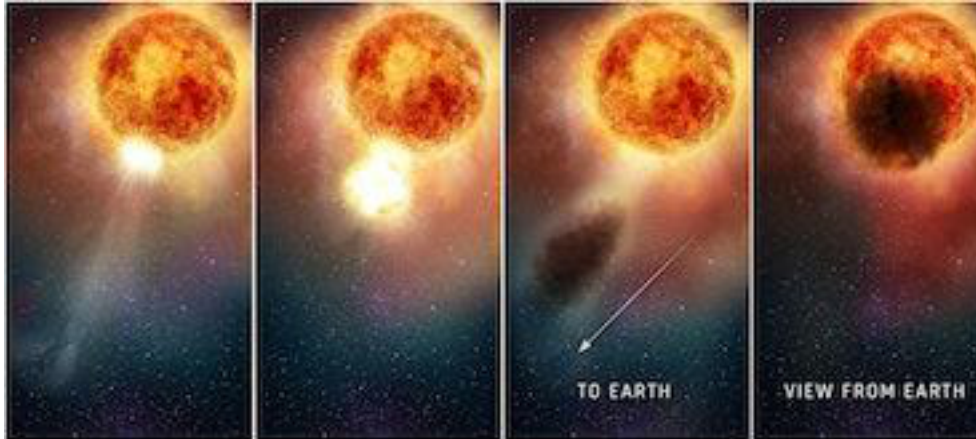
Betelgeuse, the seventh brightest star in the sky (discounting the Sun), is the brightest of the variable stars. Sometimes Betelgeuse becomes nearly as bright as Rigel (the blue fourth brightest star in the constellation), while at other times, it is notably fainter. The variation is caused by pulsations similar to those of Mira, although not as large or as regular.

Sometimes, however, a star can briefly become extremely bright. The brightest and rarest among those are the supernovas, formed when an entire star ends its life in a powerful explosion.

Supernovas can be bright enough to be visible during the day, although that has only happened a few times in the past 1,000 years. A nearby, bright supernova is the kind of event astronomers live for — but which few of us will ever get to see. We live in hope.

MYSTERIOUS BEHAVIOR

Although Betelgeuse is a variable star, the great dimming in 2021 was extreme. Within months, it had, in fact, dimmed by about 60 percent. This was eventually shown to be caused by a cloud. Stars such as Betelgeuse are continuously expelling gas and dust. A clump of gas in the wind, as large as the star itself, was obscuring half the star. In fact, images of the star showed the southern half of it to be missing. It appears that some stars, like Betelgeuse, have weather.



Betelgeuse dimming over time, with cloud seen in last panel.

NASA, ESA, AND E. WHEATLEY (STSCI)

That said, we still don't know what caused the sudden brightening; it is now 50 percent brighter than usual. But an impending supernova doesn't seem that likely. In these kinds of stars, a supernova explosion is triggered in the core. Brightness variations, on the other hand, are a surface phenomenon.

The extreme brightening may, in fact, be due to the same dust cloud that caused the dimming, now reflecting light from the star towards us and making it appear brighter.

But we can't be sure, and astronomers are excited. Betelgeuse is about 15 to 20 times more massive than the Sun, and stars of this mass are expected to end their lives in a powerful explosion known as a supernova. Betelgeuse's red color shows it is a , meaning it's already approaching the end of its life.red supergiant

But that end may still be a million years away. Stars like Betelgeuse can live in excess of 10 million years — a very brief period to astronomers but a very long time to anyone else.

Despite this, new models have been run, with some suggesting that a supernova could happen within a few thousand years, while others put this event at 1.5 million years into the future.

There are many mysteries around Betelgeuse. We don't know its precise mass — and even its distance is disputed. It is argued that the star merged with a smaller companion recently: this would explain why it rotates faster than expected — large stars usually do.

Some ancient manuscripts refer to the star as similar to yellowish Saturn rather than ruddy Mars. Has the star changed color? That could point to fast evolution — meaning a supernova may happen sooner rather than later.

EXPLOSION DYNAMICS

If Betelgeuse does go supernova, what would it look like? The star is around 500 light years away. Following an explosion, we first would detect a rain of massless particles called neutrinos, which would be harmless to us. After that, the star would quickly brighten.

After one or two weeks, it would shine with about the same brightness as the Full Moon. Betelgeuse would then fade over the next several months but remain visible in the daytime for six to 12 months. At night, you should be able to see it with the naked eye for another one or two years. But after that, we would never see it again — Orion would forever lose its red sparkle.

Is there any danger to us? Supernovas produce high-energy particles called cosmic rays, which can get past the shield of the Earth's magnetic field. But the amounts would be small compared to other radiation we receive for all but the nearest supernovas.

A supernova explosion would also create radioactive iron. In fact, this substance has been found in Earth's seabed and on the Moon, believed to have formed in a supernova explosion between 2 and 3 million years ago. That supernova was perhaps 300 light years from us, closer than Betelgeuse, but far enough to cause no major problems for life on Earth.

A very close supernova, closer than 30 light years, could cause major problems: the cosmic rays could cause ozone destruction and dangerous UV levels on Earth. It could reduce ozone by half over a period lasting hundred to thousands of years: this level is considered capable of causing an extinction event. But such a close supernova would be very rare and may happen only once per billion years.

Ultimately, Betelgeuse may still be around for some time. And that's good, as it is a fascinating and mysterious star. We still have a lot to learn from it.

This article was originally published on The Conversation by Albert Zijlstra at the University of Manchester. Read the original article here.

New Type of Star Gives Clues To Mysterious Origin of Strongest Magnets In Universe

Independent

By; Holly Patrick



A new type of star is providing clues on the mysterious origin of the strongest magnets in the universe.

Magnetars - super-dense dead stars with ultra-strong magnetic fields - are found all over the Milky Way. Astronomers are not exactly sure how they form, but researchers - using multiple telescopes around the world - have uncovered a living star that is likely to become a magnetar. Scientists say star HD 45166's entire surface is as magnetic as the strongest human-made magnets and the observation marks the discovery of the very first massive magnetic helium star.

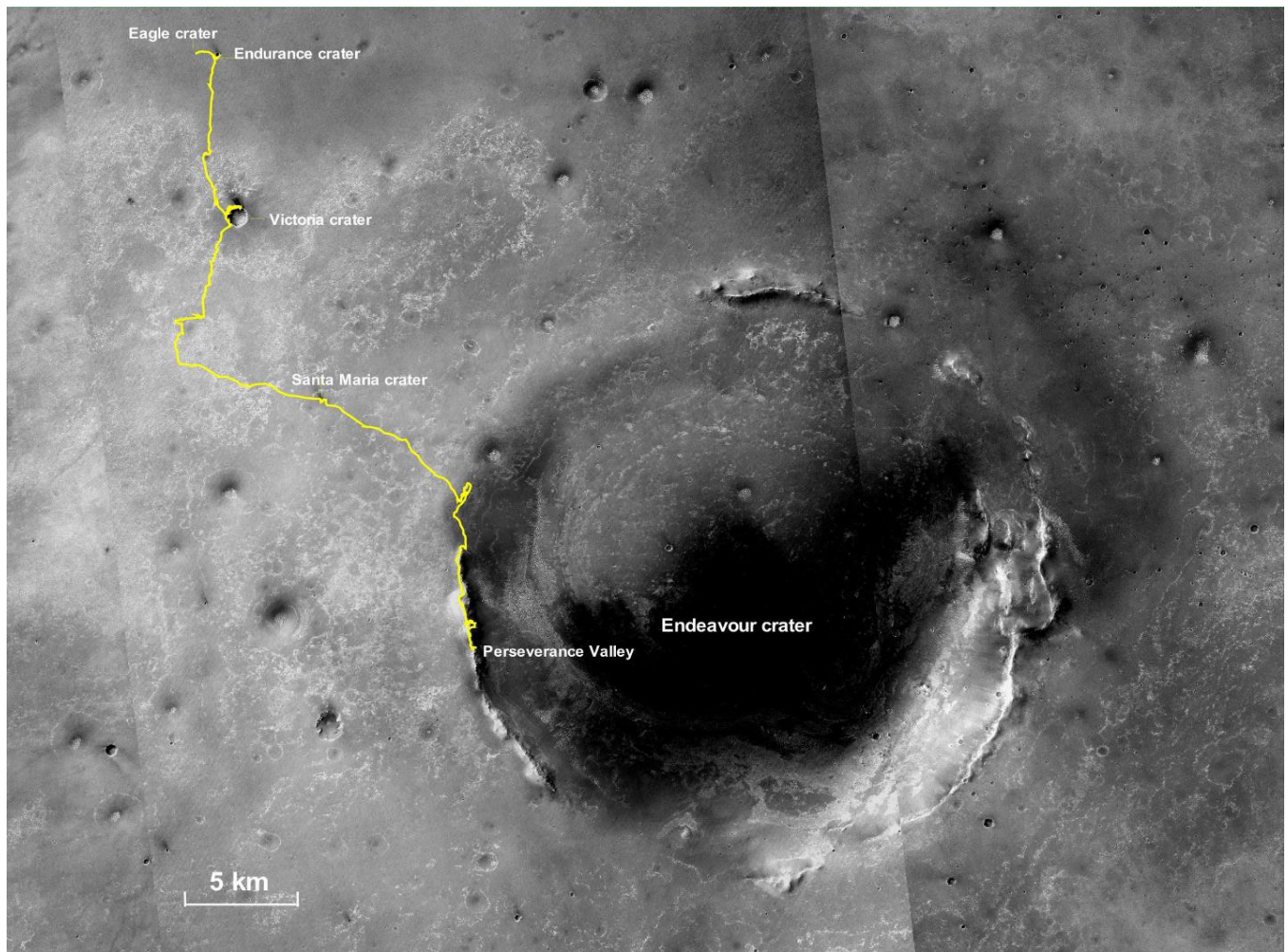
I'll Be Seeing You

Megan Eskey

The next step for Reloquence is to begin charting roads on Mars. We have completed our maps of the three inaugural roads on the Moon.

One possibility is to take an existing rover traverse, to extend it and to apply the Eskey System to generate an address. Nomenclature guidelines can help to inform the names of the roads, with nearby natural features providing inspiration. The Endeavour crater is about the size of Washington DC. One possible name is Endeavor Road. Another is Opportunity Road, named for the Opportunity rover that created this traverse, also known as MER-B (Mars Exploration Rover – B) or MER-1. Opportunity is a robotic rover that was active on Mars from 2004 until 2018 for 5111 sols, or 57 times its designed lifespan. As NASA ended their attempts to contact the rover, the last data sent was the song "I'll Be Seeing You" performed by Billie Holiday. Another possibility is Holiday Road.

We have completed a spectacular poster of three inaugural roads on the Moon, with color flyouts that suggest the peaks of eternal light at the polar regions. Email contact@reloquence.com to get on the waitlist. Add your company's logo and give them as gifts to your preferred clients, family and friends.



New Comet – C/2023 A3 – Could Be Bright In 2024

Kelly Kizer Whitt and Eddie Irizarry

March 3, 2023

Astronomers have found a new comet! They've labeled it C/2023 A3 (Tsuchinshan-ATLAS). And it's something to look forward to, as it makes its closest approach to the sun (its perihelion) more than a year from now. So, the bad news is it's not until 2024. But the good news is that early estimates of the comet's brightness suggest it'll be bright.

Perihelion for this comet will come on September 28, 2024. At that point, some estimates are suggesting it might be around magnitude 0.7. That brightness rivals some of the brightest stars in the sky (though, for comets, the brightness is diffuse, not in a single point).

And of course, as with all comets, be aware that they are finicky balls of ice and dust, often not living up to expectations.

Discovery and naming

The Asteroid Terrestrial-impact Last Alert System (ATLAS) telescope in South Africa discovered Comet C/2023 A3 on February 22, 2023. Additionally, observers at Purple Mountain (Zijin Shin or Tsuchinshan) Observatory in China found the comet independently on images from January 9, 2023. Therefore, the comet also has the nickname Tsuchinshan-ATLAS.

At discovery, the comet was still 7.3 astronomical units (AU) from the sun, and shining at a dim magnitude 18.

Where's the comet now?

Preliminary analysis of its trajectory suggests comet "A3" completes an orbit around the sun every 80,660 years. As of March 2023, the celestial visitor is currently between the orbits of Saturn and Jupiter. Although some specific facts and dates might be updated, currently it appears that closest approach to Earth should occur on October 13, 2024 at 05:38 UTC.

An amazing detail of comet "A3" is its blazing speed: 180,610 miles per hour (290,664 km/h) or 80.74 km per second, relative to Earth.

When does the fun begin?

Amateur astrophotographers in the Northern Hemisphere may start getting good images of the approaching comet by early June 2024, as the visitor glides by the constellation of Virgo. The comet gets lost in the glare of the sun by August 2024. Then it passes at perihelion – or closest to the sun – on September 28, 2024. Observers with an unobstructed view of the eastern horizon might get a view of the comet during perihelium, especially if the visitor develops an impressive tail.

The development of a nice tail is a possibility, because the comet will be a lot closer to the sun than the planet Venus. In fact, it will be so close to our star that during perihelion, comet A3 will be skimming the orbit of planet Mercury. However, this closeness to our star comes with a known risk for comets; the possibility of disintegration. That's the reason why there is a current debate on whether this comet will or will not survive its approach to the sun.

If comet A3 survives perihelion, it'll be too close to the eastern horizon during its closest approach to Earth. The good news is that the high speed of the comet will get it higher in the sky during the following nights after passing by our planet, thus making it easier to spot in the western sky.

Closest approach to Earth

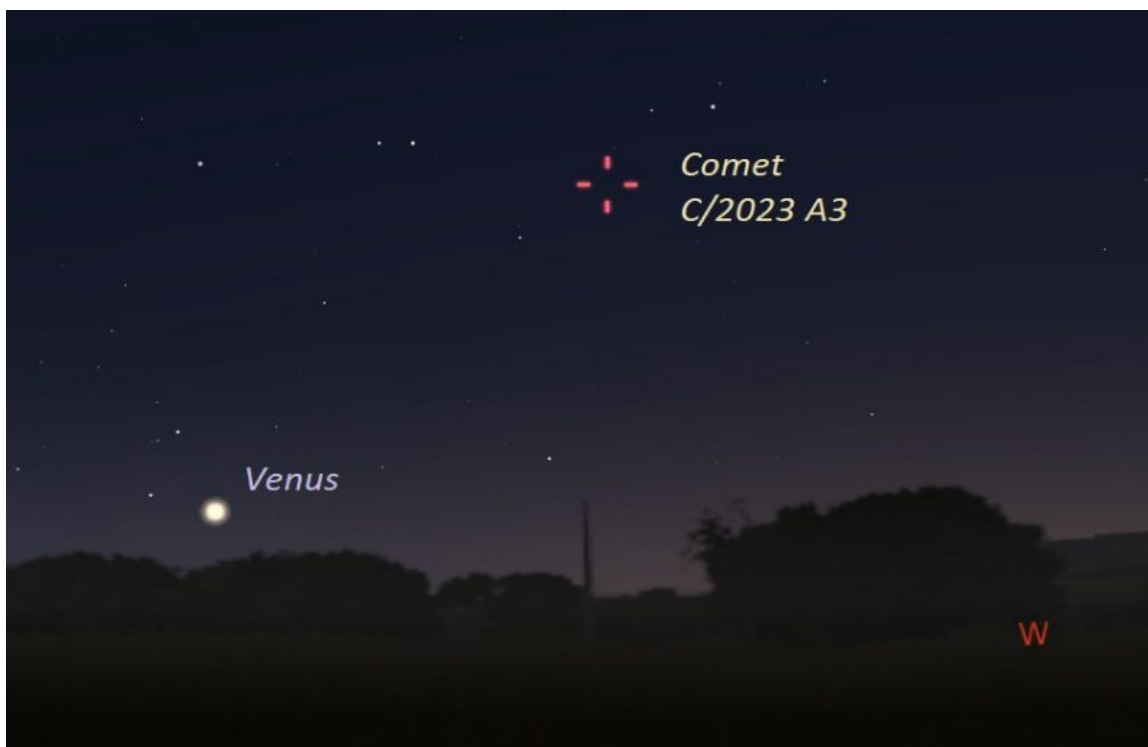
Its closest approach to Earth comes on October 13, 2024. At that point, it could be bright enough to reach magnitude -0.2. As it passes between Earth and the sun, forward scattering could make the comet appear even brighter. The reflection of sunlight off the dust and ice could enhance its light in our direction, making it brighten considerably, up to magnitude -5. That is, if it survives.

The path of Comet C/2023 A3

After the comet gets closest to the sun, it will swing around near Earth. But as it does so, it passes almost directly between Earth and the sun, making it challenging to view. In early October, the comet will be in the dawn sky in Leo and near the constellations Hydra and Crater.

Then in late October, as it appears on the other side of the sun, it will move into the evening sky, passing through Serpens Caput and into Ophiuchus.

Finder charts for C/2023 A3



Around October 17, 2024, comet C/2023 A3 (Tsuchinshan-ATLAS) might be easier to see in the western sky, as the comet gets higher each subsequent night. Illustration by Eddie Irizarry using **Stellarium**.

Bottom line: A newly discovered comet, C/2023 A3 (Tsuchinshan-ATLAS), could be quite bright in October 2024.

I Bought a New Telescope!

By Gerald Drake

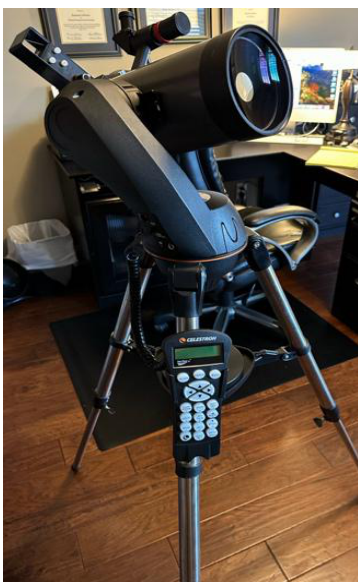
So why did I buy a new telescope? Because I have what some astronomers call “aperture fever.” Don’t get me wrong, I was happy with my simple 8-inch Dobsonian, and will use it the rest of my life, but as I progress in astronomy, I started wishing for more aperture at times.

So how much aperture does one need? As much as they can handle of course. So, what can I handle? That is a matter of lifestyle, budget, and physically what I can lift and assemble. One of the advantages of attending the astronomy outings at Hampton Plantation and other places is to see what telescopes that people are using, see how they set them up, and getting to look through them. This gave me a lot of ideas for my next telescope.

So now with that fever, I started looking and researching for something larger than 8”. I use YouTube a lot to see reviews on various models of telescopes and accessories. I knew I wanted something larger than the 8-inch, but how much larger. I quickly ruled out a 14 inch after seeing one. Way too big for me to handle and store. I looked then at Meade 10-inch and Celestron 11-inch models and I was seriously thinking on of these, until I consulted with one of our club members who suggested I might like the Celestron 9.25 inch. A huge advantage to belonging to a club is the wealth of expertise available. I consulted with two members before finally deciding on the Celestron CPC 9.25 GPS XLT computerized-telescope to replace my SLT 127 computerized telescope.

Budget is a huge factor in buying a telescope. I picked a budget that suited me based on what I saw out there in the market place and what I wanted to spend. I was able to stick to that budget.

Another consideration is the mount. Mounts can be as expensive as the telescope, if not more. An astrophotographer will always chose an equatorial mount so that they can take long exposure shots without trailing. I am not yet an astrophotographer (yet). I have taken a few pictures of the moon and Saturn, but found I was spending too much time taking the picture and not learning about the night sky. So, I’ve put astrophotography on hold for a while. I picked an alt-az fork type mount. This gives me ease of setting up and taking down. In case I want to pick up astrophotography in the future, I did buy Celestron’s wedge that will fit on my fork mount and prop up my telescope in a position that mimics an equatorial mount. That should last me a while. If I really get astrophotography fever, then I can buy an equatorial mount and adapt my CPC 9.25 to it. I’ve been told that it is easy enough to do.



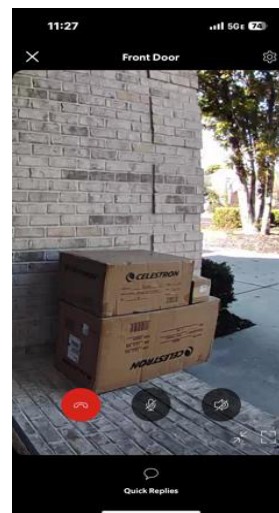
My Old Telescope

So, what to do with my old telescopes? The Celestron 127 SLT served me well for about 6 years. It was only a 5 inch aperture, but was computer controlled with decent optics. I had fun learning on it and it was a good scope to travel with, but I’m running out of room to store telescopes. A club member suggested I try and sell it on Astromart. So, I signed into Astromart and put out an ad with pictures. My SLT 127 sold in about two weeks. Selling a telescope was a new experience for me. I learned how to send invoices with PayPal and how to ship so that it arrives safely. Thanks to the UPS store for packing and shipping. As I mentioned, I’m happy with the 8-inch Dobsonian and it is not too difficult to store, so I’m hanging on to it and will use it often (I think) because it is so easy to set up and gives great views. I also have a couple of refractors that I use from time to time. They too are simple to set up and do not take up a lot of storage space.

It is indeed a good day when you receive a new telescope. Mine arrived 10 days after placing my order. It came directly from Celestron to my front door.

Unboxing and assembly was not difficult. The tripod came mostly assembled. All I had to do was install the tray which doubles as a stop to hold the legs in place. I like the design of this. It is robust yet easy to set up and take down.

The tube was packed very well. It was assembled already on the fork mount. All I had to do was lift it out of the box. That took a while. At 60 pounds, the tube assemble requires a bit of effort to lift. Once it cleared the box, it was manageable.



Now with the telescope fully assembled, it was time to learn. This model does not have internal batteries, so all power has to be supplied by an external source. With my previous telescope, the SLT 127, I had purchased the Celestron Power Tank and used it to keep from running the internal batteries down. So, I've kept it and will use it with the CPC 9.25. Also, I have a small inverter that uses the 40 volt batteries of my lawn equipment to give me 120 volt. I purchased the Celestron 120 volt power cord adapter for the CPC 9.25 and connected it to this inverter. It is working fine. So, I have two power sources that I can use.

The size of my new telescope was a bit of surprise. Sure, I saw the dimensions before ordering, but setting it up makes you realize just how big it is. I'm glad I didn't go with the 11 inch.

Of course, the clouds rolled in as I was setting it up and they stayed for the next 4 nights. Finally, I was able to test it out on the night sky and it was worth the wait. I pointed it at the moon, then Jupiter, then Neptune. This is the first time I was able to see Neptune with one of my telescopes. Saturn and Uranus were blocked by trees, so I didn't get to see them. Very sharp and clear views. The details seen on the moon were amazing.



My New
Telescope



I went through the steps to do the NexStar Sky Align, and after a couple of tries got it to work. It was surprisingly accurate. I used it to track to some of the Messier objects I've been trying to find and was surprised at how clear they were in this scope. Even with light pollution I was finally finding objects from my driveway.

The first night I stuck with the eyepiece supplied with the scope which is a 40 mm, 1-1/4" Plossl. A couple of nights later, I took the scope back out and tried various other eyepieces. I'm liking the 2" ones and settled on 3 that I'll use with this scope: a 32mm 72 degree that I'll use for general viewing and deep sky objects, a 23mm 80 degree that I'll use for planets, and a 15mm 80 degree that I'll use for higher magnification.

So, I am happy with my purchase and the views I get. Will I take up astrophotography? Maybe, later. But with the CPC 9.25, I certainly have the option to try.

Thanks for letting me share about my purchase. If you have any questions, feel free to reach out to me at gwdrake2018@gmail.com.

What's Up, Doc? †

December 2023

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Astronomy League

This document tells you what objects are visible this next month for many of the Astronomical League Observing Programs. If you are working on one of the more advanced observing programs, then I assume that you are also probably tracking where your objects are all the time. I concentrate on the more common and starter level programs. This information is based on 9 PM Eastern Time.

Naked-Eye Observing Programs

Meteors – any night, any time, anywhere, the darker the sky the better. The major meteor showers are shown in **BOLD** (times are local time in Houston, TX):

<u>Shower</u>	<u>Duration</u>	<u>Maximum</u>	<u>Type</u>
Geminids	12/7 to 12/17	12/13	Major
Ursids	12/17 to 12/26	12/22	Moderate
Coma Berenicids	12/12 to 1/23	12/20	Minor
Sigma Hydrids	12/3 to 12/15	12/11	Minor
Monocerotids	11/27 to 12/17	12/8	Minor
Dec Phoenicids	11/28 to 12/9	12/6	Minor
Puppids/Velids	12/1 to 12/15	12/6	Minor

Constellations, Northern Skies – any night, any time, anywhere, the darker the sky the better.

Last Chance this cycle: Hercules, Scutum, Aquila, Microscopium.

Transit: Cepheus, Cassiopeia, Andromeda, Pegasus, Pisces, Aquarius, Cetus, Phoenix, Sculptor.

New arrivals: Auriga, Taurus, Orion, Eridanus, Fornax, Phoenix.

Binocular Observing Programs

Binocular Messier – Monthly highlights include:

Easy – 2, 15, 27, 29, 31, 34, 35, 36, 37, 38, 39, 42, 45, 50, 52, 103.

Medium – 30, 33, 78, 79, 81, 82.

Hard – 1, 32, 56, 71.

Big Binoculars – 72, 77, 110.

Deep Sky Binocular – Monthly highlights include:

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 38, 47, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60.

Other Observing Programs

Messier

In addition to those listed under Binocular Messier, check out: 43, 57, 74, 76.

Caldwell

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 22, 23, 24, 25, 27, 28, 30, 31, 33, 34, 37, 39, 41, 42, 43, 44, 46, 47, 49, 50, 51, 55, 56, 57, 62, 63, 65, 67, 70, 72.

Double Star

2, 3, 5, 6, 7, 8, 10, 13, 16, 19, 21, 23, 24, 27, 28, 30, 31, 33, 34, 36, 38, 42, 44, 46, 47, 48, 49, 50, 53, 55, 56, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 88, 89, 90, 95.

Other Observing Programs (continued)

Planetary – These are the tasks that can be done this month:

Mercury, Venus, Mars, and Ceres are not visible in the evening sky.

Sun – Any clear day is a good time to get those sunspots. Sunset is 1649 ET at mid-month.

Moon: The Maria requirement can be done any time the moon is visible. Look after 12/19 and before 12/5 for the best views.

The Highlands requirement can be done at the same time.

The Crater Ages requirement is best done on 12/18 and 12/19.

The Scarps requirement is best done on 12/20.

Occultations occur all the time, the bright ones can be found on the internet. Objects disappear on the East side of the moon.

Asteroids – Course Plotting and Measuring Movement requirements can be done at any time on any asteroid. See above to identify the bright ones this month.

Jupiter is in Aries and is up all evening mid-month.

Saturn is in Aquarius and sets at 2206 mid-month.

Uranus is in Aries and is up all evening mid-month.

Neptune is in Pisces and is up all evening mid-month.

Pluto, the Dwarf Planet, is in Sagittarius and sets at 1915 mid-month.

On November 29 and 30

The Sun aligns with the streets of Manhattan. But on November 30 it's perfectly aligned. So if the weather conditions are not ideal, you can always try the day before.

These are all the updates for November. You are welcome to enjoy the beautiful sky view throughout the whole month. Take a camera with you, and gather some gorgeous pics. If you need help, I'm here for you. Just whistle or leave a comment below. I'll do my best to solve your problem.

Lunar

New Moon – 12/23 at 0723 ET

Key timings are indicated below:

4 days, 12/16 7 days, 12/19 10 days, 12/22 14 days, 12/26

Old moon in new moons arms – before 0723 ET on 12/15, 10 % illuminated. (72 hr > New)

New moon in old moons arms – after 0723 ET on 12/9, 10 % illuminated. (72 hr < New)

Waxing Crescent – before 0723 ET on 12/14, 3 % illuminated. (40 hr > New)

Waning Crescent – after 0723 ET on 12/10, 3 % illuminated. (48 hr < New)

Other Astronomical Events this month:

12/2 – Phoenicids Meteor Shower

12/4 – Mercury at Greatest Elongation

12/6 – Neptune Stationary

12/7 – Puppids Meteor Shower

12/8 – Mercury Dichotomy

12/9 – Sigma Hybrids Meteor Shower

12/9 – Monocerotids Meteor Shower

12/12 – Mercury Stationary

12/14 – Geminids Meteor Shower

12/16 – Coma Berenids Meteor Shower

12/17 – Neptune at Eastern Quadrature

12/22 – Ursids Meteor Shower

12/31 – Jupiter Stationary

* - Although these clubs are not detailed in this “**What’s Up Doc?**” handout, you can get information on many of their objects by using the “**What’s Up Tonight, Doc?**” spreadsheet (version 4.1). To get your copy, talk to the Doc, Aaron Clevenson, by sending an email to aaron@clevenson.org. It is also available on the club website.

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