ASTROGATOR

Volume 1 **Number 12**

February 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: February 10, 2024 @ 6:00 pm
Location: Hampton Plantation
Gates open @ 6:00 pm

Inside This Months Newsletter

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

Insights From Ian

As we start a new year, we are looking forward to astronomical viewing opportunities this year. Just this spring, we are going to have a chance to do a Messier Marathon (an all night session where we try to view all the Messier objects in one night) and a solar eclipse (a total if you are going to travel).
Also, as always, spring brings galaxy season with opportunities to view and or image a lot of galaxies. Once the pollen departs, we will start scheduling some public outreach events. I hope you will join us for astronomical fun!
-I

GSA LEADERSHIP

Executive Officer
Ian Hewitt

Treasurer
John DeFreitas

Secretary
Gerald Drake

Social Media Coordinator
Denise Wright

Newsletter Editors
Gerald Drake
Tim Kelly

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**

Grand Strand Astronomers - Membership

Grand Strard Astronomer's had no new members for the month of January 2024.

Grand Strand Astromers' Membership Dues

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 concsidered good for 2024).

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 Astronomer's January 2024 Meeting Recap

Gerald Drake

Our January Meeting was held on Thursday, the 25th , at 7:00 PM on Zoom. The meeting is also shared on YouTube for those of you who could not make it. Here is the link:
https://youtu.be/MZMg7jumVAw

Ian opened the meeting and welcomed everyone to the new year. Our first outdoor viewing session for 2024 was clouded out. Hope this is not the trend for this year.

Be sure to attend next month's meeting as we'll be discussing the Messier Marathon coming up in March. Ian is hoping to get a speaker who has plenty of experience with these to share how to prepare for one. This will be on March 9. The SCDNR will be sending representatives to this event to observe and see what we do at Hampton. The Lowcountry Stargazers out of Charleston will also be attending. This is an all-night event.

Ian announced that the groups.io is revalidating users. If you get an email notice about revalidating with groups.io, it is not SPAM. Be sure to answer it. Ian will send out a test email soon to make sure we're all still on the distribution list.

The presentation was on the upcoming solar eclipse and was given by one of our new members, Ken Legal. Ken has experienced multiple eclipses all over the world. He is also a budding astrophotographer and shared some of his excellent photos. Ken made his presentation for the first time in 2017 and shared it with students and various clubs to show the How, Why, and how to Observe eclipses.

The 2024 total solar eclipse will be on Monday, April 8, and will cross North America, passing over Mexico, the United States, and Canada. You'll have to travel to see it. Some of the club members shared their plans of where they will see it.
Ken reviewed the various types of eclipses, what happens during one, and how each one is different and why. I highly recommend you watch the YouTube video of our meeting to get the full details he covered. Everyone enjoyed what he shared. He finished with this thought: "Make sure you experience the eclipse and don't get so wrapped up in your equipment that you forget to see it for yourself. The actual seeing of the eclipse is what you'll remember the rest of your life."

There was a follow-up question about cloud cover potential at various locations along the path of the eclipse. There are projections based on past experiences. These show the farther southwest you go, the less likely for clouds to form. So, you're better off in Mexico than Missouri as far as cloud potential goes.

The presentation ended and the YouTube livestream was also ended.

There was a general discussion that followed. Ian noted that if folks do not want to do the Messier Marathon, they are more than welcome to do their normal observing at Hampton on March 9th.

To photograph the eclipse, you'll need to practice using your filters to take pictures of the sun. It is noted that during the eclipse, you need to remove the filter so you can see it. The sun is blocked by the moon so you won't damage your eyes. Be sure to try out different exposures. Ken recommended shooting in brackets so that you'll get different aperture settings. There is plenty of information online to help you with the proper exposure settings.

One of the members recommended the Photopills app that helps you plan your shoots. Here is the link: **https://www.photopills.com/**. This looks really cool. It shows you what the sky will look like at the time and place you want to shoot and gives recommendations for camera settings.

Our next public observing is February 10 at Hampton Plantation, our Dark Sky site.

Our next indoor meeting is February 22. Hope to see you at one of these.

Other club business: If you have not done so, please pay your dues for 2024 which are due beginning January 1. These can be paid on line or via check in the mail.

See our website for info: **https://www.gsastro.org/joinrenew/**

Meeting adjourned.

February 2024 Calendar Of Celestrtial Events

http://www.seasky.org/astronomy/astronomy-calendar-2024.html
Tim Kelly

February 1, 01:04 – Spica 1.7°S of Moon
On this date and time, the bright star Spica will appear about 1.7 degrees south of the Moon in the night sky. Spica is the brightest star in the constellation Virgo and forms a prominent celestial pair with the planet Jupiter. This conjunction between the Moon and Spica will create a beautiful celestial sight for stargazers.

February 2, 11:00 – Mercury at Aphelion
Aphelion is the point in Mercury's orbit where it is farthest from the Sun. On this date, Mercury will reach its aphelion, and it will be at its maximum distance from the Sun. This event has an impact on Mercury's orbital speed, which is slower at aphelion than at perihelion (the closest point to the Sun).

February 2, 17:18 – Last Quarter Moon
The Last Quarter Moon is the third and final quarter phase of the Moon during its monthly cycle. At this point, the Moon appears half-illuminated, with the left half visible from the Northern Hemisphere and the right half visible from the Southern Hemisphere.

February 4, 18:15 – Antares 0.6°S of Moon
Antares, a red supergiant star in the constellation Scorpius, will be located about 0.6 degrees south of the Moon on this date and time. The bright reddish hue of Antares makes it easily distinguishable from other stars in the night sky.February 8, 22:00 – The Alpha Centaurids meteor shower. The α-Centaurid meteor shower is a minor annual meteor shower that is active from January 28 to February 21 every year. Its peak is usually around February 8th.

February 9, 16:59 – New Moon
The New Moon is the beginning of the lunar cycle when the Moon is not visible from Earth. It occurs when the Moon is positioned between the Earth and the Sun. Since the illuminated side of the Moon is facing away from us, the night sky will be especially dark, making it an excellent time for stargazing without moonlight interference.

February 10, 12:49 – Moon at Perigee: 358,088 km
Perigee is the point in the Moon's orbit where it is closest to Earth. On this date, the Moon will be at its closest distance to our planet, approximately 358,088 kilometers away. This event is often referred to as a "Supermoon" when it coincides with a Full Moon.

February 10, 18:37 – Saturn 1.8°N of Moon
Saturn, the ringed planet, will be situated about 1.8 degrees north of the Moon on this date and time. Observers will have a chance to witness the Moon and Saturn appearing in close proximity in the night sky.

February 13, 11:01 – Moon at Ascending Node
The Moon's orbit is slightly tilted relative to the plane of the Earth's orbit around the Sun. The ascending node is the point where the Moon's path intersects with the ecliptic (the plane of Earth's orbit), moving from the southern to the northern hemisphere.

February 15, 02:15 – Jupiter 3.2°S of Moon
Jupiter, the largest planet in our solar system, will be about 3.2 degrees south of the Moon on this date and time. It will be a wonderful sight to observe these two prominent celestial objects in the same part of the sky.

February 16, 09:01 – First Quarter Moon
The First Quarter Moon marks the halfway point between the New Moon and the Full Moon. It appears as a half-illuminated Moon and is visible in the afternoon and evening sky.

February 16, 13:13 – Pleiades 0.6°N of Moon
The Pleiades, also known as the Seven Sisters or Messier 45, is a beautiful open star cluster in the constellation Taurus. On this date and time, the Pleiades will be located about 0.6 degrees north of the Moon, creating a stunning visual conjunction.

February 20, 18:54 – Pollux 1.6°N of Moon
Pollux, one of the brightest stars in the constellation Gemini, will be situated about 1.6 degrees north of the Moon on this date and time. The pairing of the Moon and Pollux will be an attractive sight in the night sky.

February 22, 03:00 – Venus 0.6°N of Mars
Venus and Mars will be in planetary conjunction on this date and time, with Venus appearing about 0.6 degrees north of Mars. Conjunctions occur when two celestial objects appear close together in the sky, creating an eye-catching event for observers.

February 23, 16:45 – Regulus 3.6°S of Moon
Regulus, the brightest star in the constellation Leo, will be located about 3.6 degrees south of the Moon on this date and time. Regulus is a blue-white star and is easily identifiable in the night sky.

February 24, 06:30 – Full Moon
The Full Moon is the lunar phase when the entire face of the Moon is illuminated by the Sun and appears as a bright, full disk in the night sky. It is a spectacular sight and often referred to by specific names in various cultures.

February 25, 09:00 – Moon at Apogee: 406,316 km
Apogee is the point in the Moon's orbit where it is farthest from Earth. On this date, the Moon will be at its greatest distance from our planet, approximately 406,316 kilometers away.

February 27, 16:53 – Moon at Descending Node
Similar to the ascending node, the descending node is the point where the Moon's path intersects with the ecliptic, moving from the northern to the southern hemisphere.

February 28, 02:00 – Mercury at Superior Conjunction
Superior conjunction occurs when Mercury is on the opposite side of the Sun as seen from Earth. During this event, Mercury is not visible from Earth's vantage point, as it is lost in the Sun's glare.

February 28, 07:40 – Spica 1.5°S of Moon
Spica, the bright star in the constellation Virgo, will be situated about 1.5 degrees south of the Moon on this date and time, providing a splendid celestial sight.

February 28, 15:00 – Saturn in Conjunction with Sun
Saturn will be in conjunction with the Sun on this date, which means it will be positioned close to the Sun in the sky

February 2024 Star Parties

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

None schedualed for the month of Januarty 2024.

Brookgreen Gardens Art Exhibit

Friday, March 1 – Thursday, March 21, 2024
1931 Brookgreen Drive Murrells Inlet, SC 29576

By Megan Eskey

Reloquence and FiOR Innovations have mapped the first three roads on Mars, and have created a spectacular poster of the first three roads on the Moon with color flyouts. The iridescent blue, green and yellow elevation maps suggest the peaks of eternal light at the north lunar pole, helium-3 (He-3) at Oceanus Procellarum and titanium dioxide (TiO_2) at Mare Tranquillitatis where the roads are charted.

Photo by Megan Eskey

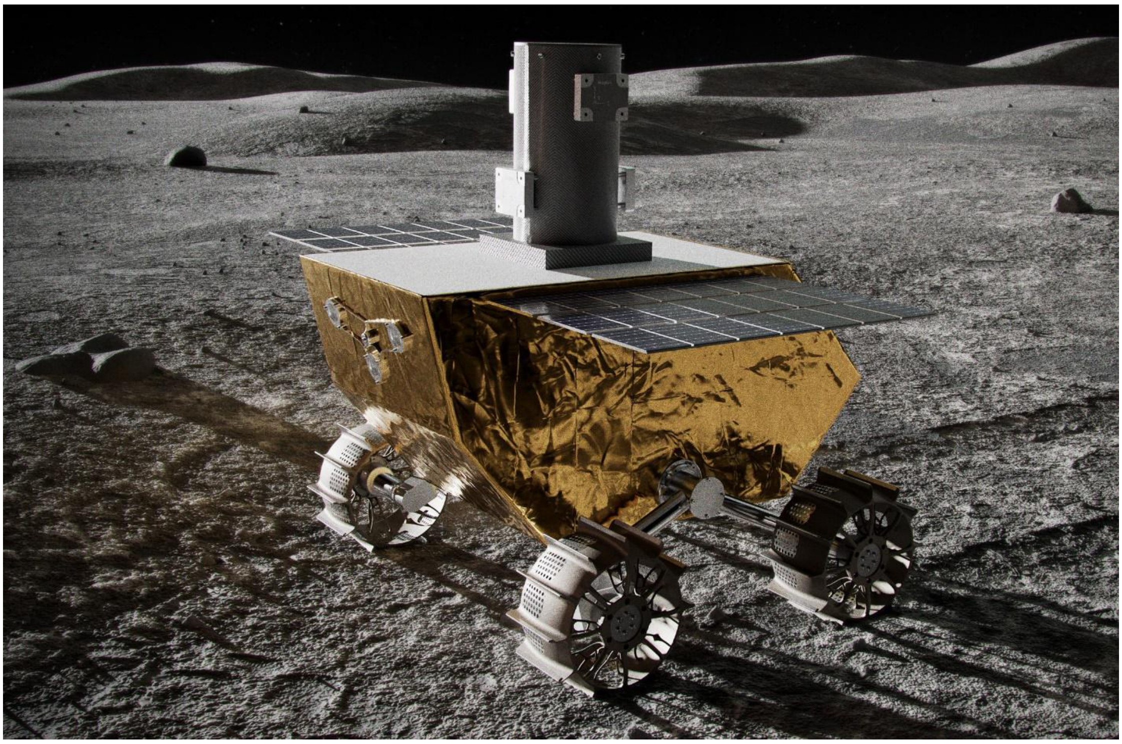
Join us at the Lowcountry Center every day from 9:30 am - 5 pm. We will be giving out 250 signed, limited edition prints of our lunar maps, first come, first served. We are hoping to publish our maps, so are not ready to release digital versions yet. These are first edition prints which will change slightly to adapt to editorial suggestions. Only one per person, please.

Maps of the Moon and Mars are necessarily matters of state, and maps that include a network of roads will have political implications. Space Roadbotics as a field of study recognizes that the new maps will eventually replace the old. They represent a novel way of visualizing the future of space exploration and space tourism juxtaposed with landform nomenclature decisions that date back to the invention of the telescope. In this way, the old and the new merge to become something that is more accurately about politics and diplomacy than about discovery.

Ideally, each country should be required to design and build a roadbot as a precursor to naming its roads, with a fixed date for sending them to the lunar surface collectively. A space logistics platform, something akin to "Uber Space," could coordinate the entire fleet. Order from chaos: an obvious extension would be to coordinate all autonomous vehicles on the Moon, including those that are not making lunar roads.

As of 2023, 74 different government space agencies are in existence, including 68 national space agencies and six international agencies. Both from a cost and technology standpoint, the goal of delivering a roadbot is well within reach of even the smallest agency, currently Israel.

Read more about the latest bevy of rovers heading to the Moon from many different countries. Although they demonstrate a range of creative approaches, to me there is a sense of redundancy.Novelty is a rare commodity in our world, and the slight shift from an autonomous rover to a roadbot seems to have eluded all of them. Could you define requirements for the first roadbots on the Moon and Mars? How would they differ from today's autonomous rovers?



Artist’s impression of the solar-powered Lunar Outpost rover on the Moon with NASA-funded Lunar Vertex instruments. The cylindrical structure on top is the mast for the magnetometer. Credits: JHU APL / Lunar Outpost / Ben Smith

Reloquence has specified its need for an autonomous lunar roadbot (ALR) that has a cargo capacity of 800 kg, traversal distances of up to 200 km without battery recharging, maximum speed of 50 kph, continuous operations for 8 hours within a 24-hour period of lunar daylight and 8 hours of lunar night, the ability to navigate a preprogrammed traverse, the ability to survive the lunar night, and the ability to traverse grades as steep as +/- 20 degrees. Optionally, it should leave distinctive dual tracks in the regolith with the name of a lunar road and should install lunar streetlights every 5 km.

Read more about Space Roadbotics on the Reloquence Alignable site. Alignable is a B2B social networking platform for small businesses and organizations.

Galileo Galilei

https://en.wikipedia.org/wiki/Galileo_Galilei

Tim Kelly

Galiteo Galilei - 1636 portrait

Galileo di Vincenzo Bonaiuti de' Galilei (15 February 1564 – 8 January 1642), commonly referred to as Galileo Galilei was an Italian astronomer, physicist and engineer, sometimes described as a polymath. He was born in the city of Pisa, then part of the Duchy of Florence. Galileo has been called the father of observational astronomy, modern-era classical physics, the scientific method,[and modern science.

Galileo studied speed and velocity, gravity and free fall, the principle of relativity, inertia, projectile motion and also worked in applied science and technology, describing the properties of the pendulum and "hydrostatic balances". He was one of the earliest Renaissance developers of the thermoscope[8] and the inventor of various military compasses, and used the telescope for scientific observations of celestial objects. With an improved telescope he built, he observed the stars of the Milky Way, the phases of Venus, the four largest satellites of Jupiter, Saturn's rings, lunar craters and sunspots. He also built an early microscope.

Galileo's championing of Copernican heliocentrism (Earth rotating daily and revolving around the Sun) was met with opposition from within the Catholic Church and from some astronomers. The matter was investigated by the Roman Inquisition in 1615, which concluded that heliocentrism was foolish, absurd, and heretical since it contradicted biblical creationism.

Galileo later defended his views in Dialogue Concerning the Two Chief World Systems (1632), which appeared to attack Pope Urban VIII and thus alienated both the Pope and the Jesuits, who had both supported Galileo up until this point. He was tried by the Inquisition, found "vehemently suspect of heresy", and forced to recant. He spent the rest of his life under house arrest. During this time, he wrote Two New Sciences (1638), primarily concerning kinematics and the strength of materials, summarizing work he had done around forty years earlier.

Refracting telescope

Based only on uncertain descriptions of the first practical telescope which Hans Lippershey tried to patent in the Netherlands in 1608, Galileo, in the following year, made a telescope with about 3x magnification. He later made improved versions with up to about 30x magnification. With a Galilean telescope, the observer could see magnified, upright images on the Earth—it was what is commonly known as a terrestrial telescope or a spyglass. He could also use it to observe the sky; for a time he was one of those who could construct telescopes good enough for that purpose. On 25 August 1609, he demonstrated one of his early telescopes, with a magnification of about 8 or 9, to Venetian lawmakers. His telescopes were also a profitable sideline for Galileo, who sold them to merchants who found them useful both at sea and as items of trade. He published his initial telescopic astronomical observations in March 1610 in a brief treatise entitled Sidereus Nuncius (Starry Messenger).

Moon

On 30 November 1609, Galileo aimed his telescope at the Moon. While not being the first person to observe the Moon through a telescope (English mathematician Thomas Harriot had done it four months before but only saw a "strange spottednesse"), Galileo was the first to deduce the cause of the uneven waning as light occlusion from lunar mountains and craters. In his study, he also made topographical charts, estimating the heights of the mountains. The Moon was not what was long thought to have been a translucent and perfect sphere, as Aristotle claimed, and hardly the first "planet", an "eternal pearl to magnificently ascend into the heavenly empyrian", as put forth by Dante. Galileo is sometimes credited with the discovery of the lunar libration in latitude in 1632, although Thomas Harriot or William Gilbert might have done it before.

A friend of Galileo's, the painter Cigoli, included a realistic depiction of the Moon in one of his paintings, though probably used his own telescope to make the observation.

Jupiter's moons

On 7 January 1610, Galileo observed with his telescope what he described at the time as "three fixed stars, totally invisible[a] by their smallness", all close to Jupiter, and lying on a straight line through it. Observations on subsequent nights showed that the positions of these "stars" relative to Jupiter were changing in a way that would have been inexplicable if they had really been fixed stars. On 10 January, Galileo noted that one of them had disappeared, an observation which he attributed to its being hidden behind Jupiter. Within a few days, he concluded that they were orbiting Jupiter: he had discovered three of Jupiter's four largest moons. He discovered the fourth on 13 January. Galileo named the group of four the Medicean stars, in honour of his future patron, Cosimo II de' Medici, Grand Duke of Tuscany, and Cosimo's three brothers. Later astronomers, however, renamed them Galilean satellites in honour of their discoverer. These satellites were independently discovered by Simon Marius on 8 January 1610 and are now called Io, Europa, Ganymede, and Callisto, the names given by Marius in his Mundus Iovialis published in 1614.

Galileo's observations of the satellites of Jupiter caused controversy in astronomy: a planet with smaller planets orbiting it did not conform to the principles of Aristotelian cosmology, which held that all heavenly bodies should circle the Earth, and many astronomers and philosophers initially refused to believe that Galileo could have discovered such a thing. Compounding this problem, other astronomers had difficulty confirming Galileo's observations

When he demonstrated the telescope in Balogna, the attendees struggled to see the moons. One of them, Martin Horky, observed several stars and found them also surrounded by smaller stars. He took this as evidence that the moons were merely an internal defect of the instrument and that Galileo's imagination had run away with him. Horky's sharp attack drew a rebuke from Kepler but set the tone for later disputes. Christopher Clavius's observatory in Rome confirmed the observations and, although unsure how to interpret them, gave Galileo a hero's welcome when he visited the next year. Galileo continued to observe the satellites over the next eighteen months, and by mid-1611, he had obtained remarkably accurate estimates for their periods—a feat which Johannes Kepler had believed impossible.

Galileo saw a practical use for his discovery. Determining the east–west position of ships at sea required their clocks be synchronized with clocks at the prime meridian. Solving this longitude problem had great importance to safe navigation and large prizes were established by Spain and later Holland for its solution. Since eclipses of the moons he discovered were relatively frequent and their times could be predicted with great accuracy, they could be used to set shipboard clocks and Galileo applied for the prizes. Observing the moons from a ship proved too difficult, but the method was used for land surveys, including the remapping of France.

Phases of Venus

From September 1610, Galileo observed that Venus exhibits a full set of phases similar to that of the Moon. The heliocentric model of the Solar System developed by Nicolaus Copernicus predicted that all phases would be visible since the orbit of Venus around the Sun would cause its illuminated hemisphere to face the Earth when it was on the opposite side of the Sun and to face away from the Earth when it was on the Earth-side of the Sun. In Ptolemy's geocentric model, it was impossible for any of the planets' orbits to intersect the spherical shell carrying the Sun. Traditionally, the orbit of Venus was placed entirely on the near side of the Sun, where it could exhibit only crescent and new phases. It was also possible to place it entirely on the far side of the Sun, where it could exhibit only gibbous and full phases.

After Galileo's telescopic observations of the crescent, gibbous and full phases of Venus, the Ptolemaic model became untenable.

In the early 17th century, as a result of his discovery, the great majority of astronomers converted to one of the various geo-heliocentric planetary models, such as the Tychonic, Capellan and Extended Capellan models,[b] each either with or without a daily rotating Earth.

These all explained the phases of Venus without the 'refutation' of full heliocentrism's prediction of stellar parallax. Galileo's discovery of the phases of Venus was thus his most empirically practically influential contribution to the two-stage transition from full geocentrism to full heliocentrism via geo-heliocentrism.

Saturn and Neptune

In 1610, Galileo also observed the planet Saturn, and at first mistook its rings for planets, thinking it was a three-bodied system. When he observed the planet later, Saturn's rings were directly oriented to Earth, causing him to think that two of the bodies had disappeared. The rings reappeared when he observed the planet in 1616, further confusing him.

Galileo observed the planet Neptune in 1612. It appears in his notebooks as one of many unremarkable dim stars. He did not realise that it was a planet, but he did note its motion relative to the stars before losing track of it.

Milky Way and stars

Galileo observed the Milky Way, previously believed to be nebulous, and found it to be a multitude of stars packed so densely that they appeared from Earth to be clouds. He located many other stars too distant to be visible to the naked eye. He observed the double star Mizar in Ursa Major in 1617.

In the Starry Messenger, Galileo reported that stars appeared as mere blazes of light, essentially unaltered in appearance by the telescope, and contrasted them to planets, which the telescope revealed to be discs. But shortly thereafter, in his Letters on Sunspots, he reported that the telescope revealed the shapes of both stars and planets to be "quite round". From that point forward, he continued to report that telescopes showed the roundness of stars, and that stars seen through the telescope measured a few seconds of arc in diameter. He also devised a method for measuring the apparent size of a star without a telescope. As described in his Dialogue Concerning the Two Chief World Systems, his method was to hang a thin rope in his line of sight to the star and measure the maximum distance from which it would wholly obscure the star. From his measurements of this distance and of the width of the rope, he could calculate the angle subtended by the star at his viewing point.

In his Dialogue, he reported that he had found the apparent diameter of a star of first magnitude to be no more than 5 arcseconds, and that of one of sixth magnitude to be about 5/6 arcseconds. Like most astronomers of his day, Galileo did not recognise that the apparent sizes of stars that he measured were spurious, caused by diffraction and atmospheric distortion, and did not represent the true sizes of stars. However, Galileo's values were much smaller than previous estimates of the apparent sizes of the brightest stars, such as those made by Brahe, and enabled Galileo to counter anti-Copernican arguments such as those made by Tycho that these stars would have to be absurdly large for their annual parallaxes to be undetectable. Other astronomers such as Simon Marius, Giovanni Battista Riccioli, and Martinus Hortensius made similar measurements of stars, and Marius and Riccioli concluded the smaller sizes were not small enough to answer Tycho's argument.

Sunspots

Galileo made naked-eye and telescopic studies of sunspots. Their existence raised another difficulty with the unchanging perfection of the heavens as posited in orthodox Aristotelian celestial physics. An apparent annual variation in their trajectories, observed by Francesco Sizzi and others in 1612–1613, also provided a powerful argument against both the Ptolemaic system and the geoheliocentric system of Tycho Brahe. A dispute over claimed priority in the discovery of sunspots, and in their interpretation, led Galileo to a long and bitter feud with the Jesuit Christoph Scheiner. In the middle was Mark Welser, to whom Scheiner had announced his discovery, and who asked Galileo for his opinion. Both of them were unaware of Johannes Fabricius' earlier observation and publication of sunspots.

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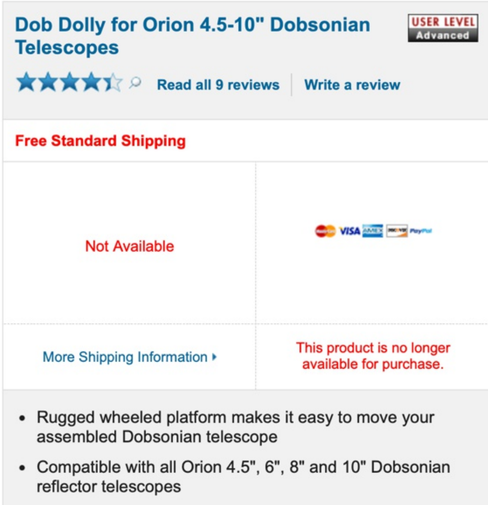
A Homemade Dob Dolly

By: Gerald Drake

A Dobsonian is a very simple and easy-to-use telescope to use. You can set them up quickly with little effort other than collimation, and modern collimation tools make that process very easy. My Dob stands ready in the garage to roll out onto the driveway and start stargazing. Roll you say? Yes, I've put it on a Dob dolly with rollers. The 8" Dobsonian is not heavy at about 47 pounds, but it is awkward to carry unless you take the tube off of the stand. I saw an advertisement on an astronomy website for a Dobsonian dolly. I thought this looked promising, so I proceeded to search for it. Orion has one in their catalog, only it is no longer available. Amazon shows one, but it states they have no stock and don't know when it will be available. See Orion catalog image below:



After studying the picture, I thought it to be pretty simple and decided to make one myself. I purchased two 24" x 24" x ¼" plywood hobby boards from Lowes. I found casters (rollers) on Amazon and also found some stabilizers.

Now I am not a woodworker. I'll share with you my mistakes so that if you decide to build one, you can do it better than what I did. An Orion Dob dolly shown above is triangular-shaped with 3 casters. I thought this may be a bit unstable when rolling so I opted to keep mine square and use 4 casters. This worked, but after testing I discovered the corners stuck out too far causing me to have to step over them. So, I cut the corners off. Now the octagon shape worked much better.

The Dobsonian base has 3 plastic feet on a triangular-shaped board that connects through a bearing to the round base. The Orion version of the Dob dolly has slotted holes to allow these feet to sit inside them. I measured with a protractor and found these are at a 60o angle. Measuring and cutting the slots was not hard, but I soon discovered that plywood is not so easy to work with. It splintered and my cuts were not clean. I used a hole saw to create the slots and evened them out with a jig saw. Again, the plywood made this difficult and my slots were not so clean and smooth. They do work by the way. After completing one board, I duplicated another and stacked the two together to make it stouter; securing with wood screws and glue. You can probably get by with one ¼" board, but I was afraid it would flex too much.

I went overboard on the stabilizers. I ordered some with ½" bolts where 3/8" bolts would have been plenty. Then to be able to screw the stabilizers up and down I need either a threaded sleeve or a T-nut that digs into the wood. I opted for the T-nut, but found out the surface of the plywood was too weak to hold it.

So, I dug out a square, pounded in the T-nut, then epoxied over it. That worked. I could have omitted the stabilizers since I used casters with a locking lever. But these will come in handy if I'm on an uneven surface and want to level the platform.

So, you see my final assembly is painted black to match my Dobsonian stand which also hides some of my mistakes. All in all, the finished product works great. It rolls smoothly and the stabilizers work well. Now If I decide at the last minute to star gaze, all I have to do is roll the Dob out from the garage onto the driveway, lock it in place, and I'm set. The slotted holes also allow for up to a 10" Dobsonian to be used or a smaller one such as the 6".

This was a fun little project and worth the effort. Let me know if you build one of these and what you do differently.

Parts I used:
2- 24" x 24" x ¼" plywood hobby board from Lowes
4 – QNCZ 2" Caster Wheels. Amazon
4 – T Tulead Adjustable Feet Leveler. Amazon
4 – ½"-13 stainless steel pronged Tee Nuts (came in a pack of 12) Amazon
8 - Wood screws and some wood glue.
4 – Fluted knob thru hole ½ - 13 steel zinc insert. Amazon
2 – part epoxy to set the Tee nuts in.
1 – quart black latex paint

Note: The Dob on the left is the club's and it is ready to be loaned out. Let us know if you're interested.

Seeing in Astrophotography
By Chris Taylor

Introduction:
Seeing refers to the atmospheric conditions that affect the clarity of celestial objects as observed from Earth. The Earth's atmosphere is not a stable medium, and its turbulent nature can cause the twinkling effect of stars. Atmospheric turbulence can distort the light from distant celestial objects, impacting the quality of astronomical images.

Astronomers often measure seeing in terms of arcseconds – the angle subtended by one second of arc on the sky. Excellent seeing conditions may result in seeing values of 1 arcsecond or less, while poor seeing can lead to values exceeding 2 arcseconds. Poor seeing affects resolution.

Focal Length and Telescopes:
Focal length, on the other hand, is a fundamental property of telescopes. It is the distance from the lens or mirror to the point where parallel rays of light converge, forming an image. In astronomy, telescopes with longer focal lengths offer higher magnification, allowing astronomers to observe distant objects in greater detail.

The Connection:
The relationship between seeing and focal length is crucial in maximizing the potential of astronomical observations. While longer focal lengths in telescopes can provide higher magnification, they also amplify the effects of poor seeing conditions. In contrast, telescopes with shorter focal lengths may be less affected by atmospheric turbulence but may sacrifice some magnification.

Conclusion:
The interplay between seeing and focal length plays a pivotal role in choosing the object we're looking to shoot, as the size of the object will determine the focal length we're choosing to shoot at. Choosing a long focal length, for smaller objects, in poor seeing conditions will result in poor resolution and poor quality images, while saving the capture of smaller celestial objects for nights with better seeing and using a shorter focal lengths on nights of poorer seeing will offer more rewarding results.

Regards

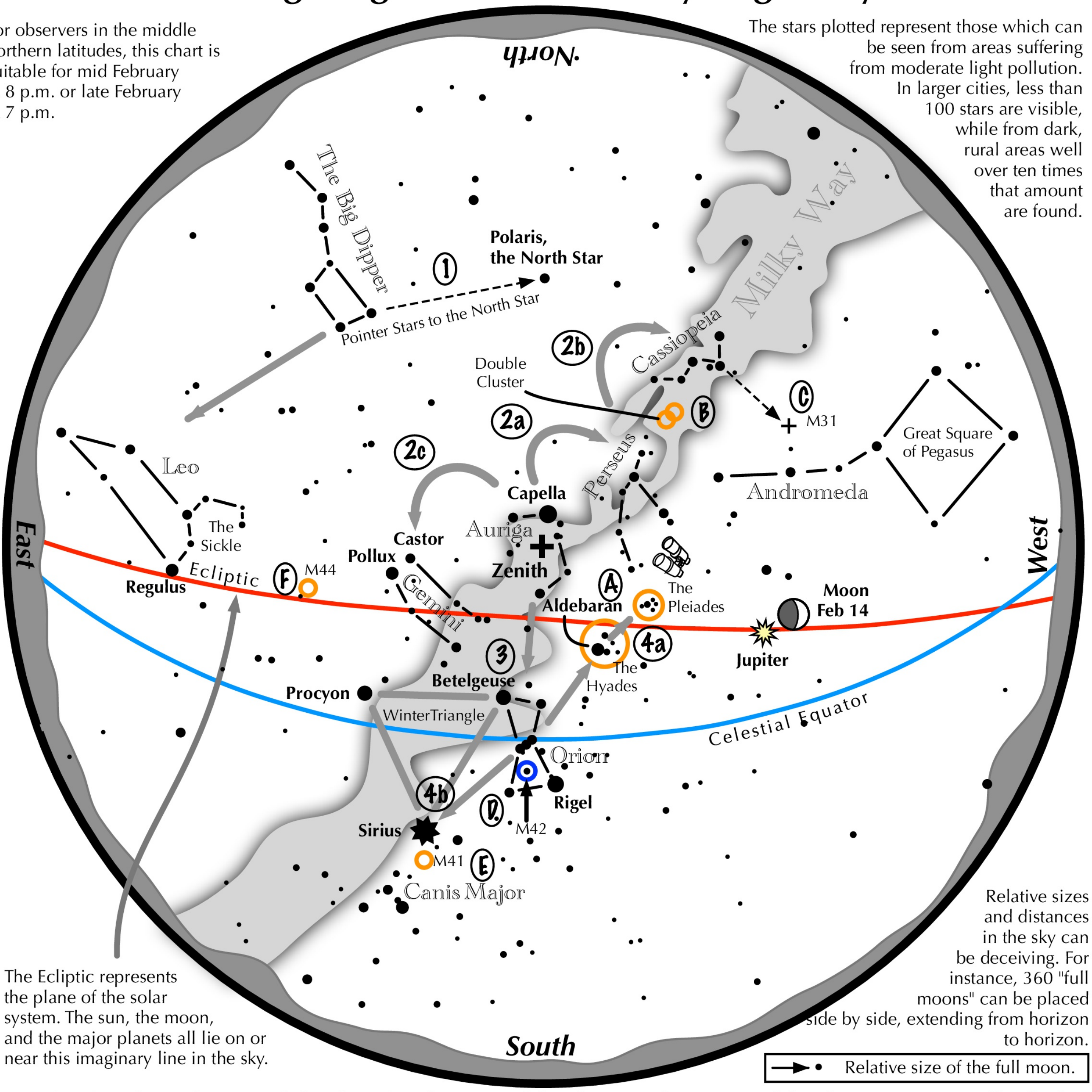
Chris

February 2024
Navagating the mid-February Night Sky
Astronomical League

Navigating the mid February Night Sky

For observers in the middle northern latitudes, this chart is suitable for mid February at 8 p.m. or late February at 7 p.m.

The stars plotted represent those which can be seen from areas suffering from moderate light pollution. In larger cities, less than 100 stars are visible, while from dark, rural areas well over ten times that amount are found.



The Ecliptic represents the plane of the solar system. The sun, the moon, and the major planets all lie on or near this imaginary line in the sky.

Relative sizes and distances in the sky can be deceiving. For instance, 360 "full moons" can be placed side by side, extending from horizon to horizon.

→• Relative size of the full moon.

Navigating the February night sky: Simply start with what you know or with what you can easily find.

1 Above the northeast horizon rises the Big Dipper. Draw a line from its two end bowl stars upwards to the North Star.

2 Face south. Overhead twinkles the bright star Capella in Auriga. Jump northwestward along the Milky Way first to Perseus, then to the "W" of Cassiopeia. Next jump southeastward from Capella to the twin stars of Castor and Pollux in Gemini.

3 Directly south of Capella stands the constellation of Orion with its three Belt stars, its bright red star Betelgeuse, and its bright blue-white star Rigel.

4 Use Orion's three Belt stars to point northwest to the red star Aldebaran and the Hyades star cluster, then to the Pleiades star cluster. Travel southeast from the Belt stars to the brightest star in the night sky, Sirius, a member of the Winter Triangle.

Binocular Highlights

A: Examine the stars of two naked eye star clusters, the Pleiades and the Hyades.
B: Between the "W" of Cassiopeia and Perseus lies the Double Cluster.
C: The three westernmost stars of Cassiopeia's "W" point south to M31, the Andromeda Galaxy, a "fuzzy" oval.
D: M42 in Orion is a star forming nebula. **E:** Look south of Sirius for the star cluster M41. **F:** M44, a star cluster barely visible to the naked eye, lies southeast of Pollux.