

The ECLIPSE

December
2021

The Newsletter of the Barnard-Seyfert Astronomical Society

Next Membership Meeting:

December 15, 7:30 pm
Online meeting

Link will be posted on
bsasnashville.com

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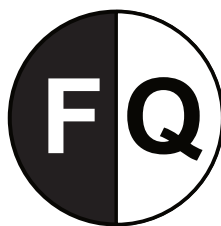


In this image the NASA/ESA Hubble Space Telescope peers into the spiral galaxy NGC 1317 in the constellation Fornax, more than 50 million light-years from Earth. This galaxy is one of a pair, but NGC 1317's rowdy larger neighbour NGC 1316 lies outside Hubble's field of view. Despite the absence here of its neighbouring galaxy, NGC 1317 is accompanied in this image by two objects from very different parts of the Universe. The bright point ringed with a criss-cross pattern is a star from our own galaxy surrounded by diffraction spikes, whereas the redder elongated smudge is a distant galaxy lying far beyond NGC 1317.

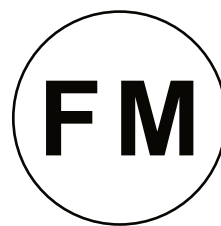
Credit: [ESA/Hubble & NASA](#), [J. Lee](#) and the [PHANGS-HST Team](#)



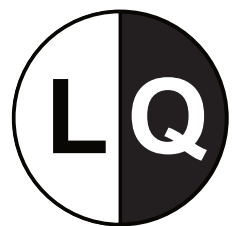
Dec 4
Jan 2, 31



Dec 10
Jan 9



Dec 18
Jan 17



Dec 26
Jan 25



C/2021 A1 (Leonard)
November 24, 2021
T Wellington
(NGC 4631 / 4656)



On the Cover: This image of Olympia Undae was collected in the middle of the Martian north polar spring. As the season changes into summertime, the dune crests will lose all the winter frosts, completely revealing the darker sand beneath. The density of dunes and the alignments of the dune crests varies with location, controlled by the amount of available sand and the predominant winds over time.

Olympia Undae is a vast dune field in the north polar region of Mars. It consists of a broad sand sea or erg that partly rings the north polar cap from about 120° to 240°E longitude and 78° to 83°N latitude. The dune field covers an area of approximately 470,000 km² (bigger than California, smaller than Texas). Olympia Undae is the largest continuous dune field on Mars. Olympia Undae is not the only dune field near the north polar cap, several other smaller fields exist in the same latitude, but in other ranges of longitude, e.g. Abalos and Siton Undae. Barchan and transverse dune forms are the most common. In regions with limited available sand individual barchan dunes will form, the surface beneath and between the dunes is visible. In regions with large sand supplies, the sand sheet covers the underlying surface, and dune forms are found modifying the surface of the sand sheet. In this case transverse dunes are more common. Barchan dunes "point" down wind, transverse dunes are more linear and form parallel to the wind direction. The "square" shaped transverse dunes in Olympia Undae are due to two prevailing wind directions.

Credit: [NASA/JPL-Caltech/ASU](#)

The James Webb Space Telescope: Ready for Launch! **By David Prosper**

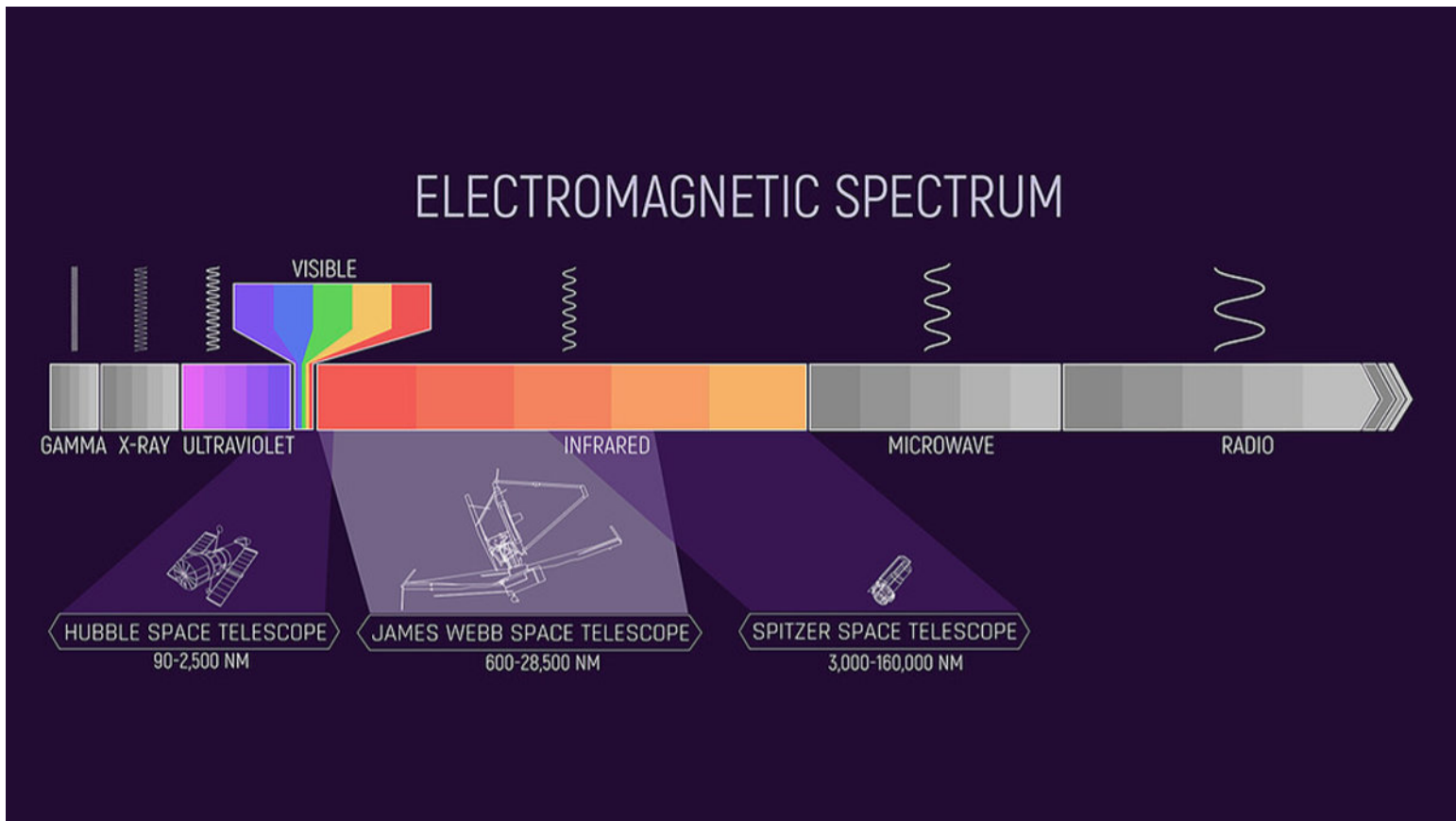
NASA's James Webb Space Telescope is ready for lift-off! As of this writing (November 15), the much-anticipated next-generation space telescope is being carefully prepared for launch on December 18, 2021, and will begin its mission to investigate some of the deepest mysteries of our universe.

The development of the Webb began earlier than you might expect – the concept that would develop into Webb was proposed even before the launch of the Hubble in the late 1980s! Since then, its design underwent many refinements, and the telescope experienced a series of delays during construction and testing. While frustrating, the team needs to ensure that this extremely complex and advanced scientific instrument is successfully launched and deployed. The Webb team can't take any chances; unlike the Hubble, orbiting at an astronaut-serviceable 340 miles (347 km) above Earth, the Webb will orbit about one million miles away (or 1.6 million km), at Lagrange Point 2. Lagrange Points are special positions where the gravitational influence between two different bodies, like the Sun and Earth, “balance out,” allowing objects like space telescopes to be placed into stable long-term orbits, requiring only minor adjustments - saving Webb a good deal of fuel.

Since this position is also several times further than the Moon, Webb's sunshield will safely cover the Moon, Earth, and Sun and block any potential interference from their own infrared radiation. Even the seemingly small amount of heat from the surfaces of the Earth and Moon would interfere with Webb's extraordinarily sensitive infrared observations of our universe if left unblocked. More detailed information about Webb's orbit can be found at bit.ly/webborbitinfo, and a video showing its movement at bit.ly/webborbitvideo.

Once in its final position, its sunshield and mirror fully deployed and instruments checked out, Webb will begin observing! Webb's 21-foot segmented mirror will be trained on targets as fine and varied as planets, moons, and distant objects in our outer Solar System, active centers of galaxies, and some of the most distant stars and galaxies in our universe: objects that may be some of the first luminous objects formed after the Big Bang! Webb will join with other observatories to study black holes - including the one lurking in the center of our galaxy, and will study solar systems around other stars, including planetary atmospheres, to investigate their potential for hosting life.

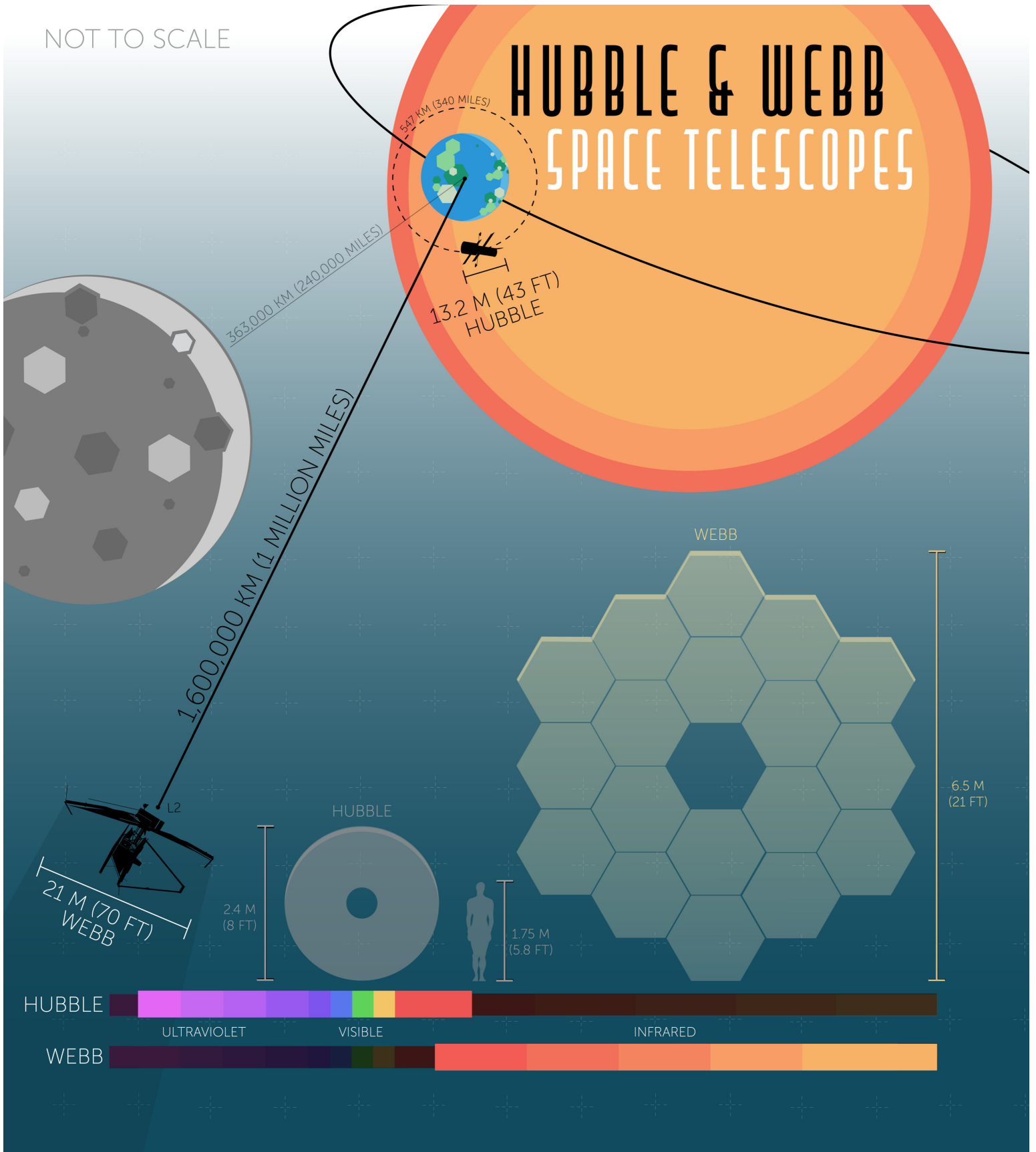
Wondering how Webb's infrared observations can reveal what visible light cannot? The “Universe in a Different Light” Night Sky Network activity can help - find it at bit.ly/different-light-nsn. Find the latest news from NASA and Webb team as it begins its mission by following #UnfoldTheUniverse on social media, and on the web at nasa.gov/webb.



Webb will observe a wide band of the infrared spectrum, including parts observed by the Hubble - which also observes in a bit of ultraviolet light as well as visible - and the recently retired Spitzer Space Telescope. Webb will even observe parts of the infrared spectrum not seen by either of these missions!
Credits: NASA and J. Olmstead (STScI)

This article is distributed by NASA Night Sky Network. The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, and more! You can catch up on all of NASA's current and future missions at nasa.gov. With articles, activities and games NASA Space Place encourages everyone to get excited about science and technology. Visit spaceplace.nasa.gov to explore space and Earth science!

NOT TO SCALE



Webb will follow up on many of Hubble's observations and continue its mission to study the most distant galaxies and stars it can - and as you can see in this comparison, its mirror and orbit are both huge in comparison, in order to continue these studies in an even deeper fashion! Credits: NASA, J. Olmsted (STScI)

**Barnard-Seyfert Astronomical Society
Minutes of a Regular Meeting of the Board of Directors
Held On Wednesday, November 3, 2021**

The regular meeting of the Board of Directors of the Barnard-Seyfert Astronomical Society was held November 3, 2021, online. Logged in were Tony Drinkwine, Bud Hamblen, Keith Rainey, Andy Reeves, Kathy Underwood and Theo Wellington. A virtual quorum being present, Keith called the meeting to order at 7:30 PM.

Keith asked for a motion to adopt the minutes of the board meeting on October 6, 2021, as printed in the November, 2021, issue of the Eclipse. Kathy so moved, Theo seconded and the minutes were adopted unanimously.

Treasurer's Report:

Theo reported \$11,256.90 in the SunTrust account and \$368.02 in the PayPal account. An additional poster has been sold.

Membership report: Keith reported 209 members.

The November star party at the Warner Park Special Events Field is still on.

There being no further business, the meeting adjourned at 8:30 PM.

Respectfully submitted,

Bud Hamblen
Secretary

**Barnard-Seyfert Astronomical Society
Minutes of a Regular Meeting of the Board of Directors
Held On Wednesday, November 17, 2021**

Because monthly in-person meetings are suspended due to the COVID-19 epidemic, the Barnard-Seyfert Astronomical Society held an on-line meeting via Zoom on Wednesday, November 17, 2021. 14 participants zoomed in.

Keith Rainey called the meeting to order at 7:30 PM. There being no discussion of the minutes, the minutes were adopted by acclamation.

Treasurer's report: Theo reported that the Suntrust bank balance was \$11,355.90 and that the PayPal balance was \$ 454.89. She reported that the RASC Observer's Handbook have been ordered.

Membership: Keith reported 214 members.

Social media: The club's Facebook page is liked by 1972 and followed by 2093. Twitter has 280 followers.

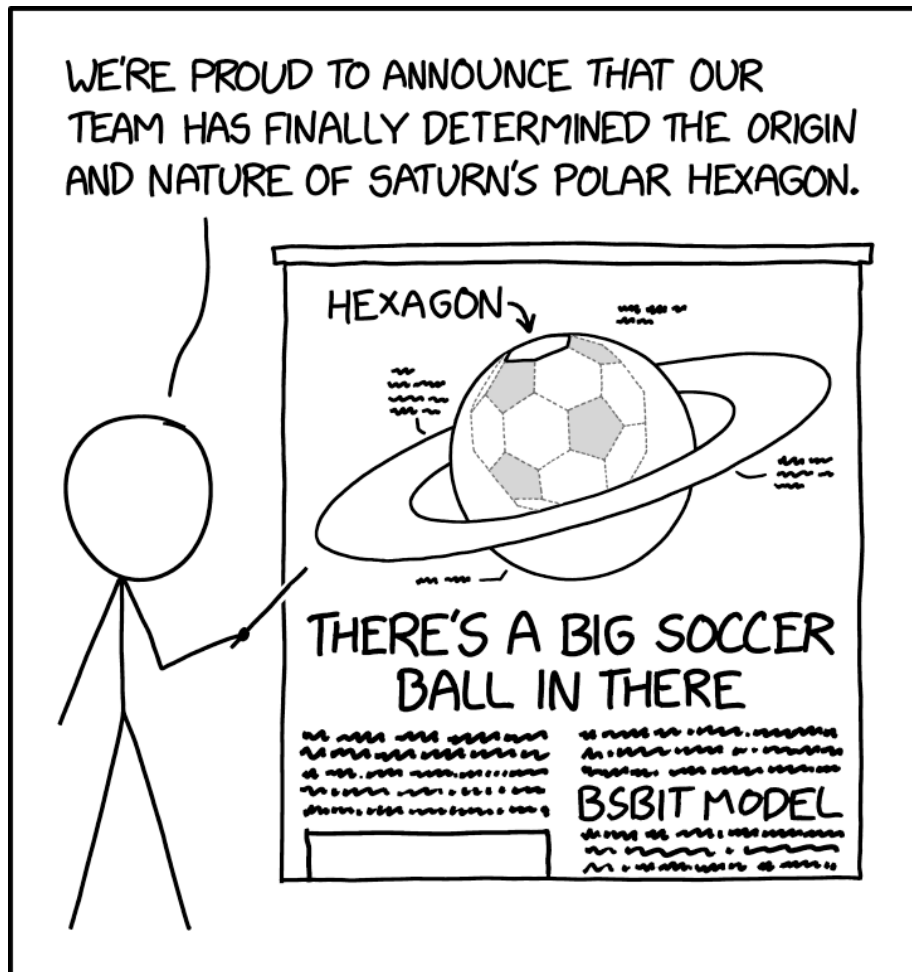
Membership: Keith reported that there were 214 members.

Keith presented "All I Want for Christmas ... Are Astronomy Toys."

There being no further business, the meeting was adjourned at 8:30 PM.
Respectfully submitted,

Bud Hamblen
Secretary

xkcd



Next BSAS Membership Meeting:

Wednesday, December 15, 7:30 pm Central
online on Zoom

Zoom link will be posted to bsasnashville.com



In honor of the club's 90th anniversary we partnered with Hatch Show Print to create a unique poster that would honor the achievement of the club. For those who don't know Hatch Show has been making posters for a variety of events and concerts for 140 years. In all that time we are their first astronomy club.

On the poster at the center is the moon. This was made from a wood grained stencil that the shop has used for over 50 years. To contrast that the telescope that the people are using is a brand new stencil made for our poster. The poster has three colors. First the pale yellow color of the moon was applied. Next the small stars, circles, and figures at the bottom were colored in metallic gold. The third color is

a blue for the night sky. Where it overlaps with the metallic gold it creates a darker blue leaving the figures at the bottom looking like silhouettes. This was a one time printing so the 100 that we have are all that will be printed.

The prints are approximately 13 3/4" x 22 1/4" and are available for \$20 at our membership meetings, or \$25 with shipping by ordering through bsasnashville.com. Frame not included.



Become a Member of BSAS!
Visit bsasnashville.com to join online.

All memberships have a vote in BSAS elections and other membership votes. Also included are subscriptions to the BSAS and Astronomical League newsletters.

Annual dues:

Regular: \$25
Family: \$35
Senior/Senior family: \$20
Student*: \$15

* To qualify as a student, you must be enrolled full time in an accredited institution or home schooled.

About BSAS

Organized in 1928, the Barnard-Seyfert Astronomical Society is an association of amateur and professional astronomers who have joined to share our knowledge and our love of the sky.

The BSAS meets on the third Wednesday of each month at the Cumberland Valley Girl Scout Building at the intersection of Granny White Pike and Harding Place in Nashville. Experienced members or guest speakers talk about some aspect of astronomy or observing. Subjects range from how the universe first formed to how to build your own telescope. The meetings are informal and time is allotted for fellowship. You do not have to be a member to attend the meetings.

Membership entitles you to subscriptions to *Astronomy and Sky & Telescope* at reduced rates; the club's newsletter, the *Eclipse*, is sent to members monthly. BSAS members also receive membership in the Astronomical League, receiving their quarterly newsletter, the *Reflector*, discounts on all astronomical books, and many other benefits.

In addition to the meetings, BSAS also sponsors many public events, such as star parties and Astronomy Day; we go into the schools on occasion to hold star parties for the children and their parents. Often the public star parties are centered on a special astronomical event, such as a lunar eclipse or a planetary opposition.

Most information about BSAS and our activities may be found at bsasnashville.com. If you need more information, write to us at info@bsasnashville.com.

Free Telescope Offer

Did someone say free telescope? Yes, you did read that correctly. The BSAS Equipment & Facilities Committee has free telescopes ranging in size from 2.6" to 8" that current members can actually have to use for up to 60 days at a time. We also have some other items in the loaner program such as a photometer, H-alpha solar telescope, educational CDs, tapes, DVDs, and books. Some restrictions apply. A waiting list is applicable in some cases. The BSAS Equipment Committee will not be held responsible for lost sleep or other problems arising from use of this excellent astronomy gear. For information on what equipment is currently available, contact info@bsasnashville.com.