

The ECLIPSE

September
2021

The Newsletter of the Barnard-Seyfert Astronomical Society

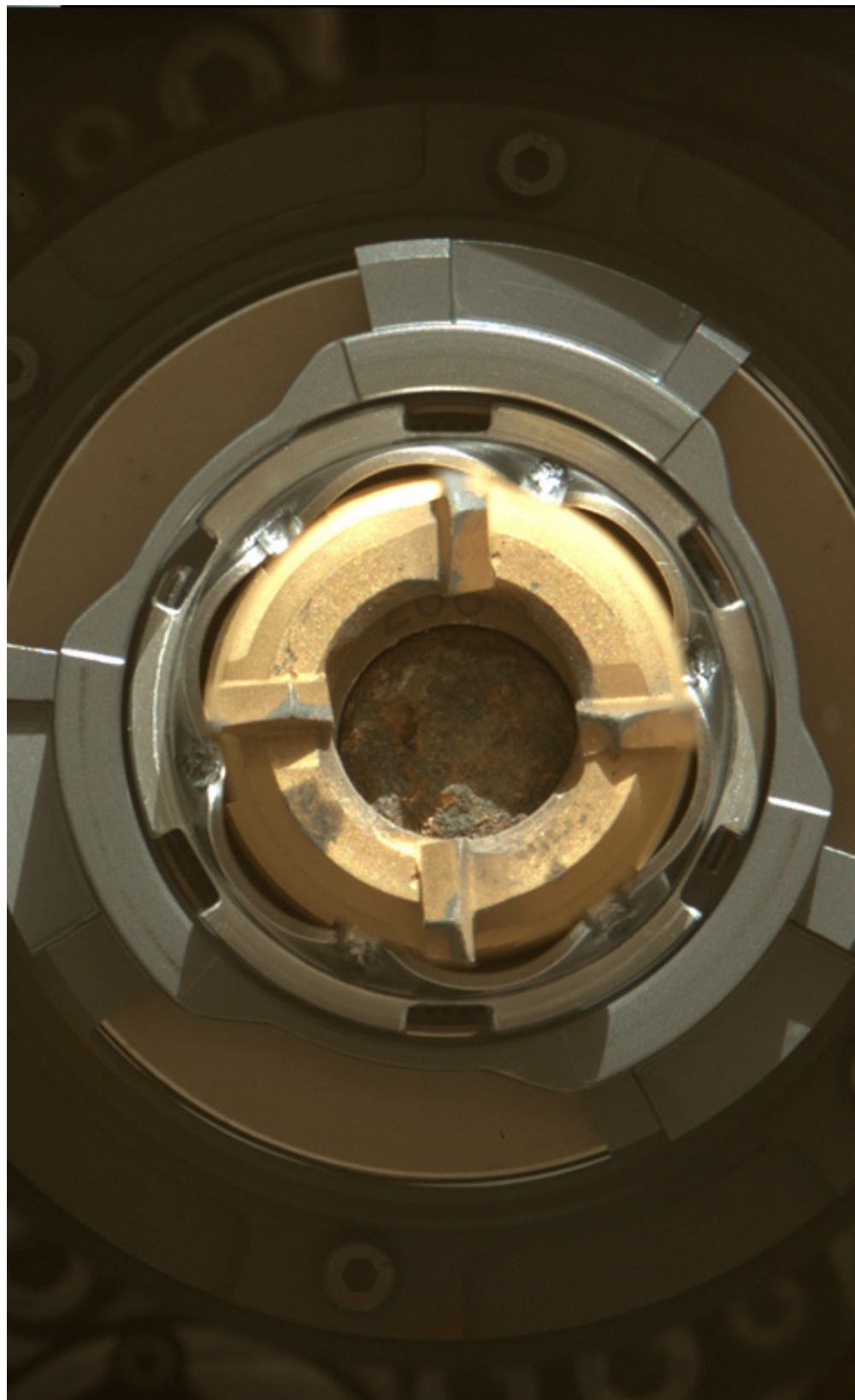
Next Membership Meeting:

September 15 7:30 pm
Online meeting

Link will be posted on
bsasnashville.com

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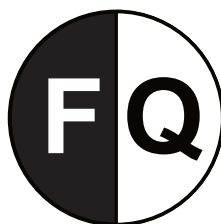


Hurricane Ida as a category 5 storm is photographed nearing the Gulf Coast of Louisiana from the International Space Station on Aug. 29. The Northrop Grumman Cygnus space freighter attached to the station's Unite module is seen in the foreground.

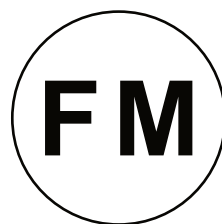
Credits: [NASA](#)



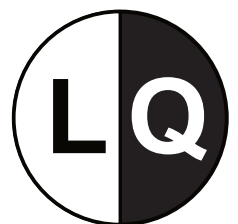
Sep 6
Oct 6



Sep 13
Oct 12



Sep 20
Oct 20



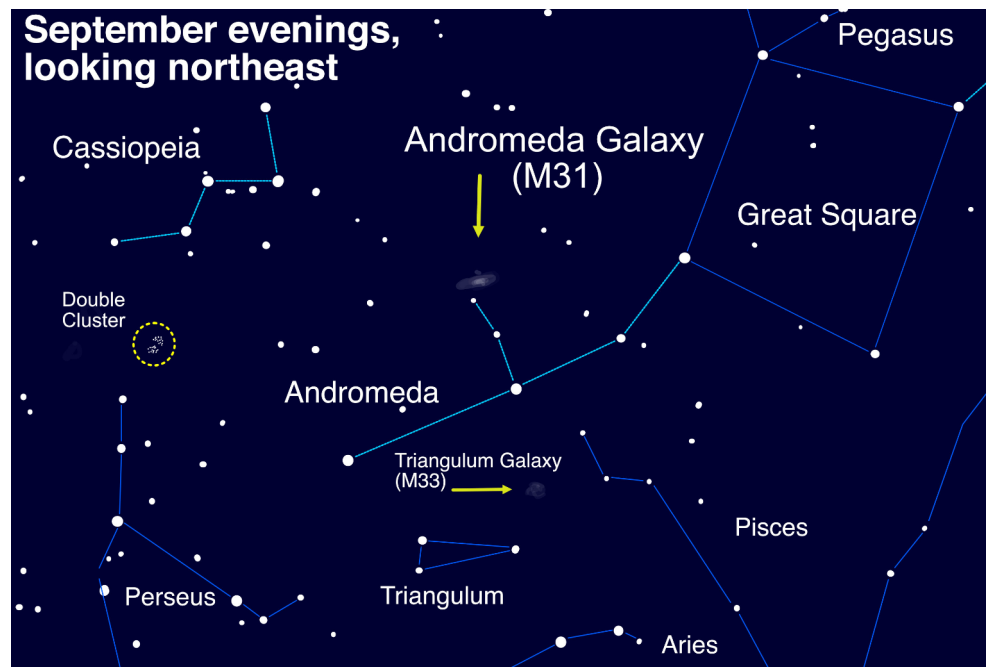
Sep 28
Oct 28

Catch Andromeda Rising By David Prosper

If you're thinking of a galaxy, the image in your head is probably the Andromeda Galaxy! Studies of this massive neighboring galaxy, also called M31, have played an incredibly important role in shaping modern astronomy. As a bonus for stargazers, the Andromeda Galaxy is also a beautiful sight.

Have you heard that all the stars you see at night are part of our Milky Way galaxy? While that is mostly true, one star-like object located near the border between the constellations of Andromeda and Cassiopeia appears fuzzy to unaided eyes. That's because it's not a star, but the Andromeda Galaxy, its trillion stars appearing to our eyes as a 3.4 magnitude patch of haze. Why so dim? Distance! It's outside our galaxy, around 2.5 million light years distant - so far away that the light you see left M31's stars when our earliest ancestors figured out stone tools. Binoculars show more detail: M31's bright core stands out, along with a bit of its wispy, saucer-shaped disc. Telescopes bring out greater detail but often can't view the entire galaxy at once. Depending on the quality of your skies and your magnification, you may be able to make out individual globular clusters, structure, and at least two of its orbiting dwarf galaxies: M110 and M32. Light pollution and thin clouds, smoke, or haze will severely hamper observing fainter detail, as they will for any "faint fuzzy." Surprisingly, persistent stargazers can still spot M31's core from areas of moderate light pollution as long as skies are otherwise clear.

Modern astronomy was greatly shaped by studies of the Andromeda Galaxy. A hundred years ago, the idea that there were other galaxies beside our own was not widely accepted, and so M31 was called the "Andromeda Nebula." Increasingly detailed observations of M31 caused astronomers to question its place in our universe - was M31 its own "island universe," and not part of our Milky Way? Harlow Shapley and Heber Curtis engaged in the "Great Debate" of 1920 over its nature.



Spot the Andromeda Galaxy! M31's more common name comes from its parent constellation, which becomes prominent as autumn arrives in the Northern Hemisphere. Surprising amounts of detail can be observed with unaided eyes from dark sky sites. Hints of it can even be made out from light polluted areas. *Image created with assistance from Stellarium*

Curtis argued forcefully from his observations of dimmer than expected nova, dust lanes, and other oddities that the “nebula” was in fact an entirely different galaxy from our own. A few years later, Edwin Hubble, building on Henrietta Leavitt’s work on Cepheid variable stars as a “standard candle” for distance measurement, concluded that M31 was indeed another galaxy after he observed Cepheids in photos of Andromeda, and estimated M31’s distance as far outside our galaxy’s boundaries. And so, the Andromeda Nebula became known as the Andromeda Galaxy.

These discoveries inspire astronomers to this day, who continue to observe M31 and many other galaxies for hints about the nature of our universe. One of the Hubble Space Telescope’s longest-running observing campaigns was a study of M31: the Panchromatic Hubble Andromeda Treasury (PHAT): bit.ly/m31phat . Dig into NASA’s latest discoveries about the Andromeda Galaxy, and the cosmos at large, at nasa.gov.



While M31’s disc appears larger than you might expect (about 3 Moon widths wide), its “galactic halo” is much, much larger – as you can see here. In fact, it is suspected that its halo is so huge that it may already mingle with our Milky Way’s own halo, which makes sense since our galaxies are expected to merge sometime in the next few billion years! The dots are quasars, objects located behind the halo, which are the very energetic cores of distant galaxies powered by black holes at their center. The Hubble team studied the composition of M31’s halo by measuring how the quasars’ light was absorbed by the halo’s material. Credits: NASA, ESA, and E. Wheatley (STScI) Source: <https://bit.ly/m31halo>

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!

**Barnard-Seyfert Astronomical Society
Minutes of a Regular Meeting of the Board of Directors
Held On Wednesday, August 4, 2021**

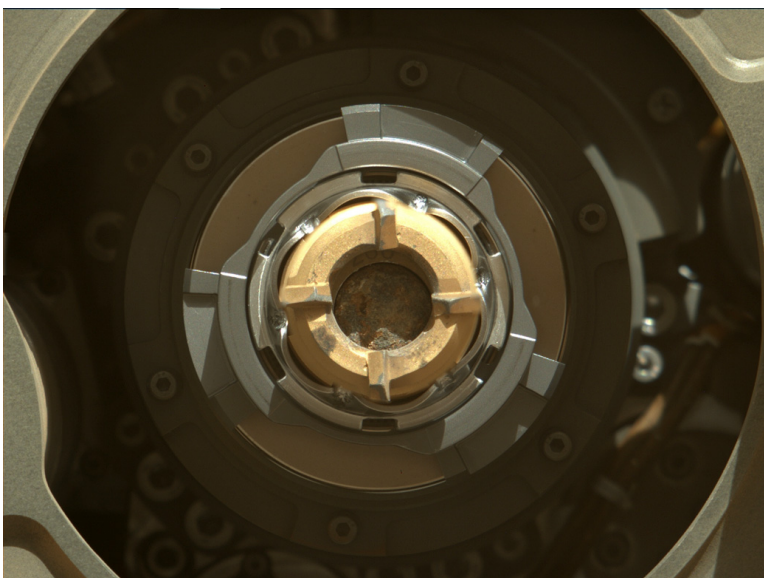
The regular meeting of the Board of Directors of the Barnard-Seyfert Astronomical Society was held August 4, 2021, online. Logged in were Tom Beckermann, Chip Crossman, Tony Drinkwine, Bud Hamblen, Keith Rainey and Theo Wellington.

Meetings and outreach:

Drew Gilmore has reported that the planetarium will be closed Tuesdays and Wednesdays. If the club is to meet at the planetarium the meeting night would need to be changed to Thursday. The Adventure Science Center wants the club to assist with ASC programs in exchange for the meeting space. Planned events included a daytime event October 30 and 31, and a way late play date on November 15. Alcohol will be served at the way late play date. It was observed that astronomical telescopes and alcohol don't necessarily mix. The Shelby Bottoms Nature Center was mentioned as an alternative site. There was discussion of polling the membership about changing the meeting night. Bud mentioned that the club had met on Thursdays in the past.

Theo reported that Heather Gallagher said that the Perseid event on the lawn of the Warner Park Nature Center is scheduled for August 12, and the first public star party is tentatively scheduled for Saturday, November 13, 2021. If the weather permits the event, attendance is expected to be large.

Continued on next page



On the Cover: Mars Perseverance Rover Gathers Rock Sample

This Mastcam-Z image shows a sample of Mars rock inside the sample tube on Sept. 1, 2021 – the 190th sol, or Martian day, of the mission. The image was taken after coring concluded but prior to an operation that vibrates the drill bit and tube to clear the tube's lip of any residual material.

The bronze-colored outer-ring is the coring bit. The lighter-colored inner-ring is the open end of the sample tube, and inside is a rock core sample slightly thicker than a pencil. A portion of the tube's serial number – 266 – can be seen on the top side of tube's wall.

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

Theo reported that there was \$11,067.85 in the Suntrust account and \$195 in the PayPal account. The club has paid \$849 for dues to the Astronomical League. The BSAS Facebook page has 1,949 likes and 2,082 followers. The BSAS Twitter account has 277 followers.

Keith reported that the club has 198 members.

Theo mentioned the scale model of the solar system at the Warner Park Nature Center, and there was some discussion about improving the visibility of the markers. Theo also mentioned that the Buffalo National River, near Gilbert, Arkansas, has been named a dark sky site by the IDA. A star gazing event is scheduled for October 2021. Re-assembling the club's big newtonian was discussed.

The meeting topic for September is under discussion.

There being no further business, the meeting was adjourned at 8:10.

Respectfully submitted,

Bud Hamblen
Secretary

xkcd

A hand-drawn comic titled "MUSIC GENRES ACCORDING TO..." with two columns: "...NON-COSMOLOGISTS" and "...COSMOLOGISTS". The comic lists various music genres and how they are perceived by these two groups.

Genre	...NON-COSMOLOGISTS	...COSMOLOGISTS
POP	POP	LITE
ROCK	ROCK	METAL
HIP HOP	HIP HOP	METAL
METAL	METAL	METAL
COUNTRY	COUNTRY	METAL
DANCE/ELECTRONIC	DANCE/ELECTRONIC	METAL
LATIN	LATIN	METAL
PUNK	PUNK	METAL
CLASSICAL	CLASSICAL	METAL
JAZZ	JAZZ	METAL
FOLK	FOLK	METAL

Barnard-Seyfert Astronomical Society Minutes of the Monthly Membership Meeting Held On Wednesday, August 18, 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, August 18, 2021. 28 participants zoomed in.

Keith Rainey called the meeting to order at about 7:30 PM. Andy Reeves made a motion to adopt the minutes of the July 21, 2021, meeting. Theo Wellington seconded and the minutes were adopted by a show of hands.

Treasurer's report: Theo reported that the Suntrust bank balance was \$11,067.85 and that the PayPal balance was \$ 449.23. \$849 had been paid to the Astronomical League for club dues this year.

Membership: Keith reported 200 members.

Social media: The May 22 Virtual Star Party has had 372 views to date. The club Facebook page is liked by 1957 and followed by 2090. Twitter has 276 followers.

Outreach: The Perseid Watch party with Dyer and Warner Park had 61 people in the wet field. A few meteors were seen, a few views of Venus, the Moon, and Jupiter.

Alex McConahay presented "Can I Get a Picture of That?", an introduction to astrophotography. Alex's web site is at <http://alexastro.com/>.

There being no further business, the meeting was adjourned at 9:00 PM.

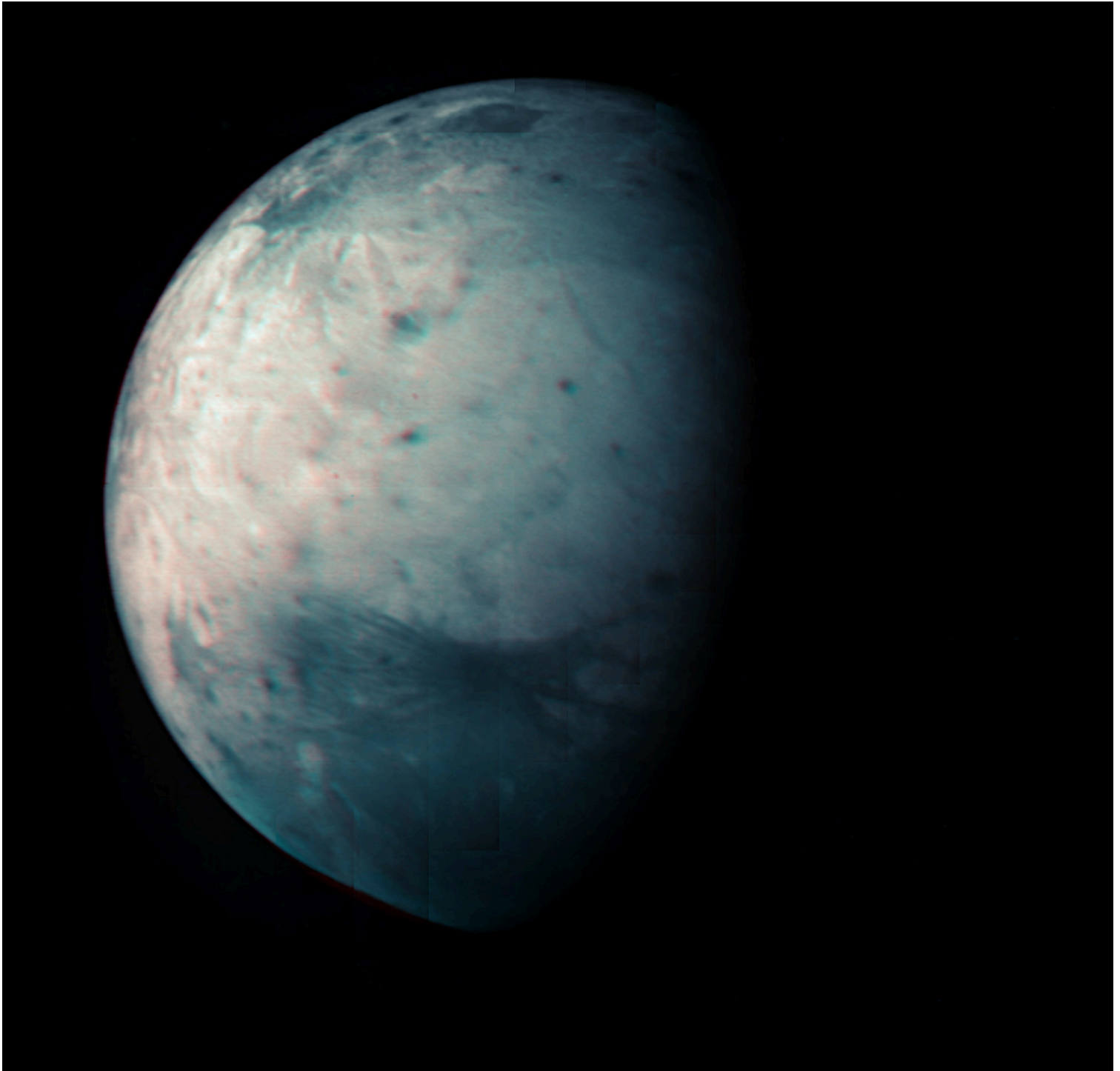
Respectfully submitted,

Bud Hamblen
Secretary

Next BSAS Membership Meeting:

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

Zoom link will be posted to bsasnashville.com



This infrared view of Jupiter's icy moon Ganymede was obtained by the Jovian Infrared Auroral Mapper (JIRAM) instrument aboard NASA's Juno spacecraft during its July 20th, 2021, flyby. Credits: [NASA/JPL-Caltech/SwRI/ASI/INAF/JIRAM](#)



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.