

# The ECLIPSE

*The Newsletter of the Barnard-Seyfert Astronomical Society*



*April 2023*



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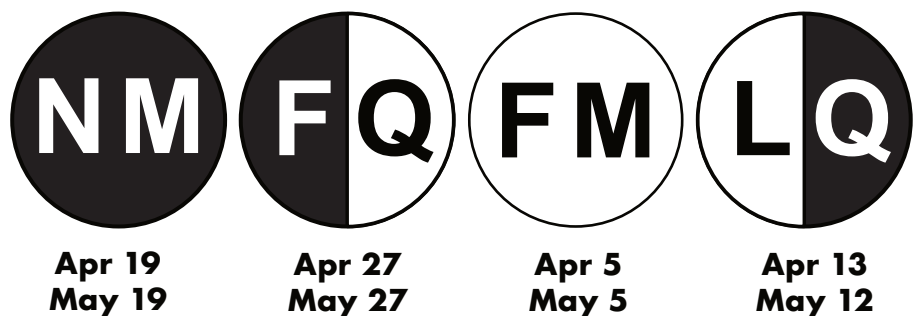
The luminous, hot star Wolf-Rayet 124 (WR 124) is prominent at the center of the James Webb Space Telescope’s composite image combining near-infrared and mid-infrared wavelengths of light. The star displays the characteristic diffraction spikes of Webb’s Near-Infrared Camera (NIRCam), caused by the physical structure of the telescope itself. NIRCam effectively balances the brightness of the star with the fainter gas and dust surrounding it, while Webb’s Mid-Infrared Instrument (MIRI) reveals the nebula’s structure.

**Credit:** NASA, ESA, CSA, STScI, Webb ERO Production Team

**On the Cover:** NASA astronauts Reid Wiseman, Victor Glover, and Christina Hammock Koch, and CSA astronaut Jeremy Hansen were announced Monday, April 3 as the four astronauts who will venture around the Moon on Artemis II, the first crewed mission on NASA’s path to establishing a long-term presence at the Moon for science and exploration through Artemis.

The crew assignments are as follows: Commander Reid Wiseman, Pilot Victor Glover, Mission Specialist 1 Christina Koch, Mission Specialist 2 Jeremy Hansen.

**Credit:** Josh Valcarcel - NASA JSC



## Happy Birthday Judith Resnik by Robin Byrne

This month we celebrate the life of a woman who accomplished much in a tragically short amount of time. Judith Arlene Resnik was born in Akron, Ohio on April 5, 1949. Judy showed an early aptitude for math, solving problems even before starting kindergarten. Raised in an observant Jewish household, Judy celebrated her Bat Mitzvah in 1962, at a time when this was uncommon.

When Judy was in high school, her parents divorced, and she was placed in her mother's custody. For a variety of reasons, Judy and her mother didn't get along. When she was 17, Judy went to court to be placed in her father's custody, instead. She won her case, and happily lived with her father, his new wife and her two new stepsisters.

An outstanding student, Judy received a perfect score on her SAT exam - the only woman to do so that year. She was also talented at playing the piano, earning an acceptance to the Juilliard School of Music to become a concert pianist. However, Judy ultimately chose to study mathematics at the Carnegie Institute of Technology. By her sophomore year, Judy discovered a passion for electrical engineering and changed her major. She graduated in 1970 with a Bachelors Degree in Engineering.

That same year, Judy married Michael Old, a fellow Engineering major. They both were hired by RCA in Moorestown, New Jersey. Judy worked on designing circuitry for missiles and radar systems. Some of the rocket and radar systems she developed were for NASA. In 1971, Judy began working on a Masters Degree at the University of Maryland. At the same time, her husband began studying at Georgetown in the Law School, so they moved to Washington, D.C. After completing her Masters, Judy began her pursuit of a doctorate in electrical engineering, studying the effects of electrical currents on the retina while she worked at the National Institute of Health. During this time, she and Michael divorced.

Dr. Resnik reunited with an old boyfriend from high school, who told her that NASA was seeking women applicants for their astronaut program. Judy was already interested in space travel due to having met a few former astronauts (Michael Collins and John Glenn), plus being inspired by Nichelle Nichols of Star Trek fame. At her boyfriend's suggestion, in 1977 Judy earned a pilot's license to increase her chances of being accepted into the space program. That same year she graduated with her doctorate. In January, 1978, Dr. Judith Resnik was named as one of six women and 29 men in the newest group of astronauts specifically chosen to fly on the Space Shuttle. This was the first time women were picked to be astronauts.

During her training at NASA, Judy developed the procedures and software for the Remote Manipulator System (later known as the Canadarm) that would be used to deploy payloads from the



Shuttle into space, or to retrieve satellites from orbit. She also worked on other software and hardware systems designed for the Shuttle. The one part of her new job that did not come naturally to her were public appearances and interviews. This was the main reason she was not chosen to be the first woman in space - Sally Ride was more comfortable dealing with the media attention that would accompany the milestone.

Judy Resnik's first Shuttle flight would be in August, 1984 aboard the maiden voyage of the Space Shuttle Discovery. The flight was delayed three times, including one delay that occurred only seconds before launch, but ultimately got off the ground on August 30. With the successful launch, Judy Resnik became the second American woman (and the first Jewish woman) in space. During the mission, she used the Canadarm to deploy satellites and a solar sail to test its ability to capture the Sun's energy. Also during the mission, footage was filmed for the IMAX documentary "The Dream is Alive." Resnik's weightless hair became an iconic part of the film. After spending 144 hours in orbit, the crew landed at Edwards Air Force Base on September 5.

Resnik's next assignment was to fly aboard the Space Shuttle Challenger as part of the STS-51 crew. Resnik would be tasked with photographing Halley's Comet, as well as delivering another satellite to orbit. This flight was also to be the first mission carrying a teacher to space, Christa McAuliffe. Although Resnik was part of the team that recruited teachers for the program, she had private doubts about taking non-astronauts on Shuttle flights. However, since NASA wanted a female astronaut with flight experience aboard with McAuliffe, Resnik was chosen for the mission. After one flight delay, Challenger launched on January 28, 1986 at 11:38 am EST. Within a minute of launch, an O-ring in one of the solid rocket boosters failed, leading to a catastrophic explosion. It was later determined that the crew were alive until the crew cabin hit the water at a speed of 207 mph, killing all on board.

Navy divers recovered the remains of all the crew members. Resnik's remains were cremated and buried at Arlington National Cemetery on May 20, 1986. Many posthumous accolades were awarded Resnik, including her elementary school being renamed in her honor. There are also craters on both the Moon and Venus that bear her name. The Institute of Electrical and Electronics Engineers (IEEE) created the IEEE Judith A. Resnik Award for contributions to space engineering, and the Society of Women Engineers created the Resnik Challenger Medal, which is awarded annually to "... a woman who has changed the space industry..."

Judy Resnik was a pioneer for female astronauts. She helped set the stage for the upcoming Artemis missions, which will see the first woman on the Moon. Whether you are observing the Moon, Venus, or watching the progress of NASA's next step in human spaceflight, take a moment to remember one of our fallen heroes who lost her life in the pursuit of expanding our human presence in space - Judy Resnik.

## References:

[Judy Resnik - Wikipedia](#)

[Judith Resnik by Lynn Cohen - Jewish Women's Archive](#)

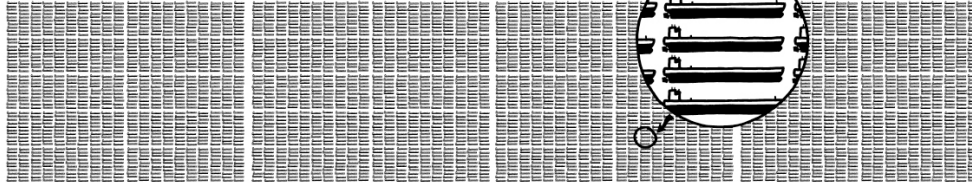
[Biography of Judith Resnik, Second American Woman in Space by Carolyn Collins Peterson - ThoughtCo](#)

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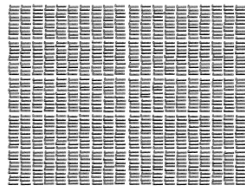
# THE PLANET KILLER COMET ICE MARGARITA

## INGREDIENTS

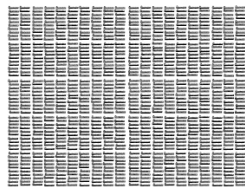
4,000 OIL TANKERS FULL OF TEQUILA



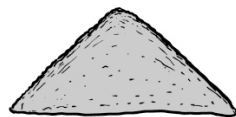
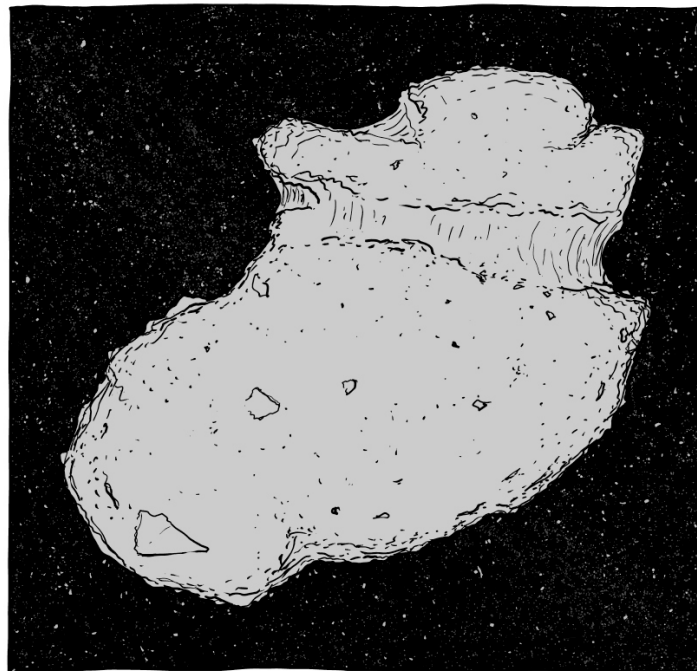
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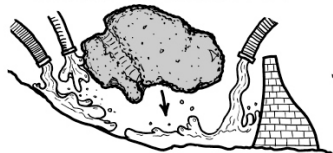
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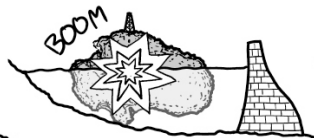
THE JUICE FROM 20 TRILLION LIMES

## INSTRUCTIONS

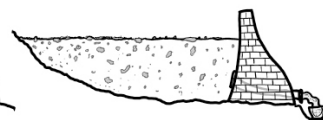
① DRAIN LAKE MEAD, COMBINE INGREDIENTS BEHIND HOOVER DAM



② DETONATE COMET USING BRUCE WILLIS'S DRILLING RIG FROM ARMAGEDDON (1998)



③ DISPENSE DRINK THROUGH HOOVER DAM TURBINES



## Solar Eclipses Are Coming! By David Prosper

Have you ever witnessed a total solar eclipse? What about an annular solar eclipse? If not, then you are in luck if you live in North America: the next twelve months will see two solar eclipses darken the skies for observers in the continental United States, Mexico, and Canada!

Solar eclipse fans get a chance to witness an annular eclipse this fall. On Saturday, October 14, 2023, the Moon will move exactly in front of the Sun from the point of view of observers along a narrow strip of land stretching across the United States from Oregon to Texas and continuing on to Central and South America. Since the Moon will be at its furthest point in its orbit from Earth at that time (known as apogee), it won't completely block the Sun; instead, a dramatic "ring" effect will be seen as the bright edge of the Sun will be visible around the black silhouette of the Moon. The distinct appearance of this style of eclipse is why it's called an annular eclipse, as annular means ring-like. If you are standing under a tree or behind a screen you will see thousands of ring-like shadows projected everywhere during maximum eclipse, and the light may take on a wan note, but it won't actually get dark outside; it will be similar to the brightness of a cloudy day. This eclipse must only be observed with properly certified eclipse glasses, or other safe observation methods like pinhole projection or shielded solar telescopes. Even during the peak of the eclipse, the tiny bit of the Sun seen via the "ring" can damage your retinas and even blind you!

Just six months later, a dramatic total solar eclipse will darken the skies from Mexico to northeast Canada, casting its shadow across the USA in a strip



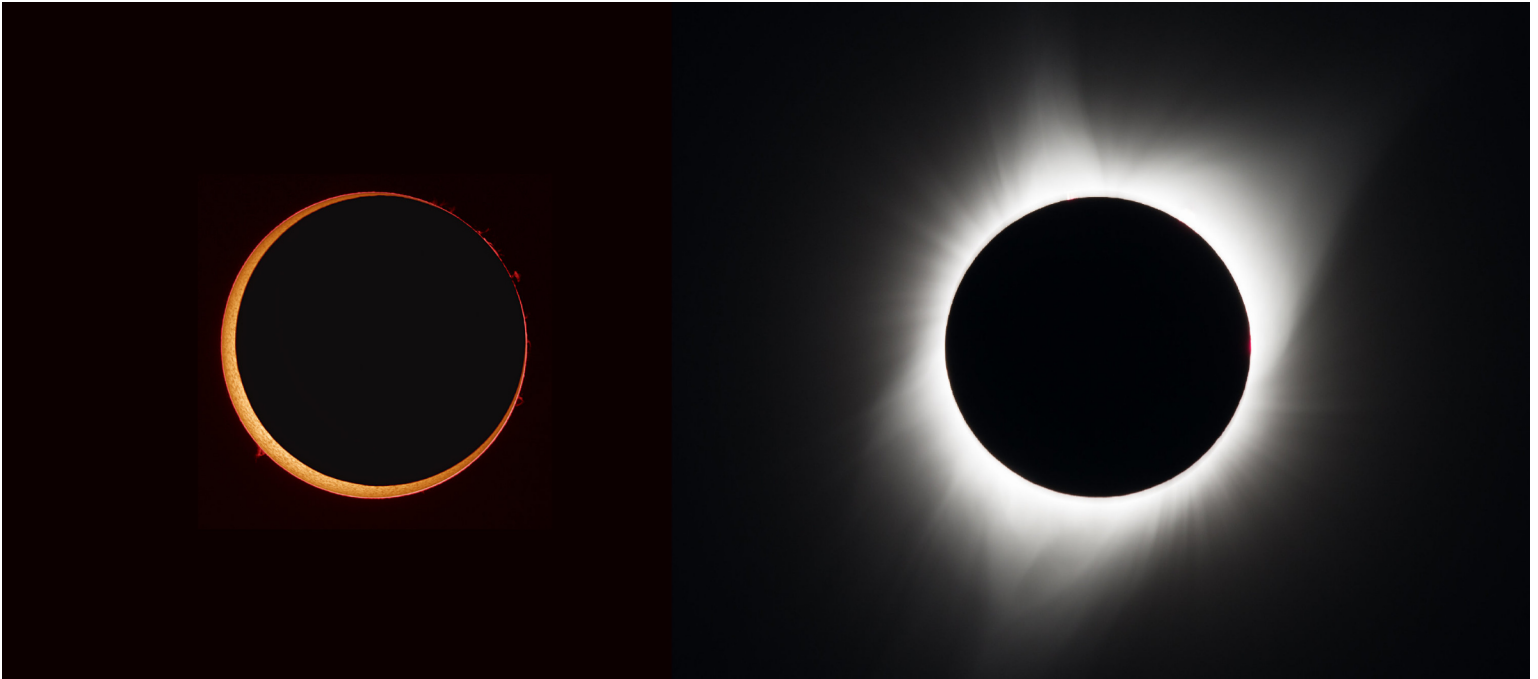
This detailed solar eclipse map shows the paths of where and when the Moon's shadow will cross the USA for the upcoming 2023 annular solar eclipse and 2024 total solar eclipse, made using data compiled from multiple NASA missions.

**Credits:** NASA/Scientific Visualization Studio/Michala Garrison; eclipse calculations by Ernie Wright, NASA Goddard Space Flight Center

approximately 124 miles (200 km) wide, on Monday, April 8, 2024. While protection must be worn to safely observe most of this eclipse, it's not needed to witness totality itself, the brief amount of time when the Moon blocks the entire surface of the Sun from view. And if you try to view totality through your eclipse viewer, you won't actually be able to see anything! The Moon's shadow will dramatically darken the skies into something resembling early evening, confusing animals and delighting human observers. You will even be able to see bright stars and planets - provided you are able to take your eyes off the majesty of the total eclipse! While the darkness and accompanying chilly breeze will be a thrill, the most spectacular observation of all will be the Sun's magnificent corona! Totality is the only time you can observe the corona, which is actually the beautiful outer fringes of the Sun's atmosphere. For observers in the middle of the path, they will get to experience the deepest portion of the eclipse, which will last over four minutes - twice as long as 2017's total solar eclipse over North America.

While some folks may be lucky enough to witness both eclipses in full - especially the residents of San Antonio, Texas, whose city lies at the crossroads of both paths - everyone off the paths of maximum eclipse can still catch sight of beautiful partial eclipses if the skies are clear. The Eclipse Ambassadors program is recruiting volunteers across the USA to prepare communities off the central paths in advance of this amazing cosmic ballet. Find more information and apply to share the excitement at [eclipseambassadors.org](http://eclipseambassadors.org). NASA has published a fantastic Solar Eclipse Safety Guide which can help you plan your viewing at [bit.ly/nasaclipsesafety](http://bit.ly/nasaclipsesafety). And you can find a large collection of solar eclipse resources, activities, visualizations, photos, and more from NASA at [solarsystem.nasa.gov/eclipses](http://solarsystem.nasa.gov/eclipses)

*This article is distributed by NASA's Night Sky Network (NSN). The NSN program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit [nightsky.jpl.nasa.gov](http://nightsky.jpl.nasa.gov) to find local clubs, events, and more!*



Photos of an annular total solar eclipse (left) and a total solar eclipse (right). Note that the annular eclipse is shown with a dark background, as it is only safe to view with protection – you can see how a small portion of the Sun is still visible as the ring around the Moon. On the right, you can see the Sun's wispy corona, visible only during totality itself, when the Moon completely – or totally - hides the Sun from view. A total solar eclipse is only safe to view without protection during totality itself; it is absolutely necessary to protect your eyes throughout the rest of the eclipse! Credits: Left, Annular Eclipse: Stefan Seip (Oct 3, 2005). Right, Total Eclipse, NASA/Aubrey Gemignani (August 21, 2017)

**Next Membership Meeting:**

Wednesday, April 19, 7:30 pm

Cumberland Valley  
Girl Scout Council Building  
4522 Granny White Pike



## **Barnard-Seyfert Astronomical Society Minutes of a Regular Meeting of the Board of Directors Held On Wednesday, March 1, 2023**

The regular meeting of the Board of Directors of the Barnard-Seyfert Astronomical Society was held March 1, 2023, online, Dr. Tom Beckermann presiding. Logged in were Tom Beckermann, Tony Drinkwine, Oz Gonzalez, Bud Hamblen, Keith Rainey, Andy Reeves, Kathy Underwood, Theo Wellington.

Tom asked for a review of the minutes of the board meeting on January 4, 2022, as printed in the March, 2023, edition of the Eclipse. No-one objected to the minutes.

Treasurer's report: Theo reported \$9,603.56 in the Truist account and \$799.39 in the PayPal account. We will make a request for a quote on eclipse glasses from American Paper Optics. The Sun will be about 50% obscured during the annular eclipse on October 14, 2023, and about 95% obscured during the total solar eclipse on April 8, 2024, and eye protection will be needed.

Membership report: Keith reported that there were 235 members.

Social media: Theo reported that there were about 2,00 follow the club on Facebook, and about 220 on Twitter.

Star Parties: The night was cloudy for the star party at the Shelby Bottoms Nature Center on February 25. About 30 people showed up. Theo was able to make a presentation on what could have been seen if the weather had permitted. Water Valley Overlook (private) is scheduled for March 18. The Bells Bend Outdoor Festival is going to be held April 15. Earth Day is going to be held April 23 at Centennial Park. BSAS has had booths at these events. Ron Ladd is ready to host the Messier Marathon at his property near Natchez Trace Parkway.

Middle Tennessee Science and Engineering Fair judging will be March 31. There were going to be over 100 entries.

The meeting was adjourned at 8 PM.

Respectfully submitted,

Bud Hamblen  
Secretary

## **Barnard-Seyfert Astronomical Society Minutes of the Monthly Membership Meeting Held On Wednesday, March 15, 2023**

The Barnard-Seyfert Astronomical Society met at the Girl Scout Center and on-line via Zoom on Wednesday, March 15, 2023, Tom Beckermann presiding. 13 persons signed in at the Girl Scout Center.

Dr Shane Larson presented “Solitude in the Cosmos: Looking for friends in the great cosmic dark,” on the possibility and the search for extra-terrestrial life. Books mentioned by Dr Larson included *The Eerie Silence: Renewing Our Search for Alien Intelligence* by Paul Davies, *Five Billion Years of Solitude: The Search for Life Among the Stars* by Lee Billings, and *The Oldest Living Things in the World* by Rachel Sussman.

Treasurer’s report: Theo Wellington reported there was \$9,650.06 in the Truist account and \$856.32 in the PayPal account.

Membership report: There were 236 members.

Social media report: There were 2000 likes on Facebook and 324 followers on Twitter.

Star parties: Shelby Bottoms was clouded out on February 25. An inside presentation was held for the members of the public who showed up. The private star party for March 18 will be at Natchez Trace Mile Marker 435.3. Be sure to bring a copy of the Park Service permit. The next members’ meeting is at 7:30 PM on April 19. The Messier Marathon is planned for April 22 and 23 at Ron Ladd’s property.

Outreach: Judging for the Middle Tennessee Science and Engineering Fair is scheduled for March 31. Award presentation is scheduled for April 13.

Respectfully submitted,

Bud Hamblen  
Secretary



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](https://bsasnashville.com). Frame not included.



Become a Member of BSAS!  
Visit [bsasnashville.com](http://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](http://bsasnashville.com). If you need more information, write to us at [info@bsasnashville.com](mailto: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](mailto:info@bsasnashville.com).