The ECLIPSE

May 2020

The Newsletter of the Barnard-Seyfert Astronomical Society

Next Membership Meeting:

Wednesday May 20, 7:30 pm
(Tentative)

We are working towards holding a virtual, online meeting in May. Watch for a message over Google Groups or Night Sky Network email for details.

In this Issue:

Barnard-Seyfert Astronomical Society

BSASNashville.com

From the President

Wow. What a long, strange month it has been. Everyone has been affected by this virus and our little club is no exception. One day we will have meetings and star parties again, but before that happens there are questions that need answering. What is a meeting going to look like? What is a star party going to look like? When this is passed, will we just go back to the way things were, or will they be different?

These are questions that the Board is addressing right now. We are meeting to try to answer these questions and if anyone has any input or suggestions, we would love to hear them. After all, this is your club too and if you have ideas, please don't hesitate to share them. I don't know yet what this month's meeting will look like. But whatever it looks like, be on the lookout for emails updating you on the type and location of the meeting.

Don't forget to look up during these times! The sky is still there and offering plenty of viewing opportunities. Jupiter and Saturn are doing their march across the night sky to a spectacular conjunction at the end of the year. Venus is still bright in the evening sky, and there are comets out there. Use our Facebook feed to get information on what's visible and where.

Please stay safe this month.

Clear skies,

Keith Rainey

BSAS
Barnard-Seyfert Astronomical Society

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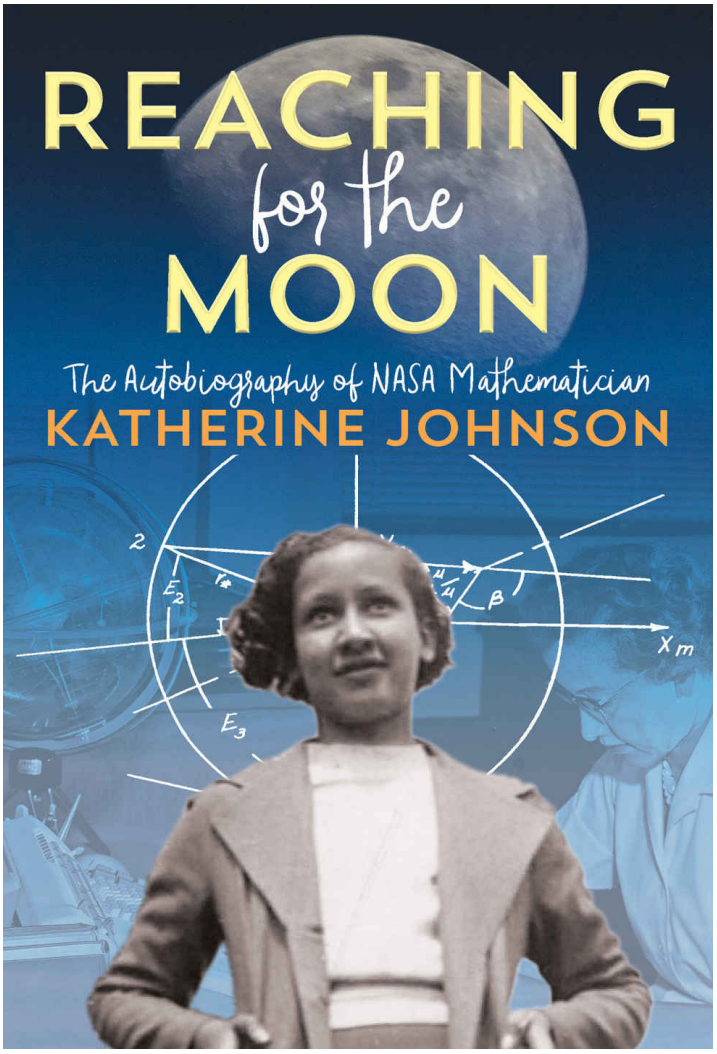
The SpaceX Crew Dragon trunk was secured to the spacecraft on Thursday, April 30, 2020, at Cape Canaveral Air Force Station, Florida, in preparation for the Demo-2 launch with NASA astronauts Robert Behnken and Douglas Hurley to the International Space Station for NASA's Commercial Crew Program. Crew Dragon will carry Behnken and Hurley atop a Falcon 9 rocket, returning crew launches to the space station from U.S. soil for the first time since the Space Shuttle Program ended in 2011. Credit: NASA

NM	FQ	FM	LQ
May 22	May 29	May 7	May 14
June 21	June 28	June 5	June 13

Book Review: Reaching for the Moon
reviewed by Robin Byrne

When I heard of Katherine Johnson's death in February of this year, I knew which book I had to read next. So I reached for "Reaching for the Moon: The Autobiography of NASA Mathematician Katherine Johnson" by Katherine Johnson.



Written for the young adult level, ages 10 and up, it is a very easy, quick read. Through the book we follow Katherine on her journey from childhood to college to working for NASA. We also see her private life with her family, her first husband (who died young), her children, and her second husband. At the same time, we get a glimpse of life for an educated black woman living in Virginia from the 1920's to present day. We share in her joy of numbers and mathematics, and her sense of accomplishment while attempting to solve problems never before encountered. Because of the age of the target audience, Johnson makes an effort to explain the obstacles and attitudes black people confronted as part of their daily life, not just during her childhood, but even when working at a place like NASA.

Katherine Johnson's story is inspiring for anyone to read. While some of it is known from the film "Hidden Figures," much is not known, or was fictionalized for the sake of film-making. The sacrifices made by her parents to ensure that all of their children got a college education during the 1930's, with the Great Depression in full swing, was amazing. So much of her success is due to the efforts her parents put forth to see that their children had a better life. For many years, Johnson's father worked in a different town, because the local economy was so hard hit. Several times, the entire family had to move to follow the work.

Katherine was such a smart young person, she started tutoring her older brother before she was old enough to attend school officially. She took it upon herself to go to school with her brother so that she could learn the material, then help him at home. That was the beginning of Katherine being accelerated through school. By the time

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Reach for the Moon, continued

she started college, she was several years ahead of her peers, and graduated college with degrees in both Mathematics and French (another of her loves) at the young age of 18.

Katherine's first job was teaching in a public school. During this time of segregation, she pointed out some interesting differences between the schools for white children compared to those for black children. Because there were so few jobs available to black women with a college education, many taught in the black public schools. Meaning that the black students may have been taught in severely underfunded facilities, but typically had teachers who were much better educated than the those for white students. In Katherine's case, her students were learning math from someone with a degree in Mathematics, as opposed to someone with solely a degree in Education. She also noted that, despite teaching in an impoverished area, her school had a high percentage of its graduates attend college.

It was through a friend that Katherine learned of the possibility of working for NASA as a mathematician. She began in the pool of women who were hired to be "computers," manually performing calculations for the engineers. Very much in the same vein as the early female astronomers who worked as "computers" at observatories. Katherine Johnson's rise through NASA was entirely due to her exceptional mathematical skill, which was showcased in "Hidden Figures."

Katherine Johnson's story is phenomenal, especially considering the era in which she lived, as both a woman and a person of color. The book is engaging, sprinkled throughout with family photographs of Johnson and the rest of her family through the years. Reading it as someone well acquainted with the space program, I did notice a few errors, but nothing that took away from the point of the book. Whether for a young person in your life, or for yourself, "Reaching for the Moon" is a book everyone will enjoy.

Reference:

Reaching for the Moon: The Autobiography of NASA Mathematician Katherine Johnson" by Katherine Johnson; Atheneum Books, 2019

There was no BSAS member meeting in April.

There was not a quorum for the April BSAS Board meeting.

HUBBLE REVEALS A TAPESTRY OF BLAZING STARBIRTH

This Hubble image shows how young, energetic, massive stars illuminate and sculpt their birthplace with powerful winds and searing ultraviolet radiation.

In this Hubble portrait, the giant red nebula (NGC 2014) and its smaller blue neighbor (NGC 2020) are part of a vast star-forming region in the Large Magellanic Cloud, a satellite galaxy of the Milky Way, located 163,000 light-years away. The image is nicknamed the "Cosmic Reef," because the nebulas resemble an undersea world.

The sparkling centerpiece of NGC 2014 is a grouping of bright, hefty stars, each 10 to 20 times more massive than our Sun. The stars' ultraviolet radiation heats the surrounding dense gas. The massive stars also unleash fierce winds of charged particles that blast away lower-density gas, forming the bubble-like structures seen on the right, which resemble coral. The stars' powerful stellar winds are pushing gas and dust to the denser left side of the nebula, where it is piling up, creating a series of dark ridges bathed in starlight. The blue areas in NGC 2014 reveal the glow of oxygen, heated to nearly 20,000 degrees Fahrenheit by the blast of ultraviolet light. The cooler, red gas indicates the presence of hydrogen and nitrogen.

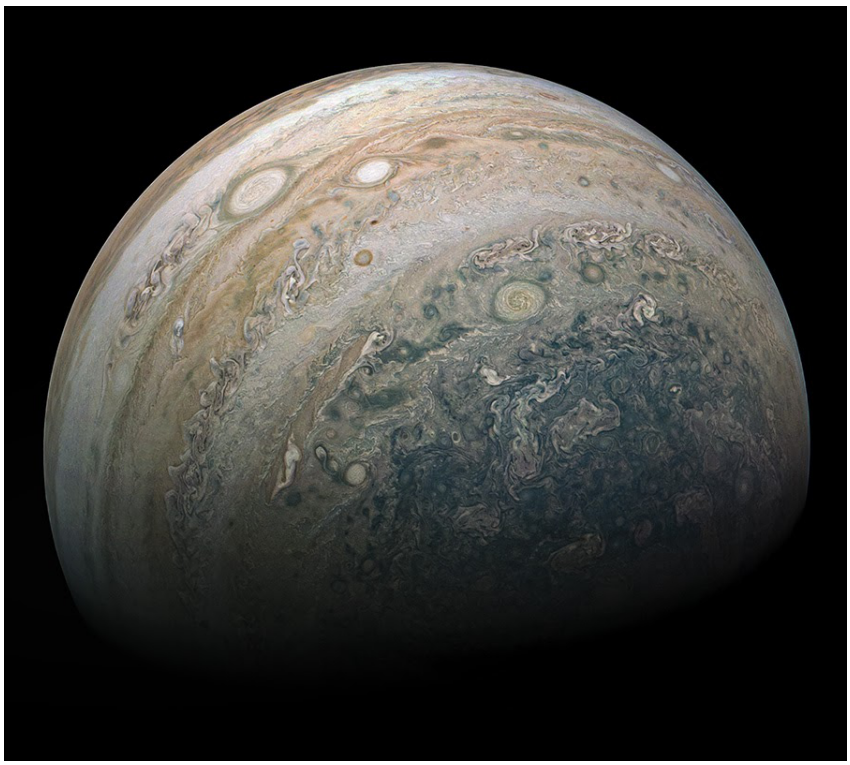
By contrast, the seemingly isolated blue nebula at lower left (NGC 2020) has been created by a solitary mammoth star 200,000 times brighter than our Sun. The blue gas was ejected by the star through a series of eruptive events during which it lost part of its outer envelope of material.

The image, taken by Hubble's Wide Field Camera 3, commemorates the Earth-orbiting observatory's 30 years in space. **Credits:** NASA, ESA and STScI

Become a Citizen Scientist with NASA!
by David Prosper

Ever want to mix in some science with your stargazing, but not sure where to start? NASA hosts a galaxy of citizen science programs that you can join! You'll find programs perfect for dedicated astronomers and novices alike, from reporting aurora, creating amazing images from real NASA data, searching for asteroids, and scouring data from NASA missions from the comfort of your home. If you can't get to your favorite stargazing spot, then NASA's suite of citizen science programs may be just the thing for you.

Jupiter shines brightly in the morning sky this spring. If you'd rather catch up on sleep, or if your local weather isn't cooperating, all you need is a space telescope - preferably one in orbit around Jupiter! Download raw images straight from the Juno mission, and even process and submit your favorites, on the JunoCam website! You may have seen some incredible images from Juno in the news, but did you know that these images were created by enthusiasts like yourself? Go to their website and download some sample images to start your image processing journey. Who knows where it will take you? Get started at bit.ly/nasajunocam



GREAT SOUTHERN JUPITER: Incredible image of Jupiter, submitted to the JunoCam site by Kevin M. Gill. Full Credits : NASA/JPL-Caltech/SwRI/MSSS/Kevin M. Gill

Interested in hunting for asteroids? Want to collaborate with a team to find them?? The International Astronomical Search Collaboration program matches potential asteroid hunters together into teams throughout the year to help each other dig into astronomical data in order to spot dim objects moving in between photos. If your team discovers a potential asteroid that is later confirmed, you may even get a chance to name it! Join or build a team and search for asteroids at iasc.cosmosearch.org

Want to help discover planets around other star systems? NASA's TESS mission is orbiting the Earth right now and scanning the sky for planets around other stars. It's accumulating a giant horde of data, and NASA scientists need your help to sift through it all to find other worlds! You can join Planet Hunters TESS at: planethunters.org

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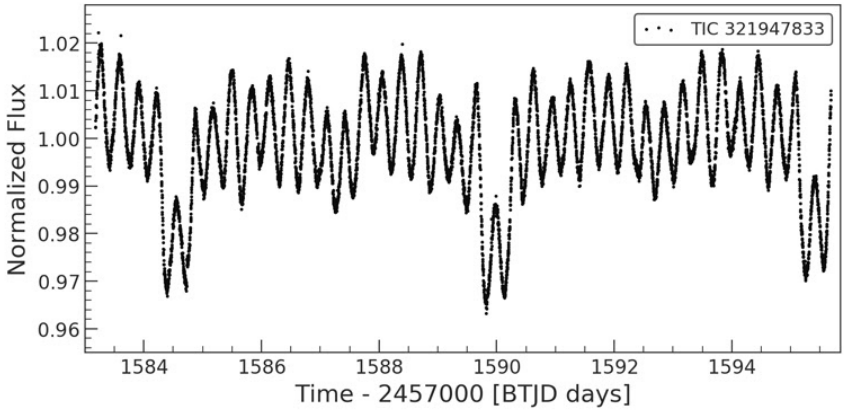
Citizen Science, continued

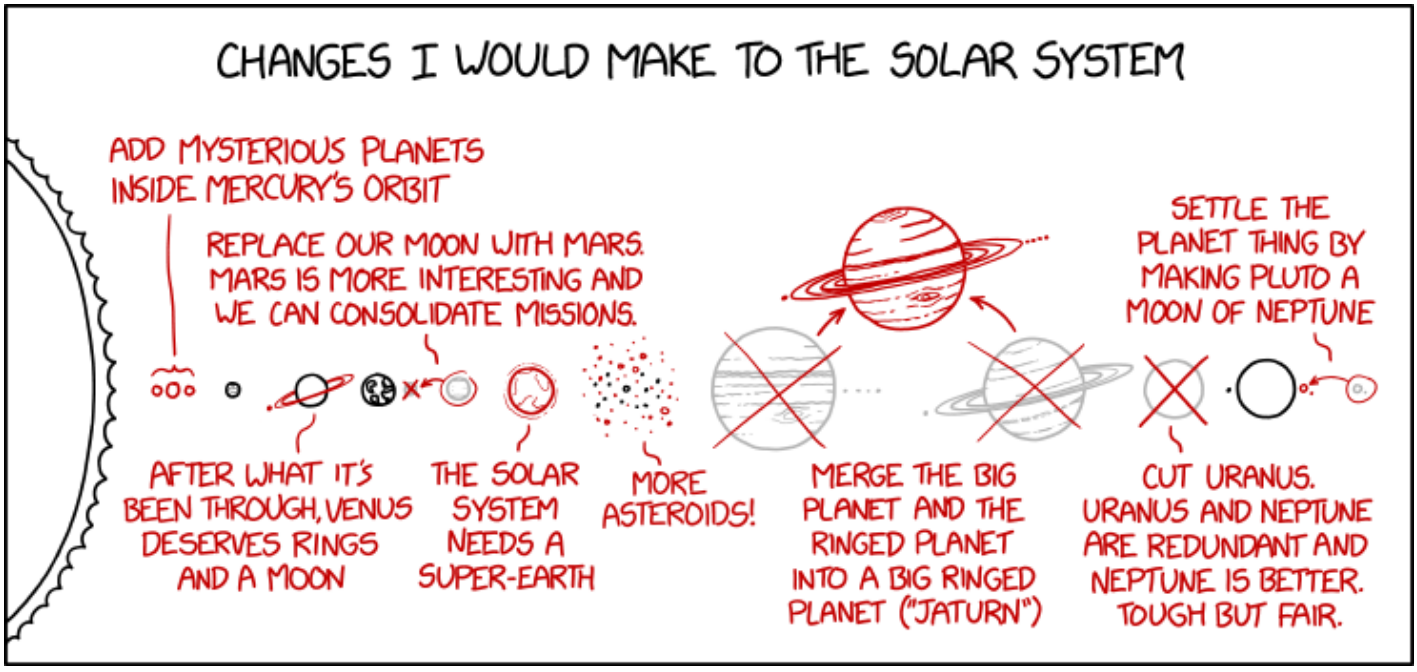
Intrigued by these opportunities? These are just a few of the many ways to participate in NASA citizen science, including observing your local environment with the GLOBE program, reporting aurora with Aurorasaurus, measuring snowpack levels, training software for Mars missions – even counting penguins! Discover more opportunities at science.nasa.gov/citizenscience and join the NASA citizen science Facebook group at facebook.com/groups/Sciencing/ And of course, visit nasa.gov to find the latest discoveries from all the research teams at NASA!



Light curve of a binary star system containing a pulsating (variable) star, as spotted on Planet Hunters TESS by user mhuten and featured by project scientist Nora Eisner as a "Light Curve of the Week." Credit: Planet Hunters TESS/NASA/mhuten/Nora Eisner

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!

xkcd



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.

Barnard-Seyfert Astronomical Society

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.