



Roanoke Valley Astronomical Society

Amateur Astronomy News and Views
In Southwestern Virginia



Volume 41—Number 5

May 2024

RVAS April Meeting Notes

Team Slim Shady

By Erin Elliott, Secretary

Technology is a beautiful thing, but at times it can cause some difficulties. Due to a few hiccups with getting the Zoom set up, we were not able to launch the Celestial Café. At 7:37 things resumed and RVAS Immediate Past President, **John Goss**, along with our Membership Coordinator, **Frank Baratta**, welcomed members and guests to the April meeting. To begin, John presented the evening's agenda.

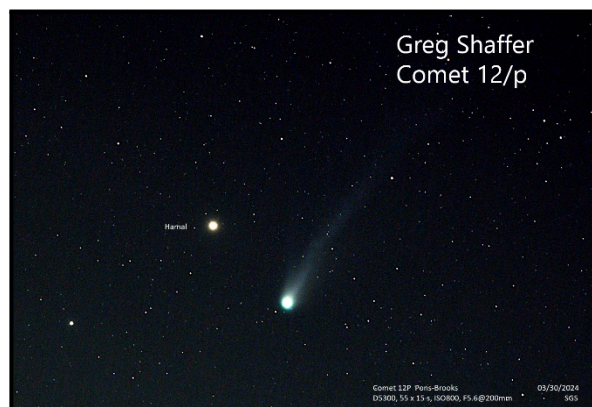
Attendance: There were 47 members and 7 guest speakers from Roanoke College NASA Challenge team to share during our program segment. 18 members were in person and 29 attended virtually.

New Members: A big welcome to our newest member, **October "Toby" Rundle**, who is also John Goss' granddaughter. This marks having 101 members of RVAS!

Astrophotography: We thank **Ed Dixon, Michael Good, Mike Hutkin, Greg Shaffer**, and **Dave Thomas** for providing their work this month. We had a variety of images focusing on near and deep sky objects.

To provide each image with the focus it deserves, we are sharing the submissions in a separate article

in this newsletter. Do not miss checking out the rest of these images.



Comet 12/p – Greg Shaffer photo

Member Observation Reports: The April 8th eclipse was one of the most talked about celestial events in history. Many of our members took trips to go watch the event in Texas, Ohio, Indiana and New York. You can see many of their pictures in this month's Astrophotography section.

Slate of Officers: The following list is the slate of officers for the upcoming election in June. The slate of officers is as follows:

- President: Michael Good
- Vice President: Bill Krause
- Secretary: Erin Elliott

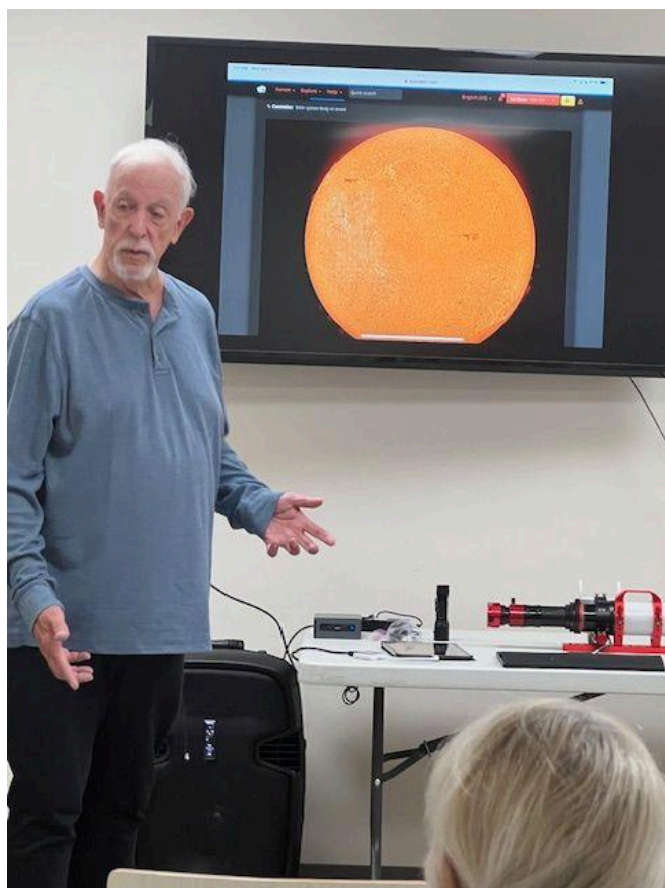
- Treasurer: Frank Baratta
- Officer at Large #1: Nancy Vogelaar
- Officer at Large #2: Caleb White

Member Outreach Committee:

Nancy Vogelaar spoke about the Blue Ridge Kite Festival outreach opportunity on Saturday, April 20th at Green Hill Park in Salem, Virginia. It is a great opportunity to reach an audience of about 9,000 attendees of the festival.

Caleb White has been leading Astronomy outreach at Salem Montessori School. They are especially seeking volunteers for a star gazing opportunity but are fighting with the weather. If you are interested in helping, please reach out to him.

On April 3, 2024, **Ed Dixon** visited the Rockbridge Regional Library in Lexington. He spoke about what to expect with the April 8 solar eclipse and they had an opportunity to take a picture of the Sun.



On April 8, 2024, **Frank Baratta** and **Ed Dixon** coordinated a Solar Eclipse event with Roanoke RVAS April 2024

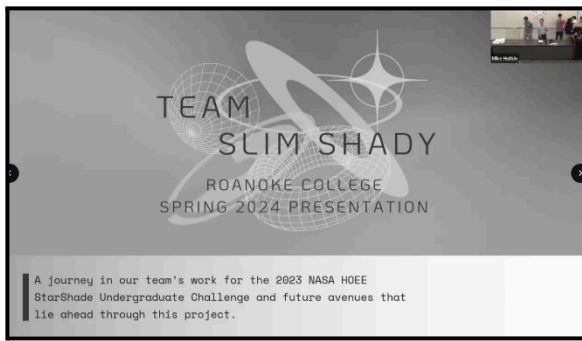
Parks and Recreation at the Mill Mountain Discovery Center. **Ed Dixon, Mike Hutkin,** and **Mark Hodges** of the Outreach Committee were able to attend. It was drizzly and cloudy, but they were able to see the eclipse for a few minutes at a time. There were hundreds of people at the event and there was even a break in the sky to watch it at maximum coverage.

There are more upcoming outreach events on the horizon, which include the following:

- June 6, 2024 @ 10am: Astronomy 101 presentation for Senior Citizens through Franklin County Parks and Recreation
- Claytor Nature Center/Belk Observatory is looking for partnership opportunities with RVAS. They have public programs for the community once a month and they would like us to visit or lead a program. An idea is to help with a Perseid Watch Party August 11-12. If you are interested in leading a program at Belk Observatory, you can contact the Outreach Director, [Jennifer Wills](#).

Star Parties in 2024: The countdown is on to see if the weather will cooperate with May's upcoming Star Party! The next potential for the Star Party will be May 3 at the Cahas Overlook. These are opportunities for members to come together and share the sky with each other. The following parties are projected to be August 2, and November 22. Please reach out to **Mike Hutkin** at president@rvasclub.org to join RVAS' Google Group to stay up to date in communication on these events.

What's Up?: Before turning to our program for the evening, John asked **Frank Baratta** for his "What's Up?" program on what the skies of May have in store for us. Frank's "What's Up? Highlights" in this issue provide a summary of program. His PowerPoint can be viewed by [clicking here](#). The recording of the program is available by [clicking here](#).



Team Slim Shady Presentation – Zoom screenshot

Team Slim Shady: A group of physics and engineering students from Roanoke College took on a NASA challenge to design a giant shade to shield space telescopes from unwanted light. They competed against colleges and universities across the country and earned second place in the competition. If you would like to view the whole program by video, you may do so by [clicking this link](#).

A journey in our team's work for the 2023 NASA HOEE StarShade Undergraduate Challenge and future avenues that lie ahead through this project.

Members of StarShade:

- Bobby Haye: Team Lead, CAD Drawings Leads
- Art Duncan: Calculations Lead, Report Lead
- Bryan Moctezuma: Construction Lead
- Patrick Brennan: Calculations, Report
- Alan Castellon: CAD Drawings
- Dylan Knick: Calculations, Report
- Addy Littlefield: Construction, Report
- Tony Saade: CAD Drawings, Construction
- Enzo Tagum Fombeno: Calculations
- Erin Trost: Calculations, Construction, Report
- Truong Le, Faculty Advisor

Introduction:

What is a StarShade?

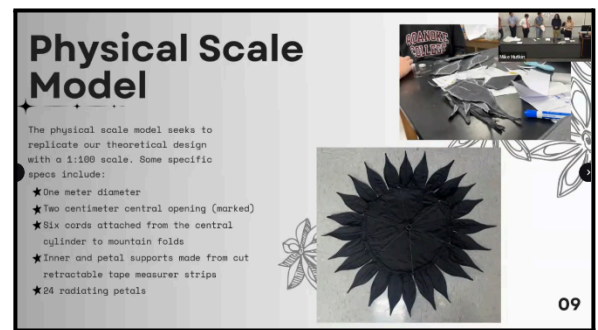
- A satellite for focusing on exoplanets
- Allows for better imaging capabilities

How did we get involved with StarShade project?

- Sept 2023: American Institute of Physics (AIP) and the 2023 NASA HOEE StarShade Undergraduate Challenge
- Began reaching out to students in the MCSP Department

General Grading

- 4 main graded components
 - o CAD Drawings (20%)
 - o Free Body Diagrams/Hand Calculations (25%)
 - o Project Report/Document (20%)
 - o Construction of 1:100 StarShade Model (35%)



Physical Scale Model – Zoom screenshot

Challenges

- Schedules
- Requirements (the crucial 6 are listed below):
 - o Payload of <1,000kg
 - o Opacity
 - o Petal Edge Sharpness
 - o Spacecraft Bus Volume
 - o Mission Duration
 - o Petal Edge Shape Tolerance
- Materials
- Mechanisms

Specific Inspirations I

- Dyneema Cables
- Tent Designs
- Tape Measurers
- Victorian Sleeves
- Car Shades
- Carbon Based Materials

Past Iterations

- There were numerous past physical model iterations
 - o Original Sketch
 - o Origami Designs
 - o NASA Template
 - o Template with 24 Petals
 - o Nylon model with steel supports
 - o Paper model with measuring tape segments

Specific Inspirations II

- Conceptual Design using the 6 listed in the Specific Inspirations I section

Final Design

- 24 Radiating Petals
- Light Payload
- Memory Material
- Superflat Dimensions

Sample Calculation: High-Carbon Steel Petal Supports

- Linear density of high-carbon steel found in a retractable tape measure

Physical Scale Model seeks to replicate our theoretical design with 1:100 scale. Some specific specs include:

- One meter diameter
- Two centimeter central opening (marked)
- Six cards attached from the central cylinder to mountain folds
- Inner and petal supports made from cut retractable tape measurer strips
- 24 radiating petals

Demo of Scale Model

Aspects Not Accounted For

- Not all requirements and specifics of the 2023 Challenge could be fulfilled before the deadline, which included:
 - o Not all components being a 1:100 replication in scale model
 - o Storage calculations note being conducted
 - o Simulations regarding applied force

Changes Made Since Fall 2023

- Addition of a central motor to automatically wind/unwind model
 - o Welcoming Ayham Makhamra and Erinson Romero to the team
- Modifying supports in outer ring
- Making our model more aesthetically-pleasing

Looking Towards the Future

- Construction of the New Sciences Center can provide modern facilities to potentially house a satellite program for future participation in the StarShade Challenge
- A new science center will provide more opportunity for students to get involved
- Team Slim Shady is making a trip to see the development of StarShade models at NASA Jet Propulsion laboratory (JPL)
- At JPL they will get to meet NASA scientists working on StarShade technology
- Potential future partnerships between Roanoke College and NASA



Team Slim Shady from Roanoke College – John Goss Photo

Next month: On May 20, 2024, we will have Rich Dollish, Amateur Astronomers Association of Pittsburgh. Driving force behind building an observatory at the Pittsburgh VA. It would be a great opportunity for veterans to socialize and spend time under the night sky.

The meeting was adjourned at 9:04 pm

The Roanoke Valley Astronomical Society is a membership organization of amateur astronomers dedicated to the pursuit of observational and photographic astronomical activities. **Meetings are held at 7:30 p.m. on the third Monday of each month. See calendar on last page of newsletter for location. Meetings are open to the public.** Observing sessions are held one or two weekends a month at a dark-sky site. For information regarding joining RVAS, including annual dues, [click here](#). Articles, quotes, etc. published in the newsletter do not necessarily reflect the views of the RVAS or its editor.

Officers/Executive Committee/Editor/Webmaster

Mike Hutkin, President (president@rvasclub.org)

John Wenskovitch, Vice President (vicepresident@rvasclub.org)

Erin Elliott, Secretary (secretary@rvasclub.org)

Frank Baratta, Treasurer (treasurer@rvasclub.org)

Nancy Vogelaar, Member at Large (memberatlarge@rvasclub.org)

John Goss, Immediate Past President (immediatepastpresident@rvasclub.org)

Michael Martin, Past President (pastpresident@rvasclub.org)

Ed Dixon, RVAS Newsletter Editor (editor@rvasclub.org)

Erin Elliott, Webmaster (webmaster@rvasclub.org)

RVAS Member Anniversaries

Congratulations to the following members who reach the indicated number of consecutive years with the RVAS since joining or rejoining during the month of May:

Harry Kessler (2017) – 7 years

Eric Walter (2020) – 4 years

William Neyman (2021) – 3 years

Rich Scott (2021) – 3 years

Thanks to all of you for being RVAS members!

Welcome Mat

The Society welcomes the following new members who joined in the indicated months:

October (“Toby”) Rundle (March 2024)

Gerald Smith, of Blacksburg (March 2024)

Ben Hartman, of Salem (April 2024)

Thanks to all for becoming RVAS members!

TEAM SLIM SHADY NEEDS YOUR HELP TO REACH THE STARS

To make a gift to help us go to NASA's
Jet Propulsion Laboratory, please
contact Roanoke College's Interim Vice
President for Advancement:
Ms. Mary Grace Theodore

✉ theodore@roanoke.edu

☎ 540-375-2487

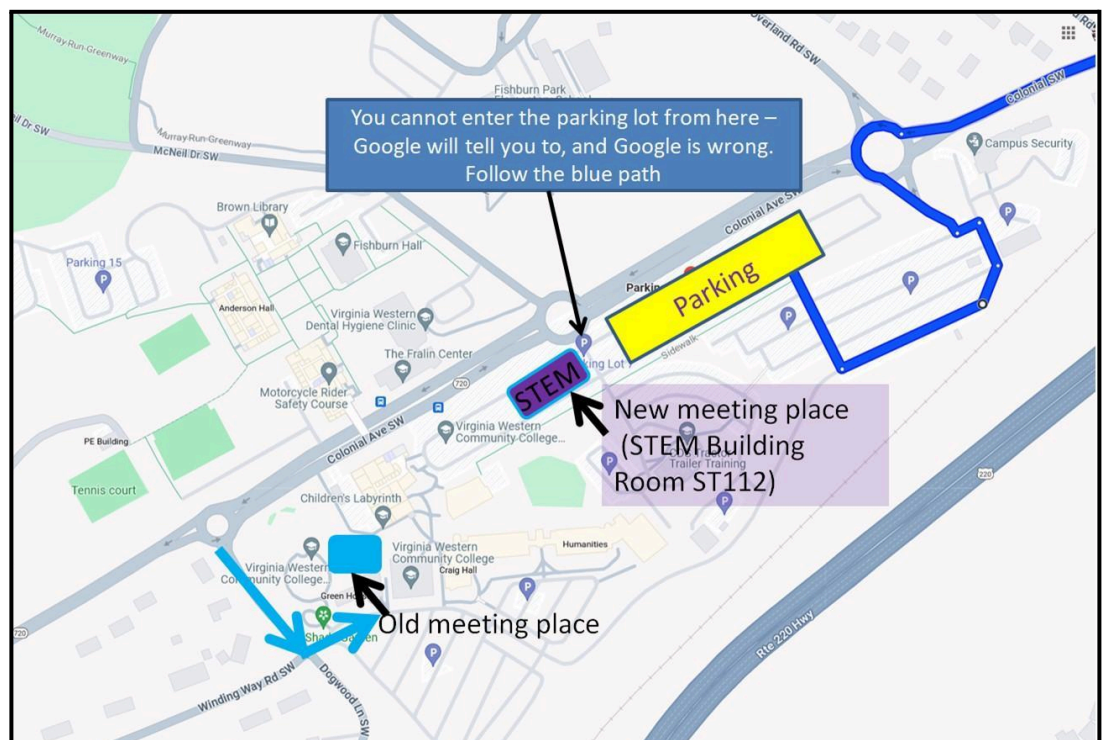
🏠 221 College Lane, Office of Advancement

Directions to RVAS Meeting Location

Virginia Western Community College STEM Building, Room ST112
3094 Colonial Ave SW, Roanoke, VA 24015

VWCC is located in the southwestern area of the City of Roanoke. The STEM Building is accessed via the roundabout at Overland Drive and Colonial Avenue, near Campus Security at the top right of the map. The STEM Building is at the opposite end of the Colonial Avenue parking lot from Campus Security. Follow the darker blue path from the roundabout and park anywhere in the lot. **Note:** Google provides incorrect guidance to access the parking lot from the roundabout at McNeill Drive. That roundabout **does not** provide an entrance to the parking lot.

RVAS April 2024



What's Up? Highlights

May 1 to 31, 2024

(See *RVAS April Meeting Notes* in this issue for links to the PowerPoint and program video.)

This Month:

So, here we are, already on the doorstep of the 5th month of 2024. And what does May have in store for us, other than the opportunity to regale the Mothers of the world for their love, patience and endurance in bearing and rearing all of us? Astronomically, May pales as a follow-on to April's solar eclipse, the second great American event in less than 10 years. Moreover, all of the planetary action occurs during the pre-dawn hours, leaving the evening hours feeling a bit empty. Nonetheless, May does offer some events for early risers and those looking for some challenges. In particular, there's an opportunity to track one of the largest asteroids and sight a razor-thin crescent Moon. Go for it!

Lunar Aspsides:

- Perigee: Sun., 5th – Distance 225,660 mi., diameter 32'54".
- Apogee: Sun., 5th – Distance 251,431 mi., diameter 29'32" (10.2% narrower than on 5th).

Celestial Events:

- Sun., 5th – Annual Eta Aquarid meteors peak at 5 p.m. Debris from outbound Halley's Comet. 15–20 per hour. Best viewed pre-dawn hours on 5th and 6th.
- Wed., 8th – Challenge Binocular/Telescopic Observation: 1% illuminated Moon less than 1° from Pleiades 5° above NW horizon 30 min. after sunset.
- Tue., 14th – At 9:47 p.m., view intersection of the celestial equator and the ecliptic, marking where the Sun will be on the autumnal equinox. Look due south a bit more than half-way up the sky, toward the zenith.
- Sat., 18th – Asteroid 2 Pallas at opposition. Excellent time to track the second discovered and third largest asteroid for the next few weeks. This chart will assist: https://in-the-sky.org/news/asteroids/20240517_14_100_2.png
- Fri., 31st – Early risers can view the waning crescent Moon 28° high in the SE pre-dawn sky, about 1.25° from Saturn.

Sunset and Twilight:

Sunset Range: 8:09 p.m. (May 1st) to 8:33 p.m. (May 31st)

Twilight Ends: 9:47 p.m. (May 1st) to 10:24 p.m. (May 31st)

Weekend Observing Opportunities:

(Dark of the Moon Weekends)

* Quarterly star party / ** Rain date

May 3rd*/4th**

May 31st/June 1st

Moon Phases:

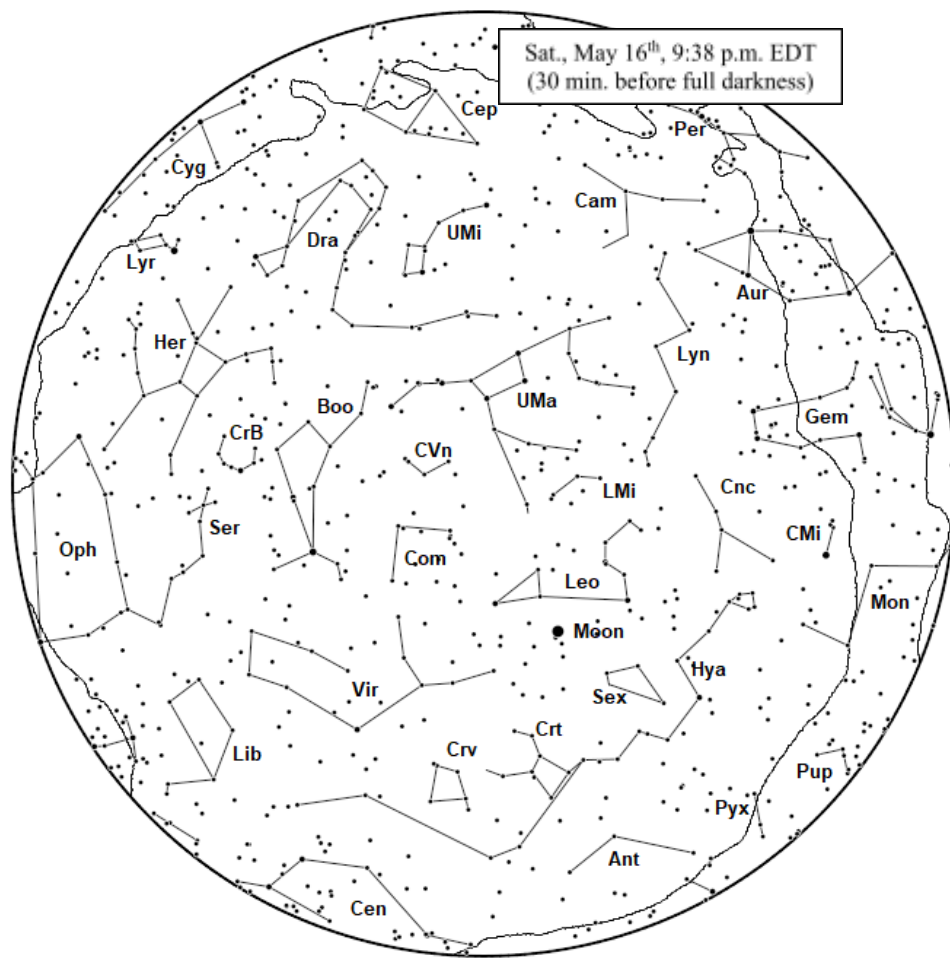
Wed., 1st – Last Quarter

Tue., 8th – New Moon

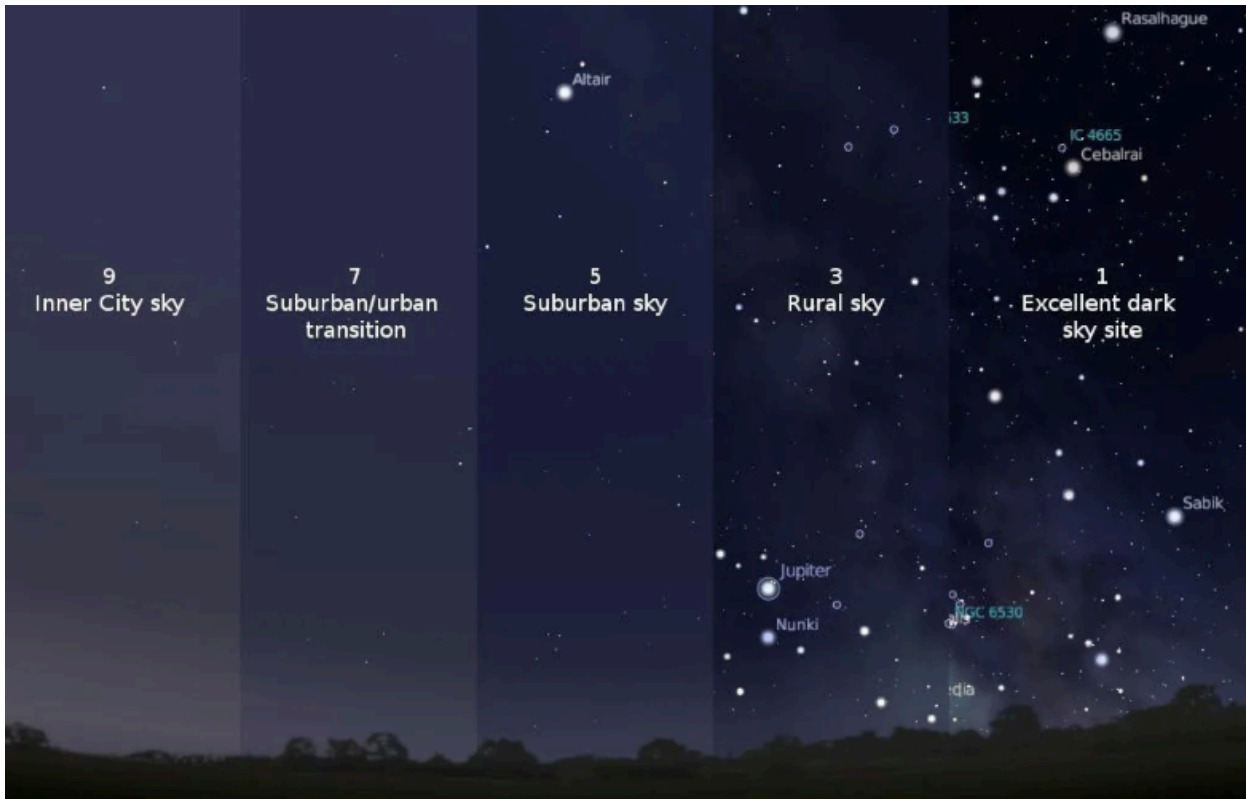
Wed., 15th – First Quarter

Thu., 23rd – Full Moon

Thu., 31st – Last Quarter



May's Night Sky Notes: Stargazing for Beginners from Night Sky Network



The Bortle scale helps amateur astronomers and stargazers to know how much light pollution is in the sky where they observe. Credit: International Dark Sky Association

by Kat Troche of the Astronomical Society of the Pacific

Millions were able to experience the solar eclipse on April 8, 2024, inspiring folks to become amateur astronomers – hooray! Now that you’ve been ‘bitten by the bug’, and you’ve decided to [join your local astronomy club](#), here are some stargazing tips!

The Bortle Scale

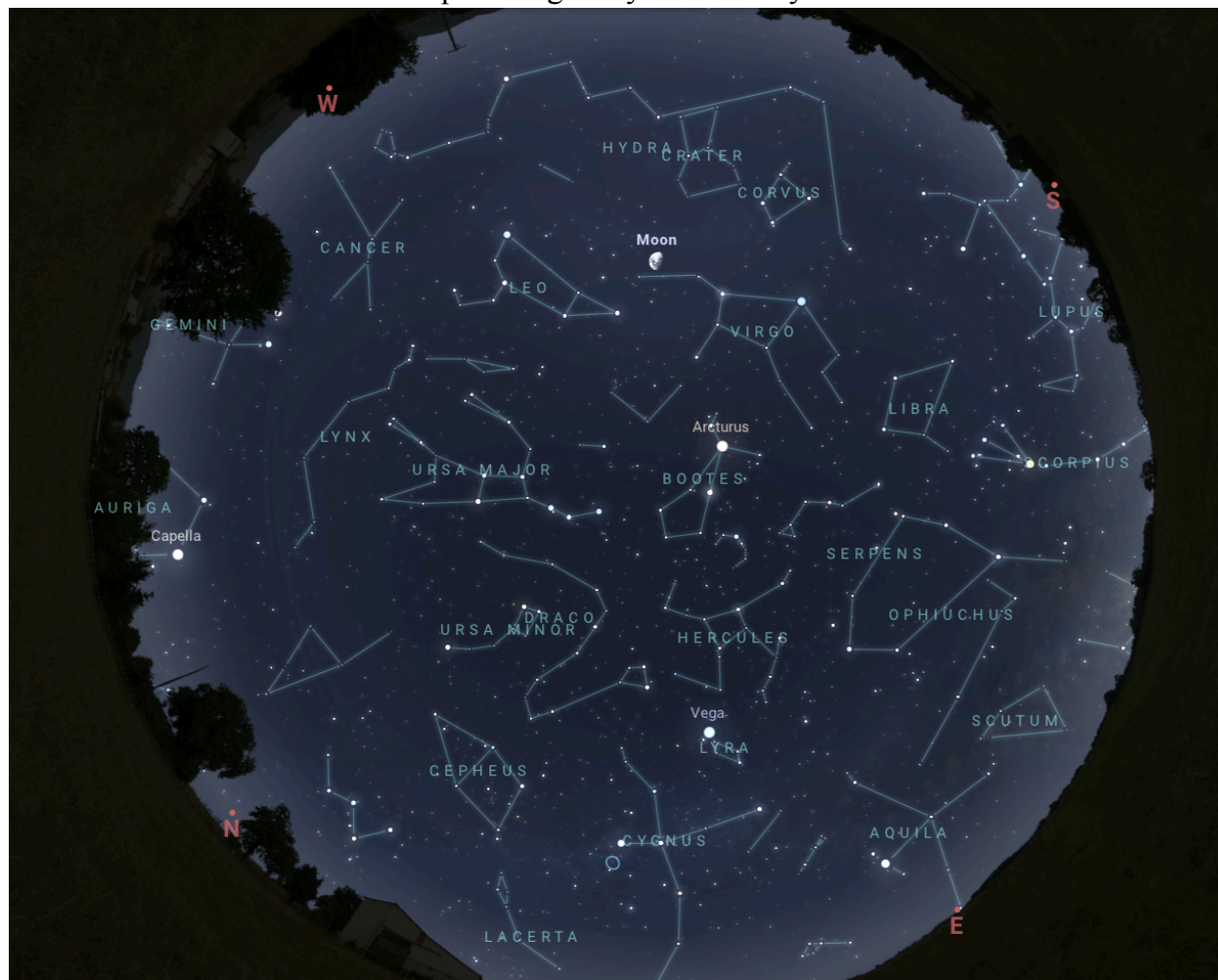
Before you can stargaze, you’ll want to find a site with dark skies. It’s helpful learn what your [Bortle scale](#) is. But *what is* the Bortle scale? The Bortle scale is a numeric scale from 1-9, with 1 being darkest and 9 being extremely light polluted; that rates your night sky’s darkness. For example, New York City would be a Bortle 9, whereas Cherry Springs State Park in Pennsylvania is a Bortle 2.

Determining the Bortle scale of your night sky will help narrow down what you can expect to see after sunset. Of course, other factors such as weather (clouds namely) will impact seeing conditions, so plan ahead. Find Bortle ratings near you here: www.lightpollutionmap.info

No Equipment? No Problem!

There’s plenty to see with your eyes alone. Get familiar with the night sky by studying star maps in books, or with a planisphere. These are great to begin identifying the overall shapes of constellations, and what is visible during various months.

A full view of the northern hemisphere night sky in mid-May. Credit: Stellarium Web.



Interactive sky maps, such as [Stellarium Web](https://stellarium.net/), work well with mobile and desktop browsers, and are also great for learning the constellations in your hemisphere. There are also several astronomy apps on the market today that work with the GPS of your smartphone to give an accurate map of the night sky.

[Keep track of Moon phases](#). Both the interactive sky maps and apps will also let you know when planets and our Moon are out! This is especially important because if you are trying to look for bright deep sky objects, like the Andromeda Galaxy or the Perseus Double Cluster, you want to *avoid* the Moon as much as possible. Moonlight in a dark sky area will be as bright as a streetlight, so plan accordingly! And if the Moon is out, check out this Skywatcher's Guide to the Moon: bit.ly/MoonHandout

Put On That Red Light

If you're looking at your phone, you won't be able to see as much. Our eyes take approximately 30 minutes to get dark sky adapted, and a bright light can ruin our night vision temporarily. The easiest way to stay dark sky adapted is to avoid any bright lights from car headlights or your smartphone. To avoid this, simply use red lights, such as a red flashlight or headlamp. **The reason:** white light constricts the pupils of your eyes, making it hard to see in the dark, whereas red light allows your pupils to stay dilated for longer. Most smartphones come with adaptability shortcuts that allow you to make your screen red, but if you don't have that feature, use red cellophane on your screen and flashlight.

April 2024

Ctrl- Click on the picture see the source file and additional information

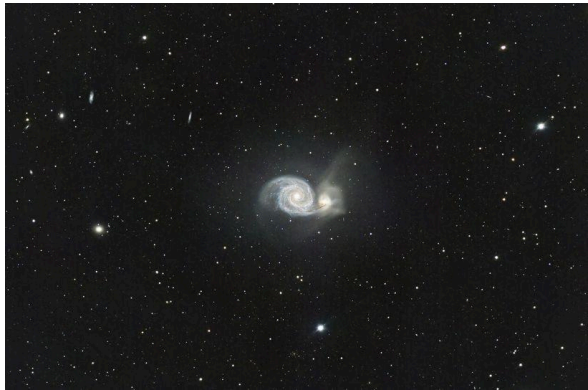
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ED DIXON



MICHAEL GOOD



MICHAEL GOOD



MIKE HUTKIN



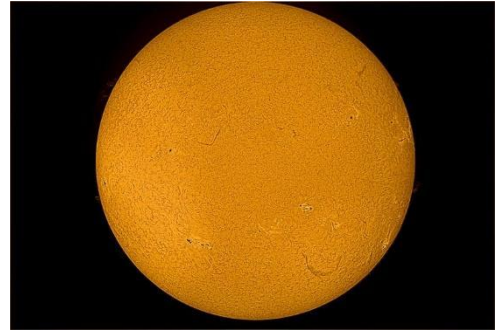
GREG SHAFFER



DAVE THOMAS



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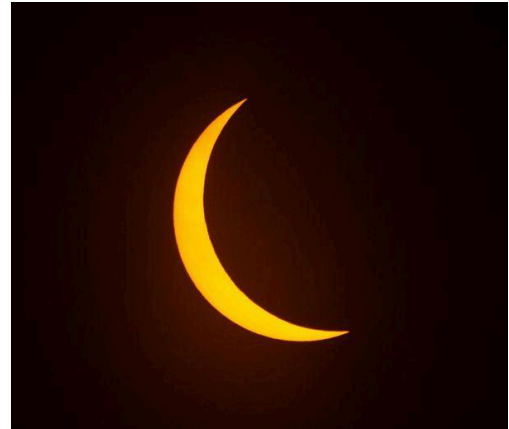


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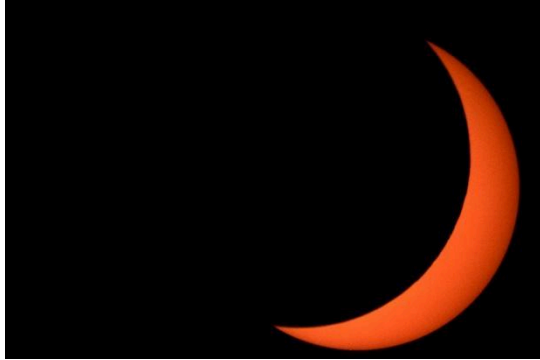
LARRY HILL



ED DIXON – VIDEO



BRIAN MATTOX



BRIAN MATTOX - VIDEO



TODD ATKINS



TODD ATKINS DAUGHTER – VIDEO



Monthly Calendar

RVAS Monthly Meeting: Monday, May 20th, 7:30 p.m. (Informal “Celestial Café” chat session begins at 7:00 p.m.) STEM Building, Room ST112, Virginia Western Community College, Colonial Avenue, Roanoke, VA. (See directions in this issue.) For our May speaker, the Society welcomes Rich Dollish, a member of the Amateur Astronomers Association of Pittsburgh. For nearly a decade, Dollish has been the driving force behind an effort to build an observatory at one of the Pittsburgh area Veterans Affairs hospitals. The goal is to offer the veterans an ability to socialize at night under the stars. Dollish will describe the background of the project, why the project is such a passion with him, challenges involved in building an observatory that serves persons with disabilities, and some of the successes they’ve had with the project. Join us on May 20th for this inspiring story of bringing astronomy to a special needs group. Watch for your meeting reminder and Zoom invitation in the days prior to the meeting.

Weekend Observing Opportunities: The following information on Fridays and Saturdays that may be suitable for observing is provided as a courtesy to RVAS members and other readers. The RVAS assumes no responsibility for the health or safety of anyone venturing out to stargaze, and cautions all who may do so to observe appropriate health and safety precautions.

- **Friday and Saturday, May 3rd & 4th.** Sunset is at 8:13p.m. Astronomical twilight ends at 9:52 p.m. The Moon sets at 3:11 and 4:23 p.m., respectively. (**Note:** May 3rd and 4th are the quarterly RVAS star party and rain date.)
- **Friday and Saturday, May 31st & June 1st.** Sunset is at 8:35 p.m. Astronomical twilight ends at 10:26 p.m. The Moon sets at 2:10 and 3:21 p.m., respectively.
- **Future Weekend Observing Opportunities: June 28th & 29th; July 5th & 6th.**

Astro-Quiz

Four first magnitude stars lie close to the ecliptic and are periodically occulted by the Moon. What are their names and the single word label often used to collectively refer to them?

Answer to Last Month’s Quiz: Last month we asked how many first magnitude stars (mag. 1.50 or brighter) a Roanoke observer at latitude 37°16’N can see versus one in Scout Key, Florida, home of the Winter Star Party, at latitude 24°39’N. (And, we offered a link to a list of the 100 brightest stars.) Both observers have a view of 180° from their northern to southern horizon—90° from overhead in each direction. Both are in earth’s Northern Hemisphere and therefore see northward to the North Pole—declination 90°00’N—as an absolute limit. So, the difference in stars seen depends solely on the declinations of their southern horizons: 52°44’S for Roanoke (37°16’ southward to the celestial equator plus 52°44’ farther southward to equal the 90° sweep to the southern horizon) and 65°21’S for Scout Key. This nearly 13°-wide swath of sky contains 6 first magnitude stars visible from Scout Key, but not from Roanoke: Rigil Kentaurus; Achernar; Hadar; Acrux; Mimosa; and Toliman. Have an answer to this month’s quiz (or a future quiz question and answer to suggest)? E-mail it to treasurer@rvasclub.org!