

amateur ASTRONOMER



sharing the wonder and science of astronomy



Photo credit: George Keighton

Return to Radnor!

For the first time since February 2020, DVAA held an in-person meeting on April 22nd at the Radnor Township Building! The program showcased original astrophotography by DVAA members, and discussion of the equipment and techniques that produced the images. Here Lou Varvarezis kicks off the presentation with a montage of some of his best images. Check out the [meeting report](#) in this newsletter for all of the details!

If you would like to participate in DVAA's active astrophotography community, visit the [Astrophotography Resource Page](#) on the DVAA website.

PLAN ON IT!

May 5 (8:00 pm - 10:00 pm) Community Star Party at Armentrout Preserve in Blue Bell. Need 2-3 additional telescope operators. [More Info.](#)

May 7 (6:00 pm - 10:00 pm) Mallon Planetarium Annual Star Party. [See Page 5.](#) Need 2-3 additional telescope operators. [More Info.](#)

May 7 (8:00 pm - 11:00 pm) Public Star Party at Valley Forge National Historical Park model airplane field. Free and open to the public (pre-registration encouraged). Backup date May 6. [More info.](#)

May 15 (10:30 pm) - May 16 (12:30 am) Total Lunar Eclipse at Green Lane Park. [More Info.](#) (New Location Marino Equestrian Campground).

May 18 Planetary Appulse Neptune 0.5 degree above Mars.

May 18 (7:30 pm) Astrophotography Workshop See [Astrophotography Resource Page](#) for info.

May 20 (7:30 pm) In-person General Meeting at the Radnor Township Building. Meeting will be live-streamed on [YouTube](#). Details [Page 4.](#)

May 27-29 Mega Meet at Pulpit Rock, PA Sponsored by Lehigh Valley Amateur Astronomy Society. Members of other local astronomy clubs invited. [More Info.](#)

May 29 Planetary Appulse Jupiter 0.5 of a degree to upper left of Mars.

May 30 New Moon Dark sky observing at various sites. See the [DVAA groups.io](#) for more info.

FOR ALL EVENTS, SEE THE DVAA WEBSITE www.dvaa.org FOR ADDITIONAL INFORMATION AND UPDATES.

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A link to Dave Mitsky's Celestial Calendar can be found at dvaa.org on the Home Page.

Welcome New DVAA Members!

We welcome all new members to enjoy the most our club has to offer by participating in DVAA activities. You are encouraged to ask questions and pursue your interests in astronomy through the club.

We suggest that new members attend our observing events and special interest group meetings, or volunteer to help with an outreach event or committee. Participation can advance your skills and enjoyment of the hobby and help you get to know your fellow members. New members are entitled to all benefits of membership.



Brian Lee
Welcoming Committee Chair
welcoming@dvaa.org

Mark Your Calendars!

Upcoming Monthly Meetings

Friday, May 20, 2022: Featured speaker Bart Fried, "Multitudinous Multiples". Details on p. 4.

Monthly Meetings have returned to the Radnor Township Building for the first time in two years! All are welcome to attend in-person. Meetings will continue to be streamed on [YouTube](#) for those who would prefer to watch virtually.

Meeting Location: Radnorshire Room
301 Iven Avenue, Radnor, PA 19087

Upcoming Meeting Dates: (all Friday evenings): May 20, June 17, July 15, Aug. 19, Sept. 9, Oct. 14, Nov. 11, and Dec. 9.

2022 Public Star Parties

DVAA public star parties are held at Valley Forge National Historical Park on the Model Airplane Field. ([Google Maps](#)). **Weather Hotline: 484-367-5278.**

The star party has returned to the traditional public telescope viewing format. The Board will continue to monitor the pandemic status throughout the year. Check the web-site (www.dvaa.org) for updates.

Public Star Party dates for 2022 (all Saturday evenings): May 7 (8:00), Jun. 4 (8:30), Jul. 9 (8:30), Aug 6 (8:00), Sep. 3 (7:30), Oct. 8 (6:30), Nov. 12 (5:00).

New this year: Backup dates will be designated the Friday preceding each date above. Check your email or the web-site, or dial the hotline, for the final weather call.

DVAA Board & Committee Chairs

Title	Name	Email
President	Harold Goldner	president@dvaa.org
Vice-President	Jan Rush	veep@dvaa.org
Secretary	Mike Tucker	secretary@dvaa.org
Treasurer & Astronomical League Coordinator	Louis Berman	treasurer@dvaa.org
Members-at-Large	Barry Johnson Tracey Trapuzzano Scott Vanaman	mbratlarge@dvaa.org
Astrophotography	Lou Varvarezis	astrophotography@dvaa.org
Camping and MSSP	Bill McGeeney	camping@dvaa.org
Door Prizes	Roy Patton	doorprizes@dvaa.org
Newsletter Committee	(see note at right)	newsletter@dvaa.org
Night Sky Network	Al Lamperti	nightsky@dvaa.org
Light Pollution	Barry Johnson	lpollution@dvaa.org
Observing	Andrew Hitchner	observing@dvaa.org
Outreach	Roy Patton	outreach@dvaa.org
Programs	Jeremy Carlo	programs@dvaa.org
Publicity	Bill McGeeney	publicity@dvaa.org
Scope Rentals	Joe Lamb	rentals@dvaa.org
Website	Louis Berman	website@dvaa.org
Welcoming	Brian Lee	welcoming@dvaa.org
Women of DVAA	Jan Rush	women@dvaa.org

Newsletter Editorial Committee: Jeremy Carlo, George Keighton, Tom Nolasco, Dana Priesing, Jan Rush and Barclay Thorn.

If you would be interested in joining us on the Newsletter Committee, or serving as guest editor for one month, just drop us a line at newsletter@dvaa.org — we'd love to have you on board, regardless of your experience level! Online tutorials are available to get you quickly up to speed.

Thanks to George Keighton for taking the lead for the March and April issues. Jan Rush is the lead editor for May and June.

Follow the DVAA on Facebook and YouTube!



DVAA [Facebook](#) group
DVAA [Photo Enthusiasts](#)
[YouTube Channel](#)

Why Do We Keep Getting in Our Own Way?

Harold Goldner [email](#)



At the book group associated with the Delaware Astronomical Society, we recently finished reading Donovan Moore's wonderful *What Stars Are Made Of: The Life of Cecilia Payne Gaposchkin*, published by Harvard University Press. I could not help feeling that publishing the book was the very least, and when I say "very least" I mean absolutely pitifully, tiniest, leastest thing that Harvard University could have done for Cecilia Payne Gaposchkin because Harvard was more of an obstruction to her than Reggie White used to be in the Eagles offensive backfield.

Lawrence Lowell, the President of Harvard University, swore there would never be a woman professor on his watch. Yet Payne taught astronomy at Harvard for decades, ultimately becoming the first woman full professor at Harvard and Chair of the Astronomy Department once Lowell had passed on to his blue blood white privileged desserts. Long before then, she had endured snub after snub for prestigious positions at other schools and observatories, while being paid a pittance, largely because the men to whom she reported were determined to keep her under their thumb.

Imagine, the woman who on her own studied plate after plate of spectrographic images, ultimately discovering that stars consisted primarily of hydrogen; who was actually compelled to insert in her groundbreaking thesis that her conclusions were "almost certainly not real" so as to not upset the current prevalent theories (and her thesis advisor); who helped establish the pre-eminence of the Harvard Observatory; who was repeatedly and consistently blocked by the male-dominated academic community despite being one of the most preeminent scientists in her field, is also the author of the monograph "Stellar Atmospheres," which is generally considered a seminal work on the subject of star composition.

Imagine what she might have accomplished if these idiots had just stayed out of her way, or even *empowered* her.

Harvard is not alone in its current hostility to wom-

en in doctoral programs. Many, *many* schools do not have sufficient women in academics, do not have enough women to be advisors to Ph.D. candidates, do not have enough women Ph.D. candidates period. It is a serious challenge for any woman desiring academic scholarship as a career to find a path that is not blocked or obstructed in some manner, or to face harassment along the way.

What about minority graduate students? One recent study looked at 1,300 graduate students in five natural and social science disciplines, examining predictors of reported discrimination across three different characteristics: gender, race and religion, finding that nearly *two thirds* of students reported discrimination on at least one characteristic, and nearly a third reported discrimination along multiple characteristics. (As of the writing of this column, Harvard has only *just* acknowledged its debt to the enslaved).

What is wrong with us? If a scientist tells us that a meteoroid is heading straight for earth and to get ready for impact, do we only listen if we hear it from a white male? (Wait, I think there's a movie about that). Is it really possible for us to actually learn something from an astronomer of color? Are Neil DeGrasse Tyson and our own Derrick Pitts mere aberrations? I think not.

More importantly, what wondrous things could be discovered, explained, concocted, or manufactured if we could just get out of the way and stop paying attention to these completely irrelevant distinctions? Warp drive? Dark Matter? Dark Energy? Black Holes?

Science is color blind. Its laws affect everyone equally and in all directions (I think Newton said something like that). It does not matter from whom that science comes from a racial, religious, gender or color perspective. It is still science.

Imagine a world in which we could just forget stupid biases and prejudices, get out of the way, and see what happens.

Upcoming Outreach Events Free and Open to the Public

Date (Cloud date)	Event	Venue	DVAA Coordinator
May 5 (May 12)	Community Star Party	Armentrout Preserve in Blue Bell	Jan Rush
May 7	Community Star Party	Mallon Planetarium @ Arcola Intermediate School (Eagleville)	Adam Chantry
May 7 (May 6)	Public Star Party	Valley Forge NHP @ Model Airplane Field	Andrew Hitchner
May 15-16	Total Lunar Eclipse	Green Lane Park @ Marino Equestrian Campground (<i>new location</i>)	Dana Priesing

- Find specific locations and times at www.dvaa.org. If you would like to help out with any of these events, contact Outreach@dvaa.org. Or, come as a participant and bring your family!

Next Monthly Meeting

May 20, 2022

"Multitudinous Multiples"

Presenter: Bart Fried, DVAA Life Member and Founder and Past President of the Antique Telescope Society

For today's amateur astronomers, observing multiple stars offers a rewarding pastime that can be as casual as simply finding and observing them, or as demanding as making precision measurements and submitting results. And observing multiple stars can be done in any location, whether in the middle of the city or from the darkest enclave. This presentation will cover the very basics up to some advanced techniques. The emphasis will be on observational double star astronomy for the amateur of any level, and we'll also discuss imaging of double stars. It will be the What's, Why's, and How's of observing multiple star systems! This talk will also cover the fundamentals of your optics, to better understand your telescope's limitations. And we'll look at many of the tools that are readily available, along with a quick run-down of the lingo, nomenclature and measurement system used for making personal observation reports.

DVAA life member Bart Fried joined the club in 1983, occasionally holding the job of Nominating Chair. He started the DVAA's list-serve in 1999 and has been its List Janitor since then. Now semi-retired from business, he is currently Executive Vice President of the Amateur Astronomers Association, Inc; Board Member, Custer Institute & Observatory; Founder and Past President, Antique Telescope Society; and a Member of Astronomical Society of Long Island, Amateur Observers Society of NY and Westchester Amateur Astronomers, Inc.

The meeting will be held in-person at the Radnor Community Building, and livestreamed on [YouTube](https://www.youtube.com). Informal gathering at 7:00, program begins at 7:30pm.

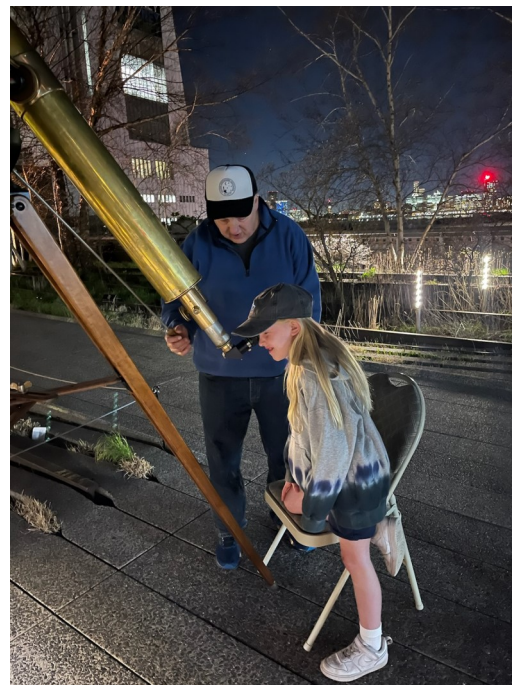


Photo Credit: Rori "Andromeda Jones" Baldari, Amateur Astronomers Association, Inc.

The April Monthly Meeting

Jeremy P. Carlo [email](#)

The DVAA April 2022 meeting was held, for the first time since the COVID-19 pandemic started in March 2020, at the Radnor Township Building. Unfortunately, our plans to livestream the meeting didn't work due to a glitch with YouTube, despite a valiant effort by Lou Berman and members of the DVAA Programs Technical Committee. Hopefully this glitch will subside by next month and we'll be able to livestream the May meeting.

President Harold Goldner opened the meeting by welcoming attendees back to the first in-person meeting since 2020. Outgoing and Incoming Outreach Chairs Jan Rush and Roy Patton, respectively, gave an update on outreach events, including several community star parties to be held in May, the upcoming May Public Star Party at Valley Forge National Historical Park, and several star parties coming up over the summer. Harold announced that longtime Observing Chair Andrew Hitchner is looking to move on after many years of great service to the club; it may be that this job has become large enough that a committee will be required to fill Andrew's shoes! Harold also announced that Bill McGeeney has taken over the job of "Camping Czar," to organize camping star parties for the DVAA over the summer.

Following a short business meeting, Programs Chair Jeremy Carlo introduced the evening's program, which was a Members' Night on Astrophotography. Jeremy also gave a brief update on upcoming programs; at the May meeting, DVAA Life Member Bart Fried will talk about double stars, and the August meeting will be held outdoors at Fort Washington State Park, as was done last summer. Tonight's member night features presentations by thirteen (!) members!

First up was DVAA Astrophotography Chair Lou Varvarezis. Lou has been instrumental (no pun intended) in revving up interest and activity in astrophotography in the club; toward this end monthly astrophotography workshops are held via Zoom, on the Wednesday evenings preceding the monthly meetings. Lou also said that outdoor workshops at Blue Mountain Vista Observatory (BMVO) or Green Lane Park are planned for the summer. Lou noted that all of his astrophotography is done with a DSLR camera which was discontinued circa 2009; you don't need the "latest and greatest" of everything to succeed! He showed some photos of his backyard observatory, which allows him to have a permanently mounted 8" telescope (no need to polar align every time!) from a reasonably dark-sky site near Green Lane Park. Lou then showed a number of images of his favorite objects, including NGC 4565 (the Needle Galaxy in Coma Berenices), M33 (the Pinwheel Galaxy in Triangulum), the globular cluster M13 in Hercules, and the Horsehead and Running Man nebulae in Orion. Lou also showed some solar system photography, including a video of Comet NEOWISE, and photos of Mars from its 2020 op-

position.

Next up was Wayne Reed, one of our resident solar observers. Wayne uses a Lunt LS60THa telescope designed for solar observing at the hydrogen alpha wavelength of 656.3 nanometers, with a Canon EOS T7i DSLR, and an intervalometer to open and close the shutter without disturbing the telescope. Wayne showed a number of images of the sun and prominences, and talked about the software used to process and stack the images.

After Wayne was Martin Jones, a newer DVAA member who is making his first explorations into planetary photography. Martin showed an image of Jupiter, in which the bands and belts can be clearly seen, and discussed plans for more imaging later this year, with a particular focus on Mars' upcoming opposition toward the end of 2022.

Next, Mitch Berger showed off a number of his recent photos. Mitch started with some photos of the sunrise partial solar eclipse of June 2021, and a photo of the just-about-total partial lunar eclipse of November 2021. Mitch showed a photo of the so-called "Belt of Venus," a pinkish band seen low across the sky around sunset, opposite from the sun's position, as reddish sunset light is backscattered toward the observer. Mitch showed several photos of the moon, an image of the December 2020 conjunction of Jupiter and Saturn, and an interesting vertical composition of the setting sun atop a snowman.

Following Mitch, Harold Goldner talked about some of his experiences in astrophotography. Although he's primarily a visual observer (who prefers to have the actual photons enter his eye and strike his retina), and uses a computer enough at work to not want to spend hours processing images, Harold has dabbled a little in photography. He showed several photos taken through his cell phone mounted on a tripod; these include a wide-field shot of the Scorpius/Sagittarius region taken from BMVO, and a shot of the waxing moon and Jupiter from near Sarasota, Florida.

Danny Chaing then showed his progress in astrophotography. He started with an 8" Schmidt-Cassegrain, but found that the large instrument and long focal length were just too unforgiving, requiring extensive setup and alignment. He switched over to a 100 mm Sky-Watcher refractor, which at f/9 with a 900 mm focal length, was much more manageable. He later purchased a 60 mm f/5.5 Sharpstar refractor, which gives an even wider field of view! Danny showed some great photos, including IC 1805 (the Heart Nebula in Cassiopeia), the California Nebula (NGC 1499) in Perseus, and the Rosette Nebula



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The April Monthly Meeting (continued)

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(NGC 2237 in Monoceros). Danny's advice: start with a small, short focal-length instrument; it's easier to set up and much more forgiving of alignment and tracking mishaps. Eventually you may want to work up to a larger instrument, but start small. Danny also suggested putting a little extra money into the mounting; any scope is only as good as the foundation it rests upon.

Gary Trapuzzano came next. He described several setups he used, including an afocal setup (eyepiece projection from a telescope), an ordinary camera with a lens and skytracker. Telescopes included a TeleVue 101 for medium-field views, and a Celestron 9.25" SCT for narrow views. Gary showed images of the Venus transit of 2004 taken from the Jersey Shore, images of solar prominences taken through Jim Sweeney's scope, an occultation of Saturn by the moon, and several solar and lunar eclipse photos. Gary also showed images of Jupiter, Saturn, and Mars, including a shadow transit of Io across Jupiter. Gary showed a transit of the International Space Station (ISS) across the sun, and a photo of the ISS with a Space Shuttle docked; features such as the solar panels could be clearly made out. Gary closed with a couple of deep sky images, including the Double Cluster (NGC 869 & 884 in Perseus) with Comet Hartley in the field, the Pleiades (M45 in Taurus), the Orion Nebula (M42), the Andromeda Galaxy M31, and a wide-field view of the Milky Way seen from Devil's Tower in Wyoming. Gary finished by presenting several wide-field images taken by Observing Chair Andrew Hitchner, including one of the sky as seen from the beach in Barnegat, NJ.

Mark Firary then talked about some of his imaging sessions from sites in rural Wisconsin, as well as the Asateague Seashore and the Pine Barrens; living in Center City Philadelphia, virtually all of his imaging is done at remote sites. Photos included M42 in Orion, IC 1396 (the Elephant Trunk Nebula in Cepheus), IC 5070 (the Pelican Nebula in Cygnus), the Pleiades M45, the California Nebula NGC 1499, and the galaxy M81 in Ursa Major. Mark also showed a nice image of the center of the Virgo galaxy cluster, centered on "The Eyes," NGC 4435 and 4438; 121 different galaxies could be seen in the same field!

Next up was Joe Lamb, who showed photos taken from his home in Springfield, Delaware County, using a Celestron Schmidt camera mounted on a wooden pier

on a concrete base in his backyard. Images included the open clusters M35 and NGC 2158 in Gemini, the open clusters M46 and M47 in Puppis (with planetary nebula NGC 2438 in the foreground of M46), galaxies M81-M82 in Ursa Major, the open cluster NGC 2362 in Canis Major, the nebula NGC 2359 (Thor's Helmet) in Canis Major, as well as photos of the planets Mars, Jupiter, and Saturn.

Hari Dorisaimy then showed some images taken from his front yard in West Chester using an 8" SCT, as well as a DSLR camera mounted on an iOptron Star Tracker. These included the California Nebula NGC 1499, M42 and the Running Man in Orion. Hari also showed a wide-field shot of the Milky Way from a site in Wachapreague, Virginia.

Doug Lentz discussed his first forays into photography, from a trip to BMVO in March 2021. Doug used a DSLR camera with an iOptron Sky Guider Pro to take an image of M51, the Whirlpool Galaxy in Canes Venatici, and discussed plans for upcoming observing trips.

Finally, Tom Nolasco presented his recent astrophotography work. Tom uses an 8" f/4 Newtonian; it's 40 years old but the mirror was recently refigured. This is a very "fast" scope typically suitable for wider-field shots and short exposures; most of the shots he showed were between 10 and 30 minutes, and taken from a light-polluted observing site. Objects included the globular cluster M3 in Canes Venatici, the Trifid Nebula M20 in Sagittarius, the Eagle Nebula M16 in Serpens, and the Dumbbell Nebula M27 in Vulpecula. Tom also showed some solar system photography taken using a 10 inch f/8.6 scope, including Comet Leonard, a double transit of Callisto and Io across Jupiter, and several images of the Moon and Jupiter. Tom then showed a couple of solar images taken using a Lunt 60 mm solar scope, including several time-lapse videos showing the evolution of solar prominences. Tom's final image was of the rising partially eclipsed sun from June 2021, looking like "devil's horns" rising above the water of the Jersey Shore and through some thin clouds.

With that, the meeting was called to a close, and Door Prize Czar Roy Patton announced the winners of the evening's door prizes. Many thanks to all our presenters at this evening's meeting, and we'll be looking forward to the next meeting at Radnor!

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The April Monthly Meeting (continued)

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Clockwise, from above left (photo credits: Mitch Berger)

Michael Wintering and member Henry Blanco White.

George Keighton (Newsletter Committee), Lou Varvarezis (Astrophotography Chair), and Joe Lamb (Rentals Chair)

Tom Nolasco (Astroimager and Newsletter Committee) and crowd

Outreach Chair Roy Patton.

Programs Chair Jeremy Carlo.



The April Monthly Meeting (continued)

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Clockwise, from above left (photo credits George Keighton)

Joe Lamb, Kaitlyn Evans, Bill McGeeney, Harold Goldner, Louis Berman, George Keighton, Melissa and Lou Varvarezis share after-meeting refreshments.

President Harold Goldner, Jeremy Carlo, Lou and Melissa Varvarezis, and Bill McGeeney and Kaitlyn Evans share a laugh.

About 40 astronomy enthusiasts gathered for Member's Astrophotography Night.

Roy Patton led an active raffle, including 2 years of accumulated items.



Annual Mallon Planetarium Community Star Party

FREE EVENT (Rain or Shine)

Saturday, May 7th

6:00 p.m.-10:00 p.m.

Great for ages 6 to 109



Events include: (events run every ½ hour from 8:30-9:30)

- Free Planetarium Shows
- Moon Phase Demo
- Telescopes to explore & Observe
- Scale Solar System Hike
- Space Arts & Crafts
- Startalk under the real stars - 9:30

Please pre-register online to help us estimate the number of attendees:

[Register Attendance.](#)

More information: www.methacton.org/planetarium

All participants under age 18 need to be accompanied by an adult.

This event is rain or shine (telescope observations will be weather-dependent)

If you would like to volunteer to set up your telescope or binoculars, please indicate your intention here: [Volunteer Astronomers](#)

“Do I Need a Light Pollution Filter and Which One Do I Get?”

Al Lamperti [email](#)

Urban and suburban sprawl has increased the amount of man-made light scattered into the sky. Efforts made by amateurs through the PA Outdoor Lighting Council (<https://www.polcouncil.org>), the PA Chapter of the IDA and the International Dark Sky Association (www.darksky.org) to change local lighting ordinances have slowed down light pollution in certain areas and encouraged municipalities, now aware of light pollution, to make appropriate changes. Unless one travels several hours to a truly dark site, most of us observe from areas affected by light pollution.

There is one accessory that is often found in eyepiece cases and that accessory is a light pollution reduction (LPR) filter. It helps one observe some of the deep sky objects with a bit more contrast, thereby making them stand out against a darker background. There are a few different types of LPR filters but before describing them it is necessary to describe the wavelengths of man-made light versus the wavelengths of light emitted by some deep sky objects.

The wavelengths of light from most man-made sources range from 550 nanometers (nm) to 630 nm, in the yellow end of the visible light spectrum (although the increasingly prevalent LED fixtures can emit at any wavelengths within the visible range). Emission and planetary nebulae emit light waves in the blue-green end of the spectrum, 450-550 nm. Theoretically if we could block out the wavelengths from 550-630 nm and allow the 450-550 nm wavelengths through, we would see our nebulae better. The LPR filters do just that, by blocking those annoying wavelengths and allowing the other wavelengths to pass through, the background sky is darker and the nebula appears “brighter” with the increased contrast afforded.

One type of LPR filter is the broadband filter and by its name you can surmise that it allows more wavelengths of light through. It is useful to visualize galaxies better. It serves to block some of the man-made wavelengths but allow most of the range of wavelengths (430-550 nm) being emitted by the billions of stars in the galaxy. Two of several examples of broadband filters are the *Deep Sky* filter by Lumicon and the *Skyglow* by Orion.

However, if you wish more contrast to visualize many planetary and emission nebulae, then you may opt for a narrow-band filter, which allows a smaller range (480-520 nm) of wavelengths through, i.e., it is more selective than a broadband LPR. Examples of narrowband filters are Lumicon’s *UHC* and Orion’s *Ultrablock*.

Line filters allow only an extremely narrow band of wavelength of light through and block most everything else. For example, Oxygen-III filters allow light only at the wavelengths of 496-500 nm through whereas the Hydrogen-beta filter permits light (486 nm) from certain nebulae like the California or the Horsehead to come through to your eye. O-III is from doubly ionized oxygen, while H-beta comes from neutral hydrogen, both of which are found in emission nebulae.

Your observing site (city versus suburbs) and your deep sky interest (galaxies and/or nebulae) will determine which filter or filters to use. These filters easily screw into the bottom of the eyepiece, Barlow lens or Paracorr. If you attach the filter to either one of the latter two items, it is easier to change eyepieces to increase magnification without unscrewing the filter each time. Alternatively, using a filter slide with 3-8 different filters allows you to easily go from one filter to the next without changing eyepieces (<https://astrocrumb.com>). You can then record which filter works best for you on that particular object. Another trick is to hold or place the filter in front of a binocular eyepiece to visualize very large objects like the North America Nebula in Cygnus or the Rosette Nebula in Monoceros.

These two excellent sources of information on nebular and light pollution filters will provide you with a wealth of detail on these very useful observing accessories.

<https://www.prairieastronomyclub.org/useful-filters-for-viewing-deep-sky-objects/>

<https://www.prairieastronomyclub.org/filter-performance-comparisons-for-some-common-nebulae/>



Below: Setting up at Blue Mountain Vista Observatory for some rare dark sky viewing on April 28th.



Photo credit: Al Lamperti

STEM Youth Explorer Academy — Will You Help?

Star Watch July 8-9, 2022



After nearly two years of planning, the STEM Youth Explorer Academy is only a few months away! This ambitious residential science academy has been organized by area Rotary Clubs, and will include 50 disadvantaged junior high school students (rising 8th graders) within a 5-county area (Berks, Bucks, Lehigh, Montgomery, and Northampton Counties). The students will be selected and recommended by teachers at their respective schools, and will attend the 4-day, 3-night science academy on full scholarships funded by the Rotary Club.

The daytime curriculum was developed by the SETI Institute with the theme "Astrobiology: Search for Life on Mars." This theme will serve as a springboard incorporating multiple scientific disciplines: biology, chemistry, mathematics, and engineering. The camp will take place at Albright College in Reading, PA. It is hoped that the experience will inspire these young people to expand their educational horizons to include scientific pursuits. Detailed information on the program is available at <https://stemyea.com/>.

Along with other area astronomy clubs, and under the direction of former Boyertown Planetarium director Peter Detterline, DVAA has been invited to assist with the evening

activities, which the organizers are calling "Star Watch." Inconveniently, Mars won't be visible, but the Star Watch activities will focus on the moon which of course will be NASA's next stop before venturing to Mars. Volunteers from amateur astronomy clubs will be teaching the students to operate beginner telescopes. Using scopes from the DVAA rental pool, or personal scopes owned by astronomy club members, we will provide the students with a hands-on telescope experience that will hopefully lead to a lasting appreciation of the night sky. In the case of inclement weather we'll conduct the hands-on learning indoors.

We are looking for approximately *10-12 volunteers for each evening* (Friday, July 8 and Saturday, July 9) from approximately 8:30-10:30pm. You can volunteer for one or both nights. It's a bit of a journey, but we will arrange carpools to ease the travel burden. *All students and volunteers must be vaccinated against Covid-19.* Background checks will not be required for Star Watch volunteers since a background-certified Rotary volunteer will always be with us.

Visit [July 8th](#) and/or [July 9th](#) and click the "Volunteer" button if you would like to volunteer for this amazing opportunity (Note: You must be logged on for the "Volunteer" button to appear), which promises to be quite impactful in the lives of these students. For any questions, or if you would like to volunteer via email, contact Jan Rush at veep@dvaa.org.

Night Lights: Aurora, Noctilucent Clouds, and the Zodiacal Light

David Prosper



This article is distributed by NASA Night Sky Network

Have you spotted any “night lights?” These phenomena brighten dark skies with celestial light ranging from mild to dazzling: the subtle light pyramid of the zodiacal light, the eerie twilight glow of noctilucent clouds, and most famous of all, the wildly unpredictable and mesmerizing aurora.

Aurora, often referred to as the northern lights (aurora borealis) or southern lights (aurora australis), can indeed be a wonderful sight, but the beautiful photos and videos shared online are often misleading. For most observers not near polar latitudes, auroral displays are relatively rare and faint, and without much structure, more gray than colorful, and show up much better in photos. However, geomagnetic storms can create auroras that dance and shift rapidly across the skies with several distinct colors and appear to observers much further away from the poles - on very rare occasions even down to the mid-latitudes of North America! Geomagnetic storms are caused when a magnetic storm on

our Sun creates a massive explosion that flings a mass of particles away from its surface, known as a Coronal Mass Ejection (CME). If Earth is in the path of this CME, its particles interact with our planet's magnetic field and result in auroral displays high up in our ionosphere. As we enter our Sun's active period of its 11-year solar cycle, CMEs become more common and increase the chance for dazzling displays! If you have seen any aurora, you can report your sighting to the Aurorasaurus citizen science program at aurorasaurus.org.

Have you ever seen wispy clouds glowing an eclectic blue after sunset, possibly towards your west or north-west? That wasn't your imagination; those luminescent clouds are noctilucent clouds (also called Polar Mesospheric Clouds (PMC)). They are thought to form when water vapor condenses around ‘seeds’ of dust from vaporized meteorites - along with other sources that include rocket launches and volcanic eruptions - around 50 miles high in the mesosphere. Their glow is caused by the Sun, whose light still shines at that altitude after sunset from the perspective of ground-based observers. Noctilucent clouds are increasing both in

frequency and in how far south they are observed, a development that may be related to climate change. Keeping in mind that observers closer in latitude to the poles have a better chance of spotting them, your best opportunity to spot noctilucent clouds occurs from about half an hour to two hours after sunset during the summer months. NASA's AIM mission studies these clouds from its orbit high above the North Pole: go.nasa.gov/3uV3Yj1

You may have seen the zodiacal light without even realizing it; there is a reason it's nicknamed the “false dawn”! Viewers under dark skies have their best chance of spotting this pyramid of ghostly light a couple of hours after sunset around the spring equinox, or a couple of hours before dawn



Comet NEOWISE flies high above a batch of noctilucent clouds in this photo from Wikimedia contributor Brwynog.

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Night Lights

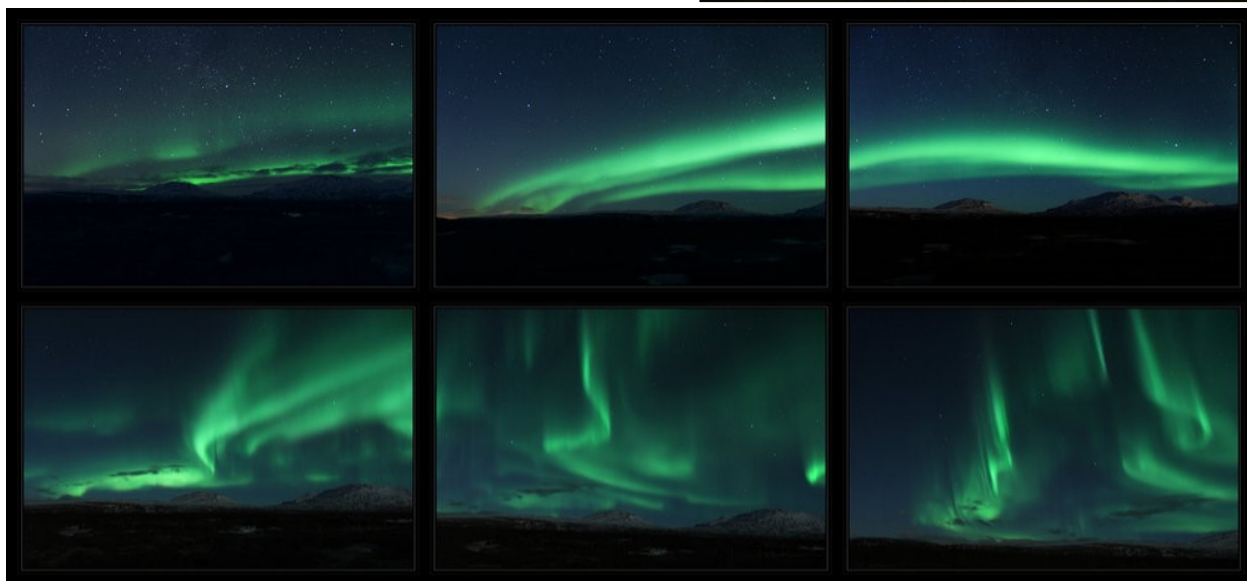
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around the autumnal equinox. Unlike our previous two examples of night lights, observers closer to the equator are best positioned to view the zodiacal light! Long known to be reflected sunlight from interplanetary dust orbiting in the plane of our solar system, these fine particles were thought to originate from comets and asteroids. However, scientists from NASA's Juno mission recently published a fascinating study indicating a possible alternative origin: dust from Mars! Read more about their serendipitous discovery at: go.nasa.gov/3Onf3kN

Curious about the latest research into these night lights? Find news of NASA's latest discoveries at nasa.gov.

(Right) The zodiacal light extends into the Pleiades, as seen in the evening of March 1, 2021 above Skull Valley, Utah. The Pleiades star cluster (M45) is visible near the top.

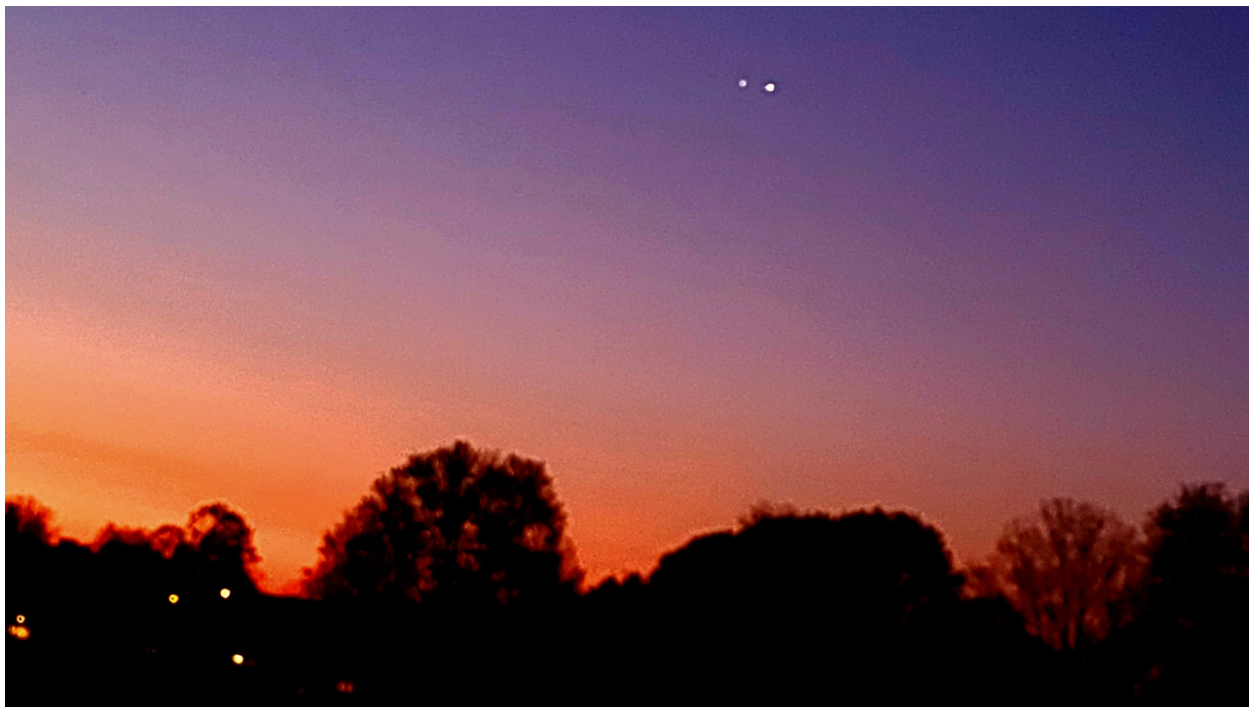
Credit and source:: NASA/Bill Dunford .<https://www.flickr.com/photos/gsf/51030289967>



(Above) A sampling of some of the various patterns created by aurora, as seen from Iceland in 2014. The top row photos were barely visible to the unaided eye and were exposed for 20-30 seconds; in contrast, the bottom row photos were exposed for just 4 seconds- and were clearly visible to the photographer, Wikimedia contributor Shnuffel2022.

License and source: CC BY-SA 4.0 https://commons.wikimedia.org/wiki/File:Aurora_shapes.jpg

The above article is distributed by the NASA Night Sky Network, a coalition of hundreds of astronomy clubs across the US dedicated to astronomy outreach. Visit <https://nightsky.jpl.nasa.gov/> to find local clubs, events, stargazing info and more.



Thanks to Mitch Berger for this lovely shot of Jupiter and Venus, taken 4-30-22 at about 5:30am from Bryn Mawr's Polo Field (Samsung S20 Ultra cel).

State Level Lighting Guidance Petition

Love the Night Skies? Please sign our [petition](#)!

As many of you might be aware, recently Dark Sky Advocates scored a modest victory in Pittsburgh. The ordinance affects lighting policies within park areas of the city. This win caught the attention of Senator Carolyn Comitta's (Chester County) office, which sought out additional information through the PA Chapter of the IDA, where members of both the PA Chapter of the International Dark Sky Association and the Pennsylvania Outdoor Lighting Council met with the Senator's team to plead their case for responsible lighting practices.

We look forward to utilizing this petition to showcase the level of support for determining adequate nighttime lighting guidance at a state level. It's our hope that each and every one of the members of this club can assist us in this cause! In addition to the petition, we're building a coalition of nighttime partners involved in health, environmental, and related fields. If you'd like to support our activities, please reach out to the following contacts below. Every little bit helps!

Thank you for your consideration.

Barry Johnson (johnsonb52@comcast.net), Pennsylvania Outdoor Lighting Council

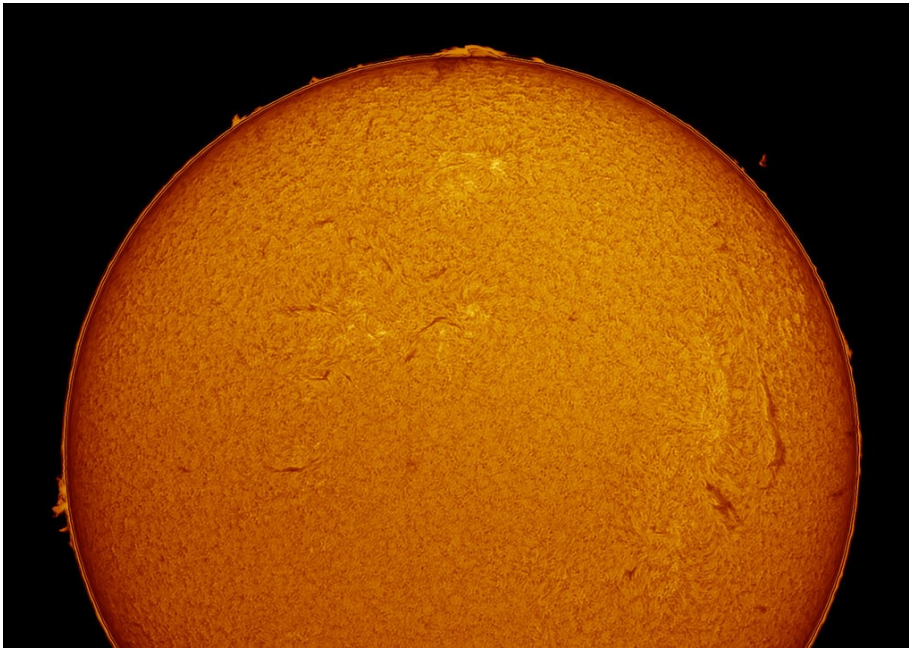
Bill McGeeney (billmcgeeney@gmail.com), PA Chapter of the International Dark Sky Association



Editor's note: International Dark Sky Week was April 22-30 this year. Visit <https://idsw.darksky.org/> to learn more about the important work of the International Dark Sky Association. The Pennsylvania Senate recognized the [International Dark Sky Week in the state](#).

The Sun “Heats Up”

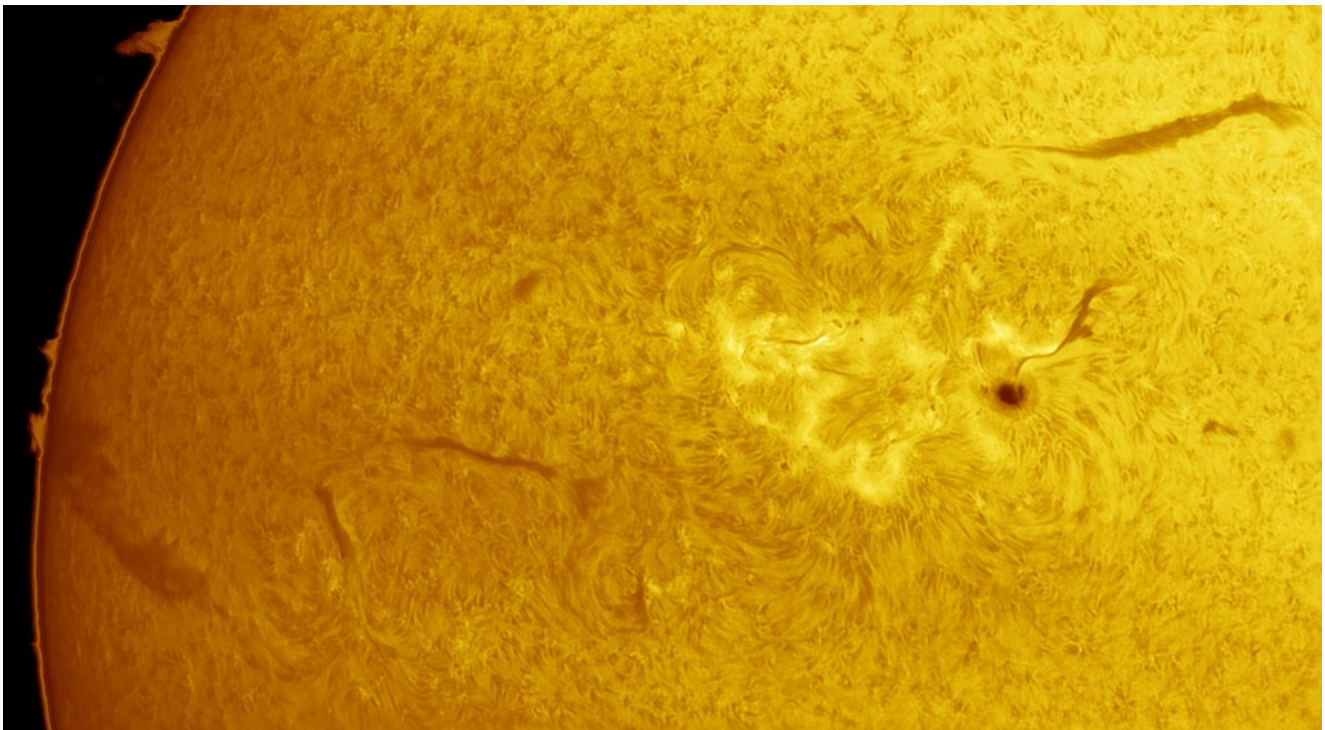
Over the past 2 weeks, DVAA members caught image after glorious image of the sun, which after years at solar minimum is once again sporting fascinating prominences and storms.



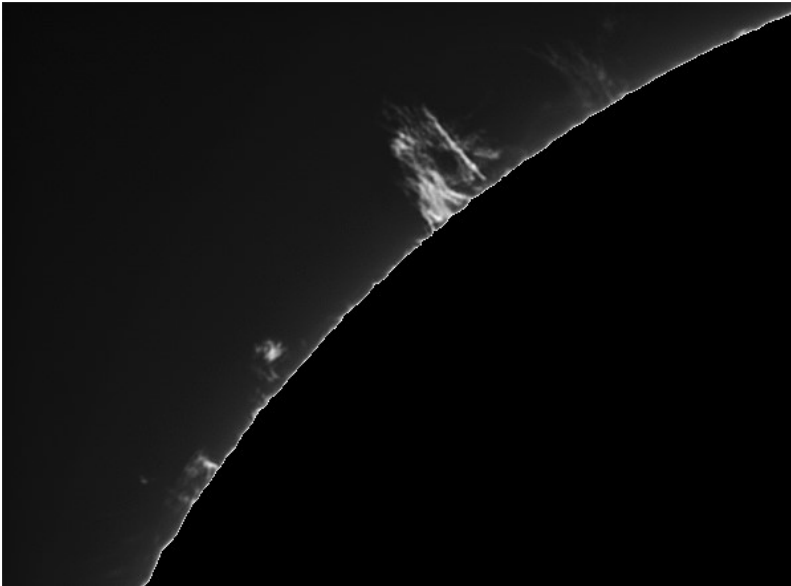
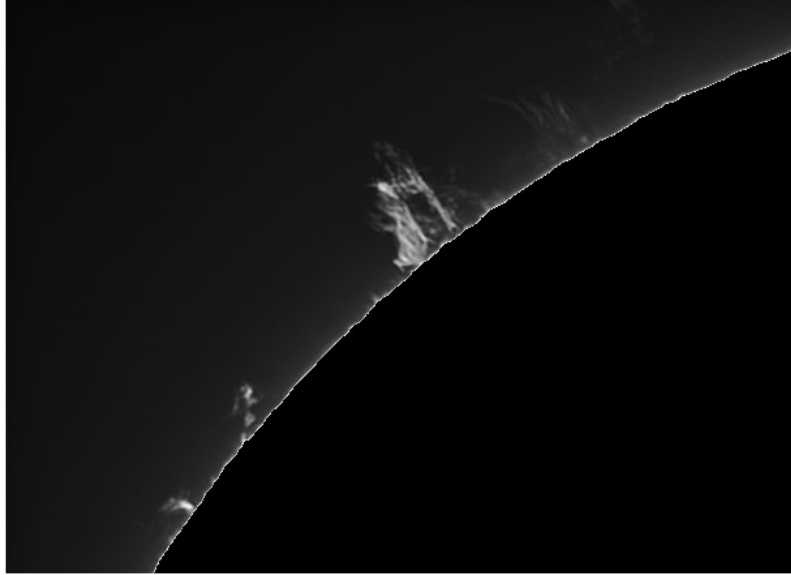
Left: Wayne Reed notes the filament at the top leading to the prominences at the edge, and the apparently separated prominence at the 1:30 clock position. Imaged April 12, 2022 with ASI385MC camera, 4 sec exposure.

Below: Closeup of active sunspot area AR2978 on April 2, 2022. ASI385MC camera, 2.5x Powermate, and Lunt LS60THa solar scope.

Photo Credits: Wayne Reed



The Sun “Heats Up”



In this unique image sequence, Tom Nolasco captured a prominence with an unusual rectangular arch, like a doorway (upper left). A photo 34 seconds later (middle) shows the right side of the arch which had morphed into an unusually thin vertical spike. Imaged April 8, 2022.

LUNT 60 mm Ha solar scope with a 2x barlow and a ZWO ASI174mm camera.

Photo Credits: Tom Nolasco

Sunspots AR 2993 and 2996, imaged with LUNT 60mm Ha solar scope with a 2x barlow and ZWO ASI174mm camera at asi 174 mm.

Photo Credit: Tom Nolasco



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Ioptron Tracker



Orion 6" StarBlast Dobsonian



All scopes include tripod/base, eyepieces, manuals, power, etc. Rental is \$10/month with \$20 deposit. More info at www.dvaa.org under the OBSERVING tab. To rent one of these scopes, contact Joe Lamb at rentals@dvaa.org.

The Delaware Valley Amateur Astronomers

Since 1976, the **DVAA**, a non-profit corporation, has **shared the wonder and science of astronomy** with thousands of amateur astronomers and the public in the Philadelphia area. Each month we host dark-sky and local star parties, telescope workshops, science & astronomy lectures, educational outreach sessions, and more. To learn more or to join DVAA, please visit www.dvaa.org.

Check the schedule for our **free monthly meetings open to the public**, now returning to face-to-face meetings in Radnor, as well as being streamed on [YouTube](https://www.youtube.com).

get in on the fun:
JOIN the DVAA TODAY!

Dues are \$40 per year for an individual, \$60 for a Family Membership, or \$10 for a Junior or Student Membership. **Membership benefits** include our monthly newsletter, membership in the Astronomical League (including its publications), access to our dark-sky observing sites, and inexpensive rentals of fine telescopes. You can join or renew online at www.dvaa.org. If paying by mail, include a note stating what you are paying and membership category desired. Make checks payable to "DVAA" and send to our treasurer: Louis Berman, 477 Turner Avenue, Drexel Hill, PA 19026, or for more information contact treasurer@dvaa.org.

