

The Observer

The Official Publication of the Lehigh Valley Amateur Astronomical Society

<https://lvaas.org/>

<https://www.facebook.com/lvaas.astro>

June 2022

Volume 62 Issue 06





ad astra *****

One thing that always seems to increase interest in astronomy is Comets.

Comet C/2017 K2 (PanSTARRS) will be closest to the Earth on July 14, 2022, and closest to the Sun on December 19, 2022. PanSTARRS was first sighted by astronomers in 2017 when they spotted it, via the Pan-STARRS survey instrument in Hawaii.

The weather did not cooperate for the May Star Party, but we were able to present two planetarium shows with about 10 persons present. Ten LVAAS members volunteered to support the Star Party. Our next star party is scheduled for June 4th and a few **regular** Star Party volunteers will be at Cherry Springs State Park for the Cherry Springs Star Party that weekend. Please stop in to assist Earl Purcell at the Star Party. Earl will be conducting planetarium shows but will need help manning the parking lot, running the telescopes, as well as **running the Red Shift**.

A meeting was held May 21st of the Astro-Imaging group at South Mountain. Lynn Krizan presented a demonstration of the Star Exterminator software. Also, since there was good weather, a few members set up their imaging equipment and demonstrated its use.

On May 21st additionally, a group of members assembled at the South Mountain site to work on the Pulpit Rock 17" Dobsonian telescope. The activities included cleaning the mirror, collimating the mirror, commissioning the encoders, and configuring the Sky Safari software to work with the telescope in the morning and conducting an evening observing session with the Astro Imaging group.

We are always looking for volunteers to assist with club events and club management. This includes Director positions and Star Party volunteers (guiding parking for cars, run the Red Shift, run the various telescopes, and assist wherever necessary). Your help will be greatly appreciated. Please contact Preston Smith if you would like to volunteer. His email is on the LVAAS Website Contacts page.

Ad Astra!

Thomas Duff

Minutes from the LVAAS General Meeting – May 1st, 2022

The May 2022 LVAAS General Meeting was conducted electronically using an on-line service, and in person at our South Mountain headquarters. Approximately 39 people were in attendance. Director Tom Duff opened the meeting at 7:03 p.m.

Tonight's General Meeting's presentation was "NASA's Infrared Platforms" by John Conrad, NASA Ambassador. John will tell us about what we can learn from infrared astronomy, and discuss current and upcoming infrared telescopes in the air and in space, including SOFIA, Spitzer, Hubble, and the James Webb Space Telescope.

John Conrad followed his childhood interest in space and spaceflight through Astronautical Engineering degrees at the U.S. Air Force Academy and Purdue University straight into leadership in unmanned space programs for the Air Force and NASA. Now retired, his extensive career experiences never wandered far from technology development and application in Aerospace and Defense as well as IT and Energy and Security programs. His life-long learning (formal and informal) and accumulated tools have enabled him to make frequent presentations to orient and promote science applications and solutions to a variety of audiences. His most recently used platforms include telescopes and binoculars to share his knowledge and love of astronomy and cosmology. John, as a NASA/JPL Ambassador, brings the expertise of NASA scientists and engineers, providing insights into U.S. progress in exploring space.

The May General Meeting was recorded.

Membership: Rich Hogg

- 2nd readings
 - Aaron Fritz
 - Jill & Tom McNabb
- 1st readings
 - Jolene Nye
 - Michael Ackumey
 - (Family membership includes wife Micleenah Fayall and children Kedom and Delanya Ackumey)
 - Hutchinson Family (Daniel, Cheryl, Andrew, Elizabeth)
 - Patty Bacak
 - (joining her husband Joe Bacak in an upgrade to a Family membership)

General Comments:

On May 14th there will be a Solar Party at the Da Vinci Science Center in Allentown which will be open to the public. There will be opportunities for questions and also for viewing the sun. Please email Blaine Easterwood if you are interested in volunteering for the event. Reminder: there will be a lunar eclipse on May 15th starting at 10:30 p.m.

South Mountain Maintenance – Bill Dahlenburg

On Saturday mornings we are here doing maintenance and are available to help members by answering questions, renting out telescopes, checking out materials from the library, and doing training on telescopes.

MegaMeet – Tom Duff

MegaMeet is coming up from May 27th-29th at Pulpit Rock. The Star Party will be next Saturday.

Astroimaging Group – Tom Duff

The Astroimaging group will be meeting on May 21st at 7 p.m. Lynn Krizan will give a presentation on more advanced processing techniques.

Pulpit Rock Observatories – Frank Lyter

Winter project updates: Materials for the Meteor Camera Project are available for around \$150 and the Dobsonian Telescope Encoders Project is on track to bring the Dobsonian to the Star Party at South Mountain to demonstrate.

The 18" Tinsley and 12" Meade telescopes at Pulpit Rock are now operational. The Meade is connected to a computer with planetarium software installed that can control the telescope and direct it to point at whatever you want to view.

Next General Meeting:

The next general meeting will be Sunday, June 12th at 7 p.m. The presentation will be "A Tale of Two Circles: From Orbits to Atoms" by Gary DeLeo. The meeting will be held in person and online.

Tonight's meeting was adjourned at approximately 8:47 p.m.

Submitted by Michael Huber, Secretary

Via Sandy Mesics, Program Chairperson

Upcoming LVAAS General Meeting Speakers

In June, **Gary DeLeo** will speak on "**A Tale of Two Circles: from Orbits to Atoms.**" - Live at SMHQ Grady

In July, **Ray Harris** will speak on "**Lost Constellations.**" - Live at SMHQ Grady

In August, **Frank Lyter** will speak on "**LVAAS Winter Projects: the Meteor Camera, and the Digital Setting Circles for the 17" Dobsonian.**" - Live at Pulpit Rock

In September, **Rick Wasatonic** will speak on "**Photometry of Betelgeuse.**" - Live at SMHQ Grady

In October, **Mike Huber** will speak on "**Astronomy with Kids**" - Live at SMHQ Grady

Speakers are still needed for November and December; please contact Sandy to volunteer or to suggest a speaker: astrosandy@gmail.com

Via Dave Raker: Librarian

New Books/DVDs

Extraterrestrial by Avi Loeb

Ignition by John D. Clark

Spacesuit: Fashioning Apollo by Nicholas de Monchaux

The Practical Astronomer by Brian Jones

Space! The Universe As You've Never Seen It Before (revised edition; edited by Rachel Fox)

The Great Year by Walter Cruttenden and James Earl Jones; narrated by James Earl Jones DVD

Endurance by Scott Kelly Audiobook CD set

Via Earl Pursell, UACNJ Liason:

United Astronomy Clubs of New Jersey (UACNJ), of which LVAAS is a member, will be holding Public Nights (Star Parties) every Saturday from now until the end of October. There will be a talk beginning at 8 p.m. live and online, followed by observing. Since both the talk and the observatories are outside, everything is weather permitting. Reservations are suggested, but not required. Please visit www.uacnj.org for more information.

Benefit from giving to LVAAS through your IRA

If you are 70 1/2 or older, you can make a charitable gift directly from your IRA to LVAAS without paying income tax on the withdrawal. State laws about Qualified Charitable Deductions (QCDs) and how QCDs are handled vary. If interested, please consult an adviser so you can help LVAAS today!

https://lvaas.org/page.php?page=using_rmd_to_support_lvaas



Cover image: The Total Lunar Eclipse May 15-16, 2022. Imager: Gary A. Becker

Enjoy a taste of the lunar eclipse experience if you weren't able to view it yourself this year (and even if you were!)

Gary and Peter Detterline traveled to Fort Littleton, PA to ensure clear skies for the best experience, and returned home with some very impressive images for their trouble.

Check out Gary's *StarWatch* article "Chasing the Sky" in this issue beginning on page 8, with images through page 13.

To see the very best images go directly to Gary's website astronomy.org and view them there.

Thanks Gary and Peter!

LVAAS General Meeting at *Grady Planetarium*

Sunday, June 12, 7:00 p.m.

**"A Tale of Two Circles: From
Orbits to Atoms" "**

presented in person by

Dr. Gary DeLeo
Lehigh University



The study of astronomy would not be complete without an appreciation of the importance of circles, circular motion in particular. Circular motion is not only common in nature, but also critical to our understanding of the composition of the universe and how it works. We will examine two aspects of such motion: one which takes place at a very large scale, planetary and stellar orbits, and the other at a very small scale, electrons in orbit about the nucleus of an atom. In so doing, we will have fun with the numbers that characterize planetary and stellar motions. We will then examine the atomic-scale motions responsible for the spectra of stars that tell us practically everything we know about them.

Professor Gary DeLeo was a member of the Lehigh University faculty in the Department of Physics for forty years before retiring at the end of 2019. He received his Ph.D. from the University of Connecticut with a specialty in theoretical solid-state physics. He has served as Associate Dean in the College of Arts and Sciences, and as Chair and Associate Chair of the Department of Physics. His passion for astronomy – a field that he has followed closely for about fifty years – led to his change in research area to astrophysics, with a focus on binary stars. Professor DeLeo has run a significant number of science outreach programs, and he is the recipient of seven teaching awards and honors.

Prospective new members who wish to attend the meeting should email membership@lvaas.org.



Night Sky Notebook
for
JUNE
by
Peter Detterline





StarWatch

Chasing the Sky

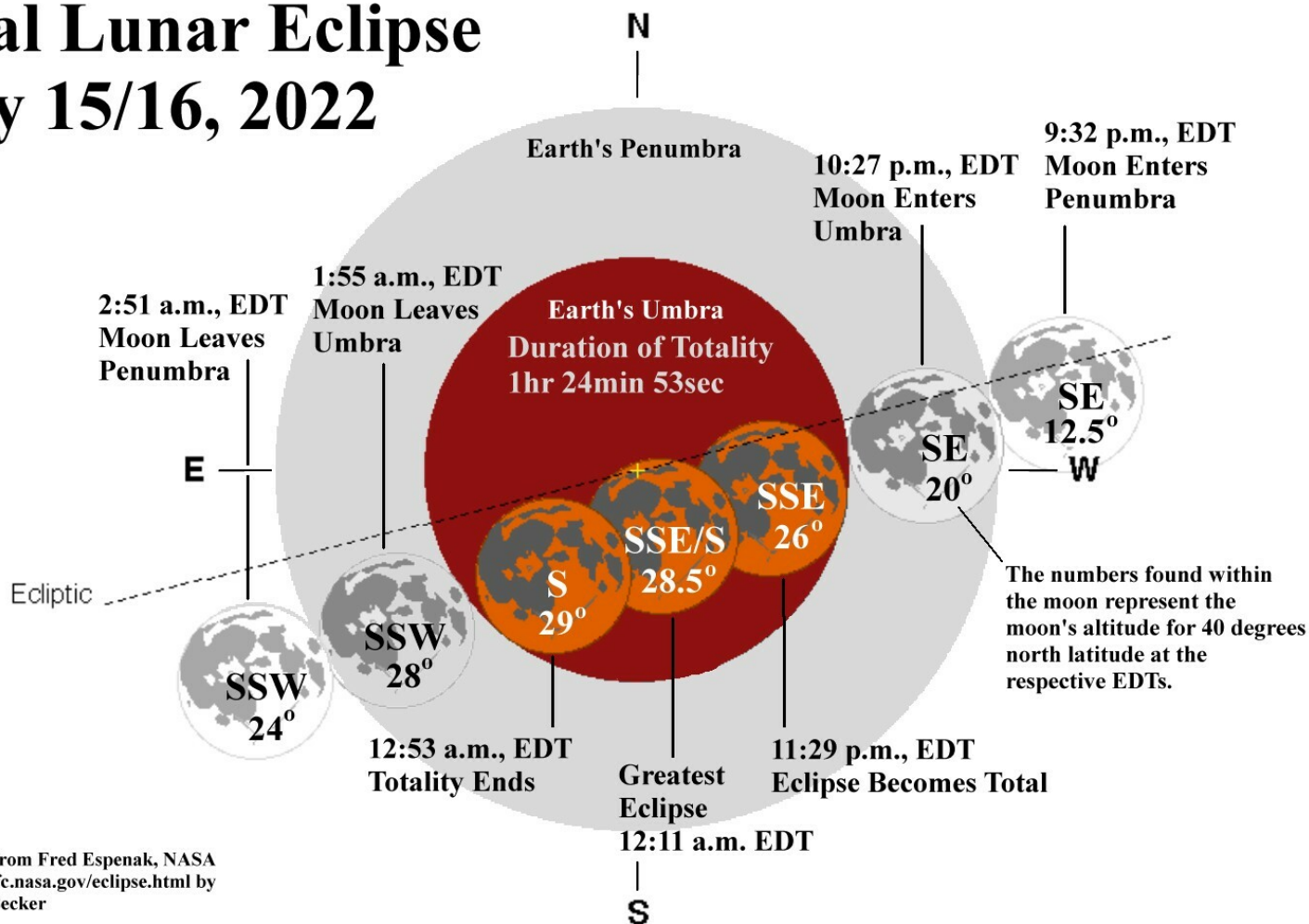
When it comes to the weather, viewing any major celestial event on the East Coast is more or less of a crapshoot. Learning to deal with disappointment has been a hallmark of my astronomical experiences over a lifetime of making observations. That being said, it was not going to happen with the best sky show of the year, the total lunar eclipse of May 15/16. I had practiced my astrophotography several days earlier on a very clear, tranquil evening. Photos are [here](#). Then the clouds rolled in. • During the days preceding the eclipse, there seemed to be no reasonable place within 400 miles to chase down a location with mostly clear skies. The Midwest, the mid-Atlantic, and the New England states were all plagued by clouds, drizzle, and T-storms. We were squeezed between two frontal boundaries that were moving at a snail's pace. Alas, it seemed as if the lunar eclipse was going to be *eclipsed* by clouds. • However, changes began to occur about 24 hours before the event. The low off the Atlantic coast that had been stagnant for days began to exit and a weak cold front that would usher in a better chance of successful viewing began to make its way across Pennsylvania. • Peter Detterline and I decided to chase better sky conditions on the western side of the system. We found our haven in Fulton County near a small town called Fort Littleton where we stopped my Jeep at a well-maintained farmstead. Edna, a small stocky woman, came to the door, and after introductions, gave us permission to set up our telescopes on a beautifully mowed clover field just on the other side of her barn. It was a perfect location, high up on a hillside with a beautiful southeast to southwest vista that quickly filled in with clouds to our dismay. Then it cleared. • Meteorologically, it was an odd sort of night with clouds rolling in and then retreating almost like waves on a beach, but in ultra-slow motion. • As soon as we thought we were doomed, the clouds

would dissipate, leaving a darkening sky as the moon pushed deeper into the Earth's main shadow. During one cloudy session, I texted a friend and called others to see how they were fairing. I was content that we had journeyed to Fort Littleton, although happily it seemed as if everyone was catching glimpses of the event too. My first teaching assistant at Moravian University, Alex Pena, phoned to chat and declare that it was crystal clear in Williamsburg, VA where he was watching the event unfold. • Alex's sky, however, was not as dark as south-central PA. The eclipse was also darker than expected. Colors were muted through binoculars with more yellows than reds being witnessed. Ironically, the moon appeared redder with the unaided eye than when viewing with an optical aid. Another indication that the eclipse was more subdued were the longer exposures I was able to take in comparison to other lunar eclipses that I had photographed. Thirteen seconds recorded at a higher sensor sensitivity (ISO) was the maximum length, whereas in other total lunar eclipses, 3.2 seconds was the time that the moon could sustain before beginning to whiten the sky around it. The focal length of my refractor was also shorter, adding to the amount of light registering on the sensor. My favorite images of the eclipse are posted [here](#). Note all of the stars that are visible, partly attributed to the darker skies and partly to the longer exposures that were taken to record the moon. With longer exposures, the colors become vivid with saturated reds and yellows that had to be subdued slightly in the processing routines. As Luna was egressing from the shadow around 1:30 a.m., a final batch of clouds rolled in. We decided to wrap up things and were headed east by 2:15 a.m. By 7 a.m., I was home, showered, and in a deep, coma-like sleep. *Chasing the sky* had proven wonderfully successful. Ad Astra!

Gary A. Becker -- beckerg@moravian.edu or garyabecker@gmail.com
Moravian University Astronomy - astronomy.org also [facebook.com/StarWatchAstro/](https://www.facebook.com/StarWatchAstro/)

Forward this **StarWatch** to a friend by clicking [Join](#)

Total Lunar Eclipse May 15/16, 2022



Adapted from Fred Espenak, NASA
eclipse.gsfc.nasa.gov/eclipse.html by
Gary A. Becker

Eclipse images on the following pages were captured by Gary A. Becker and can be viewed in all their glory on the pages of *StarWatch* on Gary's website, astronomy.org.

1. Partial eclipse as the moon enters Earth's main shadow
2. (top) A few minutes before totality
(bottom) At the beginning of totality
3. (top) Nearing the end of totality
(bottom) Moon moving from Earth's shadow, the umbra
4. Total lunar eclipse









From the LVAAS Archives: The Many Lives of the Wilkes Observatory

By Sandy Mesics

In the June 1972 Board of Governor's minutes, there is a request from LVAAS member Stan Wilkes for a plot of land at Pulpit Rock so that he could build an observatory there. Wilkes had been an LVAAS member since the 1960s, and was responsible for planning the first new observatory to be built at Pulpit Rock, the Arthur Fox Memorial Observatory, built by the "junior" group, the Ursa Major Astronomical Society.



Originally, when LVAAS acquired Pulpit Rock, the plan was to make sites available for lease to individual members who could build their own observatories. At that time, the only observatories at Pulpit Rock were the Kawecky Observatory and the aforementioned Fox Observatory. There was also an elevated platform to observe meteors, the Olivier Meteor platform, also constructed by Wilkes and Gary Becker. During much of this time, Wilkes was in charge of Pulpit Rock maintenance, until October 1974. Though the site was growing with new construction, a recurring theme during this period was the sad state of the Pulpit Rock road.

A request is received from S. Wilkes to obtain a 30' x 30' plot south of the meteor observing site on which to erect an observatory. This construction will be 16' long by 10' high by 12' wide and will house a 16" telescope. P. Shenkle and R. Schlegel are designated by the Director as being the individuals who will consider this request.

Wilkes' request languished for a couple of years, and In April 1974 he requested permission to start construction of his observatory. The lot was to be approximately 100 feet NW of the Schlegel McHugh Observatory (now commonly referred to as the "Tinsley" building). The observatory was to be 40 feet long, 8 feet wide, and 4 feet high. Wilkes planned to use the observatory for photometry and astroimaging. This request was granted by the board, with the caveats that he stake off three lots, the felling of trees be kept to a minimum, and that he was to remove his piers, etc. if and when he no longer would use the observatory. Wilkes had purchased a 40-foot truck trailer and converted it into an observatory. He divided the trailer into three parts: a sleeping quarter complete with TV, apartment refrigerator, and bed, a remote instrument room, and the observatory itself, housing a 16-inch short focus Newtonian.

In July 1974, Wilkes cut down trees, and concrete was poured for the pier. In June 1975, the minutes of the Board of Governors reported that "Stanley Wilkes ... will be ready to move his observatory to Pulpit Rock by the first week in August. Ralph Schlegel, William McHugh and Paul Shenkle will review the lease and submit it to the Board."

In May 1998 Wilkes donated his trailer to LVAAS. At that time, it was described as "basically sound," but needed an investment of about \$500 to renovate it. The renovations involved repairing leaks, replacing some plywood, paneling, ceiling tiles, countertops and painting. There was a lot of debate as to how best use the facility: some wanted to convert it to a radio observatory, while other wanted to

maintain it as an optical observatory. Still others suggested using it as a bunkhouse or meteor observing deck.

In March 2000, the Observer reported that the trailer had been designated as the home of a radio telescope. The next month, work commenced on the project with help from the LVAAS Explorer Post. Steps were fabricated and installed, the interior was refurbished, and the south doors of the trailer were replaced with a solid wall. By the end of Summer, 2000, a 10-foot satellite dish was mounted on the north roof: the work was spearheaded by member Gary L. Moore, and supported by Joe Zelinski, Pete Detterline, Tom Smith, Scott Fowler, and Bill Dahlenberg. The system was designed to detect 1.42GHz, the frequency used for SETI and galaxy mapping activities. The system worked for a short time until the failure of a power supply.

Waning interest and Gary Moore's declining health soon resulted in the radio telescope languishing. In 2004, the roof of the trailer needed repair, and it was also invaded by mice and snakes. The roof was repaired and replaced with a rubber roofing material the next year, and the roll-off portion of the roof was repaired as well.

In Spring 2006, Frank Toth, an amateur astronomer living near New Tripoli, donated his Meade 12-inch LX200 Classic Schmidt-Cassegrain telescope to LVAAS. This would turn out to be the Society's first go-to telescope. It was decided to install this telescope in the trailer on a trial basis. Pete Brooks made an equatorial wedge for the scope and built a regulated 18-volt power supply and small heater to keep the electronics warm during the winter months. Eventually Pete replaced his wedge with a commercial Milburn wedge.

While the Meade scope continued to function in the trailer for many years, it had its drawbacks: the scope was so high off the floor that the observer had to use a ladder to observe with it. The trailer continued to leak and attract rodents and snakes.



1. The Meade telescope in the Wilkes trailer.



2. Frank Lyter (l) and Ron Kunkel (r) with the Meade telescope in the Spacek Observatory.

In 2018, the Meade telescope was relocated to the Spacek Observatory, so that members would have access to an easily operated go-to telescope.

Currently (spring 2022) the trailer sits empty, except perhaps for the ubiquitous rodents and snakes. The plan for the trailer is to salvage some of the steel to repair the Spacek Observatory's roof. The remainder of the trailer will be disassembled and removed.

Many thanks to Frank Lyter for his help with this article.

References

LVAAS Board of Governors minutes, 1972-present.



LVAAS Meteor All Sky Camera Project!

LVAAS is looking for volunteer members to participate in a first ever, winter project to assemble Meteor All Sky Cameras for use at our South Mountain & Pulpit Rock Observatory Sites.

The project is intended to involve volunteers of all experience levels to build Meteor All Sky Cameras based on the Raspberry PI platform that will be installed at LVAAS observatory sites.



LVAAS is picking up the material costs for the units and will be facilitating the build via remote Zoom sessions and in-person events for field testing and deployment.

We are encouraging members with little to no experience in these types of systems to actively participate with demonstrations, coaching and troubleshooting assistance from more experienced members. Using Zoom for most of the activities will minimize travel and encourage active participation or simply observing the process. Volunteers are welcome to purchase their own parts and participate in that manner if they wanted their own for home. The unit cost expected to be approximately \$200.

Activities include:

- Setup & Configuration of Raspberry Pi with suggested applications
- Networking of Raspberry Pi for downloading images & remote access
- 3d Part / Enclosure design & printing (e.g. via Fusion 360)

Reference: Make Magazine Article:

<https://makezine.com/projects/raspberry-pi-meteor-camera/>

Contact us if you would like to participate or have any questions!

Blaine Easterwood-Education Director - blaine@ieee.org

Frank Lyter-Pulpit Rock Observatory Director - flyter@ptd.net

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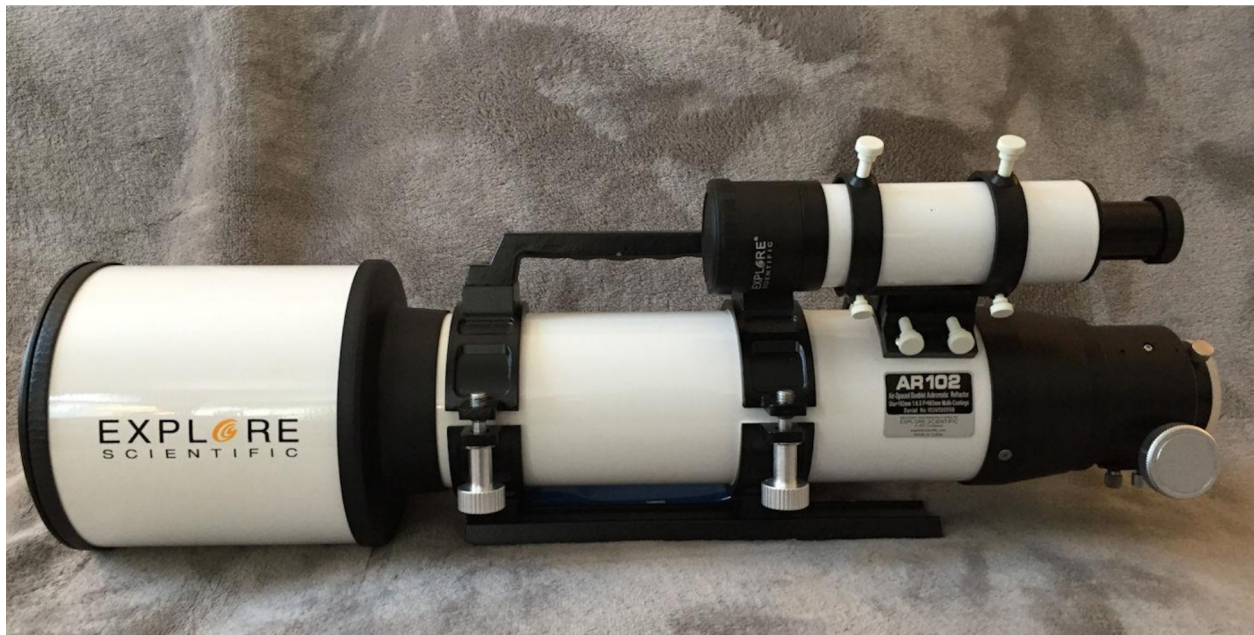


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<https://www.cafepress.com/lvaasredshiftonlinestore>

For Sale: \$300

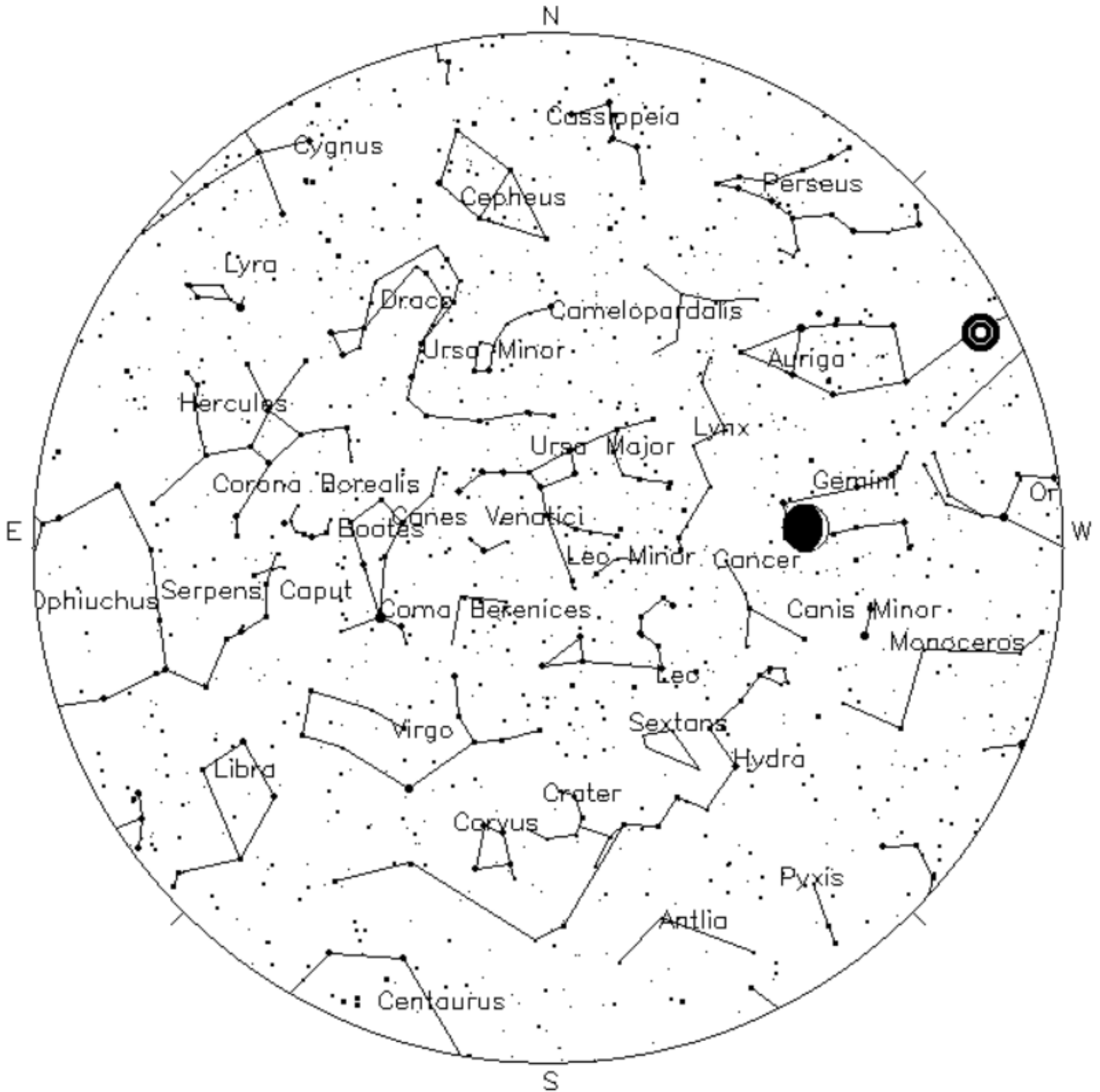
**Explore Scientific - AR102 f/6.5
Air-Spaced Doublet AR Series
Achromat Refractor Telescope**



Virtually new in box. Includes dual speed 2" focuser, cradle rings with handle, 8x50mm finder, and all packing materials. This same model scope is currently selling for \$600 if you can find it. The reason I am offering so cheap is that I am keeping the 2" diagonal. I have a 1.25" diagonal and 2" adapter that I will sell with the scope for an additional \$25 if needed.

Contact: Bob LaFleur at BLF999@Gmail.com

Sky Above 40°33'58"N 75°26'5" Friday, June 3, 2022 00:00 UTC



adapted from Home Planet for Windows. The GIF output file generation is based upon the ppmtogif module of Jef Poskanzer's pbmplus toolkit, of which many other components were used in creating the images you see here.

ppmtogif.c - read a portable pixmap and produce a GIF file

Based on GIFENCOD by David Rowley

Lempel-Zim compression based on "compress"

Modified by Marcel Wijkstra

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Customize Your Sky at <http://www.fourmilab.ch/yoursky/>

JUNE 2022

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
			01	CSSP 02	CSSP 03	CSSP 04 Star Party
CSSP 05	06	First Quarter Moon 07	08	09	Scout Camping at Pulpit Rock 10	Scout Camping at Pulpit Rock 11
Scout Camping at Pulpit Rock 12 General Meeting - 7:00 PM	13	Full Moon 14	15	16	17	18
Fathers Day 19 Deadline for submissions to the Observer	20	Last Quarter Moon 21	22	23	24	Astro Imaging at SM 7pm 25
LVAAS Board of Governors Meeting 26	27	28	New Moon 29	30		

JULY 2022

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
					01	Star Party 02
03	Independence Day 04	05	06	First Quarter Moon 07	08	General Meeting/Picnic - 5:00 PM 09
General Meeting (rain date) - 7:00 PM 10	11	12	Full Moon 13	14	Scout Camping at Pulpit Rock 15	Scout Camping at Pulpit Rock 16
Scout Camping at Pulpit Rock 17	18	19	Last Quarter Moon 20	21	22	Astro Imaging at SM 7pm 23
Deadline for submissions to the Observer 24	25	26	27	New Moon 28 Stellafane	Stellafane 29	Stellafane 30
Stellafane 31 LVAAS Board of Governors Meeting						

2022 LVAAS EVENT CALENDAR

Contributed by Bill Dahlenburg

2022 LVAAS Event Calendar												
	Sundays				Saturday	Saturday	Monday	Multi-Day	Moon Phase			
	General Meeting time	Date/location	Board meeting	Observer submission deadline	7:00 PM Astro Imaging	Star Parties	Scouts at S. Mountain	Weekends Scouts at Pulpit R.	New	First	Full	Last
January	3:00 PM	9 Muhlenberg/Zoom	30	23	no mtg	no mtg		no camping	2	9	17	25
February	3:00 PM	6 * Muhlenberg/Zoom	27	20	no mtg	no mtg		no camping	1	8	16	23
March	3:00 PM	13 Muhlenberg/Zoom	27	20	26	12			2	10	18	25
April	7:00 PM	10	24	17	23	9			1 30	9	16	23
May	7:00 PM	1 *	22 *	15	21	7			30	9	16	22
June	7:00 PM	12	26	19	25	4			29	7	14	21
July	5:00 PM	9/10 Picnic – S.M.	31	24	23	2			28	7	13	20
August	7:00 PM	13/14 Pulpit	28	21	20	6			27	5	12	19
September	7:00 PM	11	25	18	17	3			25	3	10	17
October	7:00 PM	9	30	23	15	1			25	3	9	17
November	7:00 PM	13	27	20	19	5			23	1 30	8	16
December	**	10/11	18 *	11	17	no mtg		no camping	23	30	8	16

* early due to conflicts

July, Aug & Dec are Saturday meetings with rain date on Sunday
 Jan, Feb & March general meetings Muhlenberg (tentative)
 August meeting is at Pulpit Rock
 December meeting / Holiday Party **

NEAF
 Cherry Springs S.P.
 Stellafane
 Black Forest S.P.
 MegaMeet

April 9-10
 June 2-5
 July 28-31
 August 19-21

Publishing images is a balancing act!

When preparing your images for publication in The Observer, please consider the following guidelines:

Put the quality in:

- ▶ Considering the "print" size of the image, make sure you have at least 150 pixels/inch.
- ▶ Use a reasonably good quality for the JPEG compression ratio.

But watch the "waistline"!

- ▶ Don't go too much above 200 pixels/inch max.
- ▶ Use the lowest JPEG quality that still looks good!
- ▶ Shoot for <300KB for a 1/2 page image or <600KB for a full page.

Tip: If you're not Photoshop-savvy, you can re-size and compress undemanding images ("human interest" not astroimages), with an online tool such as:

<https://www.ivertech.com/freeOnlineImageResizer/freeOnlineImageResizer.aspx>. It will also tell you the pixel size and file size of your original, even if you don't download the processed copy.

The Observer is the official monthly publication of the Lehigh Valley Amateur Astronomical Society, Inc. (LVAAS), 620-B East Rock Road, Allentown, PA, 18103, and as of June 2016 is available for public viewing. Society members who would like to submit articles or images for publication should kindly do so by emailing *The Observer* editor, France Kopy, at editorlvaas@gmail.com. Articles submitted prior to the Sunday before the monthly meeting of the board of governors (please see calendar on website) will appear in the upcoming month's issue. PDF format is preferred. Early submissions are greatly appreciated. Articles may be edited for publication. Comments and suggestions are always welcome.

LVAAS members please feel free to submit ads for astronomy equipment you have for sale, and additionally you may sponsor a maximum of three ads from non-members per year. Please submit your finished ad as a PDF, with pictures and text. Every attempt will be made to include submissions in a timely manner.

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Existing members please update your LVAAS profile information by emailing the membership director at membership@lvaas.org.

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