The Observer

The Official Publication of the Lehigh Valley Amateur Astronomical Society
https://lvaas.org/
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September 2024
Volume 64 Issue 9

Nomination of LVAAS Officers for the 2025 Term

Nominations for LVAAS officers will be accepted through the close of our September 8th membership meeting at our South Mountain Headquarters.

LVAAS full members in good standing (current dues paid) are entitled to vote and/or be considered for office. Nominations will not be accepted nor shall additional nominations be placed on the ballot after the close of nominations during the September 8, 2024 membership meeting.

Nominees to date:

Director: **Benjamin Long**

Assistant Director: **Kyle Kramm**

Secretary: **Beth Julius**

Treasurer: **Vo Maziarz**

Please contact me at the address below should you have questions regarding any of the positions above, or if you may be considering an elected position.

Voting for contested positions will take place at our October 13th general membership meeting. Installation of newly elected officers will take place at our December general membership meeting.

Regards,

Bill Dahlenburg - Nominating Committee Chairman

sm_maintenance@lvaas.org

Pulpit Rock Panorama by Michael L. Morgan ~ submitted by Sandra Repash

Via Sandy Mesics, Programs Chairperson

Upcoming LVAAS General Meeting Speakers

September: Steve Conrad will speak in person and via Zoom on "Occultations" at South Mountain HQ.

October: Mario Motta will speak via Zoom on "Building a 32-inch Telescope and Observatory"

November: Dave Moll will speak on "Lore of the Ancient Skies"

December: Emma Page (Lehigh U) will speak on "Transits and Eclipsing Binary Stars"

- Please contact astrosandy@gmail.com if you have ideas for speakers, or would like to volunteer.

Via Bill Dahlenburg, Nominating Committee Chairman

Please see the announcement regarding LVAAS Officer Nominations, which will be held on September 8 at our general meeting. Bill's contact information is on the announcement should you have questions.

KUDOS! THANK YOU, LVAAS VOLUNTEERS!

September kudos go out to the LVAAS South Mountain crew! For your ongoing dedication to maintaining the grounds and observatories in tip-top shape, LVAAS sends out a big 'thank you' to **Pete Brooks, Earl Pursell, Mike Clark, Kyle Kramm and Bill Dahlenburg.** Kudos!

A big LVAAS 'thank you' also goes out to the volunteers who helped out with the very successful Lehigh Gap Nature Center Star Party: **Claudio Stabile, Linda Prince, Joe Zitarelli, Earl Pursell, Tom Julius, Terry Pundiak and Blaine Easterwood.** Thanks for putting astronomy out there for the public to enjoy! Kudos!

Earl Pursell sends kudos to those members who helped out with the August Star party: **Bill Dahlenburg, Tom Julius, Joe Zitarelli, Frank Lyter, Eric Loch** and some others not named. Earl also would like to recognize those members who assisted with their technical expertise at the July general meeting and with the planetarium: **Rich Hogg, Jamie Elovski, Blaine Easterwood, and Aidan Berger**. Without you the show couldn't go on!

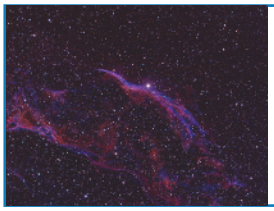
And a huge thanks to **Ron Kunkel** for his hard work keeping Pulpit Rock Astronomical Park looking its best. Kudos, Ron! Also **Frank Lyter** for the park's observatory oversight and ongoing improvements. Kudos Frank!

Finally, **Aidan Berger** would like to thank **Bill Dahlenburg** for taking over as coordinator of the August Star party while he was busy preparing to head off to college. Kudos again, Bill, and best of luck to Aidan!

LVAAS runs on its volunteers. Thanks to everyone for stepping up to the task! Kudos!

Via Earl Pursell, UACNJ Liason

Public Program Nights have resumed at United Astronomy Clubs of New Jersey; please visit uacnj.org for info.



cover: **The Witch's Broom Nebula,** imaged by **Joe Zitarelli** during MegaMeet 2024 in narrowband where Ha=Red, Oiii=Green and Sii=Blue. Done between 2 a.m. (when the wind died down) and 5 a.m. (sunrise) having lost some subs due to clouds.
Ha 180” x 18 Oiii 180” x 9 Sii 180” x 11
Astro-Tech AT80 EDT Telescope on an iOptron CEM 25 mount.

LVAAS General Meeting

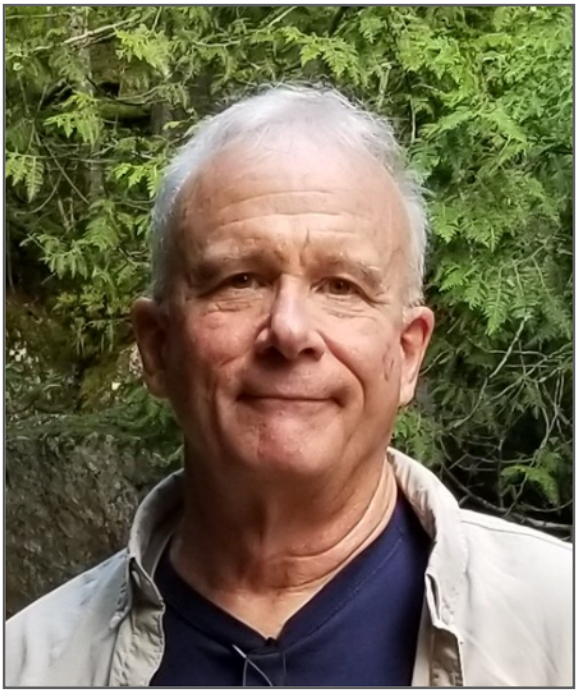
Sunday, September 8, 7 p.m. in person and via Zoom

South Mountain Headquarters

"Occultation Timing: New and Improved"

presented by

Steve Conard



Occultation timing has been used for several decades to measure the size and shape of asteroids, producing chord accuracies in the 100 meter range from distances of several AU. Many amateurs have tried this, but given it up due to the difficulty in collecting data and the rarity of high probability events. In the past several years, a number of advances have been made which have greatly decreased the barriers to success. This talk will give the basics of occultations timing, with an emphasis on the tools that are responsible for generating nearly four times the data than five years ago. The latest hardware will be shown along with results of recent observations.

Steve Conard has been an amateur astronomer for more than 50 years. His love of telescope making as a teenager turned into a 42 year career working for the Johns Hopkins University developing optical systems as an optical engineer. Most of his career was spent working on NASA astrophysics and planetary missions. This includes being in the role of lead engineer for the LORRI camera on the New Horizons mission to Pluto for more than 20 years.

Mostly retired and now living in Wellsboro, Steve recently founded the Pennsylvania Wilds Astronomy Club. He regularly volunteers at several Pennsylvania State Parks and is working to control light pollution in the Wilds by working with several advocacy groups. His other interests include hiking, railtrail biking, and his antique motorcycle.

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

Minutes from the LVAAS General Meeting – August 10, 2024

The August 2024 LVAAS General Meeting was conducted at the Pulpit Rock Astronomical Park. Approximately 60 people were in attendance.

Director Benjamin Long opened the meeting at 8:20 p.m.

Membership: Rich Hogg

- The following members completed their Second Readings and are now Full Members:
  Bruce Balthaser
  Brett Beidler
  Matt Zimmerman and McKenzie Sterner (family membership)

- The following members completed their First Readings:
  Stephen Huber
  Leroy Kromis

- The following members have previously completed a First Reading and are still eligible to complete a Second Reading to become Full Members:
  Cynthia Kuhns
  Theodore Opperman
  Miretta Wadopian
  Michael Williams

Pulpit Rock - Frank Lyter:

- Ron Kunkel and I are available for training on any of the scopes.
- We will be having more work parties at Pulpit Rock in the coming months.
- We will be switching to combination locks on the telescopes within the next month.

Astroimaging - Tom Duff:

- The Astroimaging Group meets one Saturday each month at 7:00 p.m. at South Mountain.
- All members are welcome to come as well as to join the Astro-Imaging groups.io email list.
- The schedule for meetings is on the calendar

Stargazers - Kyle Kramm:

- The Stargazers Group is very informal and meets on the second Friday of each month at South Mountain at 7:00 p.m.
- We meet without a preset agenda and are available to assist if anyone has equipment issues.
- We may watch a video or if it is clear we can go outside and use the scopes.

Recruiting for Officers – Bill Dahlenburg:

- We currently have the following slate of officers for next year:
    - Director: Benjamin Long
    - Assistant Director: Kyle Kramm
    - Treasurer: Wojciech Maziarz
- If anyone else is interested in running for any of these positions please let Bill know.
- The position of Secretary is currently open for next year. If you are interested please contact Bill or our current secretary Joe Zitarelli for more information.

Treasurer – Wojciech Maziarz:

- I am available to discuss the finances of the Society if anyone has any questions.

Library - Joe Zitarelli:

- We are continuing to view *Adventures in Astronomy* on Tuesday evenings at 7:30 p.m. at South Mountain. We are viewing a live presentation via Zoom that is directed towards high school level astronomy. The course goes through mid-September and the topics are listed on the calendar.

Star Party Coordinator – Aidan Berger:

- The next Star Party is Saturday August 17 and we are expecting a good turnout. We could use help and you are invited to attend and help.

General Comments - Mike Huber:

- We are looking at putting together an LVAAS Calendar for 2025.
- If you have images or are interested in helping, please contact Mike Huber.

  All help is welcome.

Tonight's General Meeting's presentation is The Long and Winding Road to a Muhlenberg Observatory

Featuring Brett Fadem, PhD

After a 10-year acting career in NYC, I attended Grinnell College from 1991 to 1995, where I graduated with a B.A. in physics. Continuing on to graduate study in High-energy Nuclear Physics at Iowa State University, I earned my Ph.D. in 2002. After a two-year teaching position at Colby College in Maine, I took a faculty position at Muhlenberg College in 2004 where I have taught for twenty years. Over the interval, with the help of three NSF grants, I have exposed dozens of undergraduate students to nuclear physics research at Brookhaven National Laboratory in Long Island using the Relativistic Heavy Ion Collider (RHIC). Recently, I have started teaching astronomy at Muhlenberg College and have become involved with the Skynet consortium that uses a worldwide network of robotic telescopes to teach introductory astronomy and more advanced courses in observational astronomy.

In 2004, when I started at Muhlenberg College, Professor Robert Milligan had constructed a robotic observatory in Siding Spring, Australia for the College. At the site there was a Celestron C-14 telescope that could be operated remotely. The goal was to search for supernovae and exoplanets as well as to study radiation curves. Sadly, due to the costs involved and how hard it was to get to, the observatory was closed in 2011. I always hoped to build another. In the interim, my students and I spent our summers working at Brookhaven National Laboratory on research related, in part, to the quark-gluon plasma, a state of matter that existed everywhere in the universe millionths of a second after its creation, and to other fundamental questions in high energy nuclear physics.

I joined Judith Parker as a member of LVAAS in 2020. Judith was a professor at Muhlenberg College who had been a long time member of LVAAS. Unfortunately Judith passed away in 2022. The astronomy course at the College utilizes the "Our Place in the Universe" (OPIS) curriculum. We also use the Skynet robotic telescope network, the Cerro Tololo Inter-American Observatory and the PROMPT telescopes to look for gamma ray bursts. Our goal is scientific work, not pretty pictures. We also use a solar telescope as well as smart telescopes including a Unistellar Equinox to view the supernova in M101 and the Comet C/2022 E3 (ZTF). We are also able to get students involved in research at Brookhaven National Laboratory on Long Island studying droplets of primordial matter.

With telescopes we are only able to look back to 400,000 years after the Big Bang. We must use particle accelerators to look at hotter and higher energies when quarks and gluons were free in a plasma state. They use the Relativistic Ion Collider to infer the quark-gluon plasma to demonstrate how this relates to Cosmology.

The Conrad W. Raker Wildlife Sanctuary in Germansville, PA was gifted to Muhlenberg College. We are looking at locating the observatory next to the field station that is already there. Building the Muhlenberg Observatory had a set budget with most of the money being donated by the family of a former student, Ben Eber. It was decided that the basic structure would be a roll-off made by Stolzfus Sheds. It was decided to use an Orion 8" f/8 Ritchey Chretien Reflecting Telescope weighing 18 pounds, and mount it on an Orion Atlas Pro mount. Currently the base plate for a pier is installed with plans to install a pier that the mount will sit on. Club member Frank Lyter has been assisting with this phase. The camera to be used is a ZWO ASI533.

After taking questions, Professor Fadem ended his talk.

Next General Meeting:

- Sunday September 8, 2024 at 7 p.m. at South Mountain

The August 2024 General Meeting was recorded.

The meeting was adjourned at approximately 9:45 p.m.

Submitted by Joe Zitarelli, Secretary

MegaMeet 2024, imaged by LVAAS member **Phillip Doherty** during a drone fly-by of Pulpit Rock Astronomical Park in Kempton, PA. MegaMeet is an annual event organized by LVAAS' AstroImaging Director **Tom Duff.**
Pulpit Rock is the dark sky site of the Lehigh Valley Amateur Astronomical Society, located on the Appalachian Trail .

Education and Outreach News and Opportunities

Blaine Easterwood

These are exciting times! In addition to finishing up the "Adventures In Astronomy" course over the summer (thanks Joe Zitarelli), we have a beginners Astro-Imaging Course and great community event coming up over the next two months. I look forward to more cool and interesting things in the months to come!

Intro to Astro-Imaging Course

Saturday, September 21st
9AM to 12PM
South Mountain Observatory

If you want to learn the basics of astrophotography, then this course is for you! Astro-Imager and LVAAS member Paul Tracy has put together a 3 hour class that will help the aspiring astrophotographer understand the fundamental concepts of this wonderful hobby.

Here is what Paul says about the course: "The course is intended for those who are new to the hobby and want to learn more about the imaging process. I assume little to no knowledge of astronomy or imaging and will provide all the background required to introduce a new hobbyist to imaging. Topics will include an introduction to deep sky objects suitable for imaging, coordinate systems, telescopes, mounts, and cameras. It will define many terms used by imagers and discuss a typical imaging session including the data acquisition and post processing steps. The course will not go into depth on any specific equipment or tools but will provide a broad overview to quickly get new members oriented to the imaging process and provide the basis for further exploration."

Please RSVP to phtracy@ptd.net (cc: education@lvaas.org) if you plan to attend, it will help us plan accordingly.

Note: This class is for LVAAS members only.

Lehigh Valley Space Fest! (October 12 & 13)

We need your help! LVAAS is participating in the Lehigh Valley Space Fest again this year and we need volunteers to help us. We are looking for people to:

- Help staff our outdoor display
- Setup your solar telescope and assist the public with viewing
- Provide backup to our solar viewers so they can take breaks

We appreciate any time that you can volunteer. So even if it's for only an hour or two, we would love to have your help! This is a great opportunity to share your energy, experience, and knowledge with the general public.

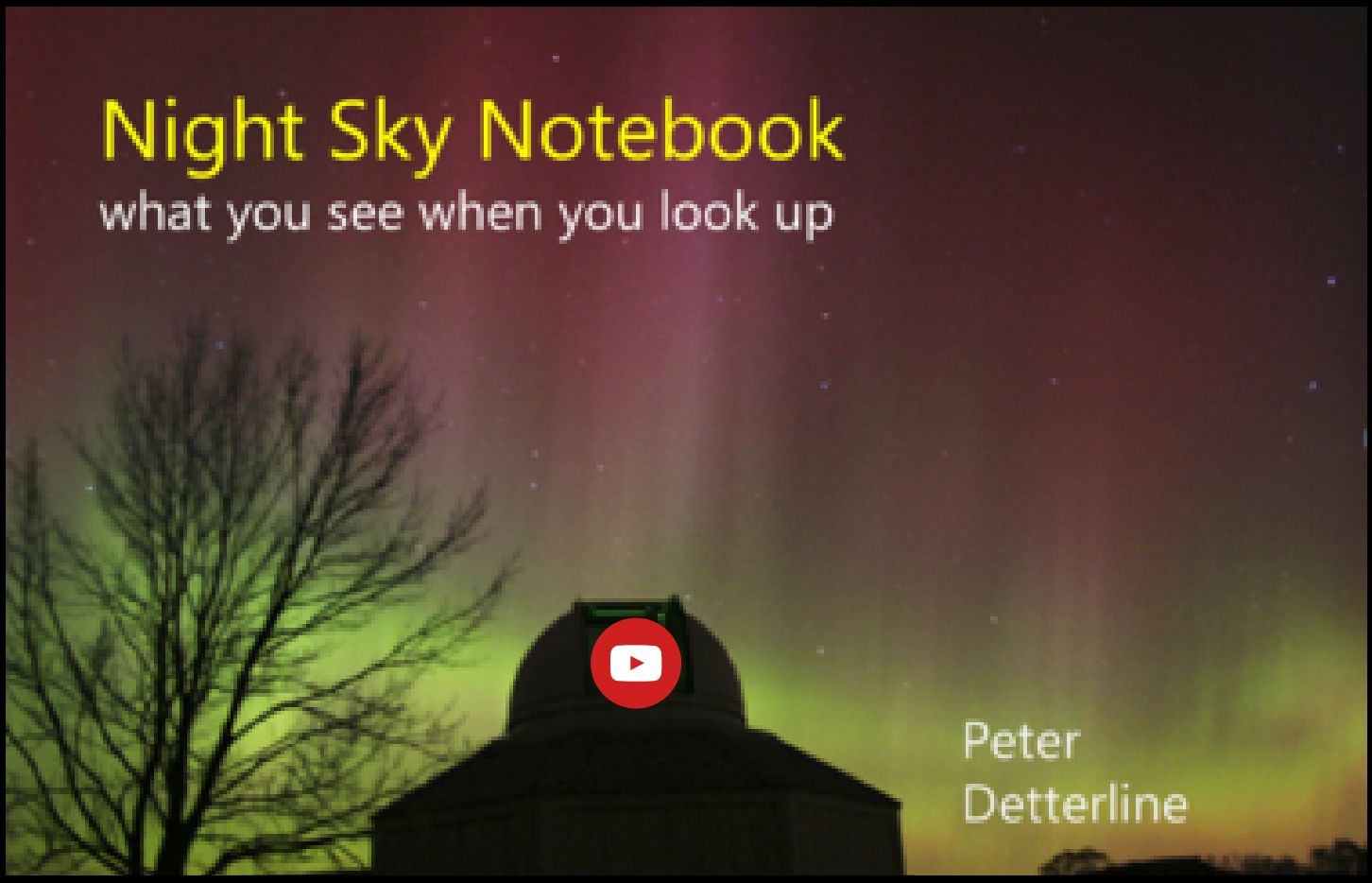
The event is at Lafayette College this year. More details are available at the Lehigh Valley Space Fest Website: https://www.lvspacefest.org/home

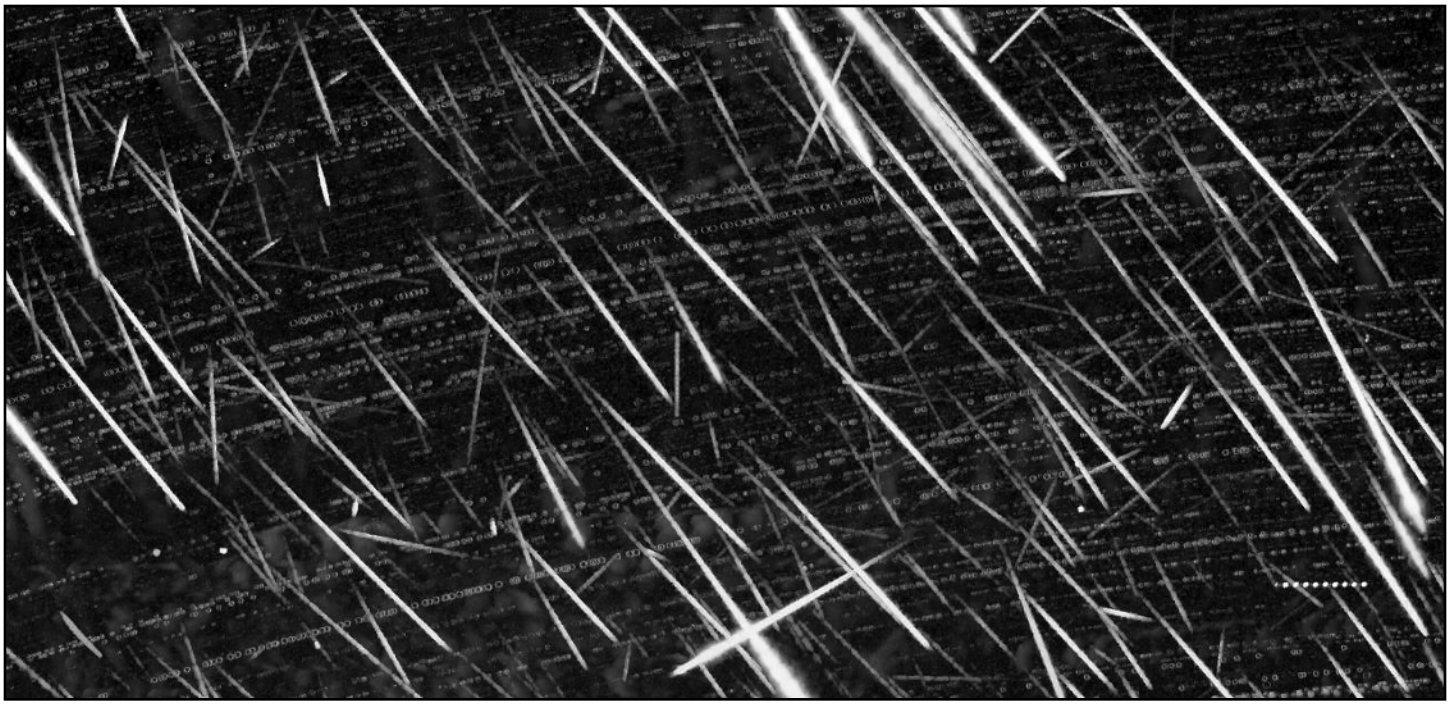
For more information, or to be an LVAAS volunteer, please contact any member of the education committee (Linda, Joe, Mike, or Blaine) at education@lvaas.org

Peter Detterline's

Night Sky Notebook

September 2024





LVAAS Meteor Cameras Capture the Perseids!

We had a good showing last night (Aug 11-12) with LVAAS meteor cameras picking up hundreds of meteors.
The counts were as follows:

Station Code	Operators	Location	Perseids	Total
US002D	LVAAS	South Mountain	164	188
US002E	Terry Pundiak	Easton	186	212
US002L	John Kmetz	Upper Providence	131	159
US004D	Tom Duff	Bethlehem	172	252
US0050	Ron Kunkel	Mohrsville	252	327

For a timelapse of the South Mountain camera, please visit:
https://globalmeteornetwork.org/weblog/US/US002D/US002D_20240812_003257_406114_detected/
then scroll to the bottom of the page.
For the results of all meteor cameras in the USA, please see:
https://globalmeteornetwork.org/weblog/US/
It was quite a successful night. We also caught quite a few on Saturday night, and tonight the 13th should be productive as well.

Clear Skies,

John Kmetz and Frank Lyter

Melissa Wirth 8/12/2024 1 a.m. from Center Valley PA, with Perseid meteor!

Bob Dreisbach viewed the Aurora from Northampton, PA in bright light!

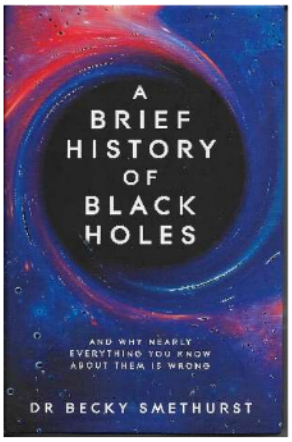
Another beautiful photo from Melissa!

Warren Landis noticed a purplish glow in the skies over Allentown, PA and thought his camera was acting up!

Mike Huber caught this display with his smartphone camera from Lansdale PA on 8/12/2024 2:30 a.m.!

Late Summer Aurora - The Perseids Finishing Touch!

Peter Detterline imaged the Aurora (above and below) over Boyertown on his way home from Perseids-watching. Wow!



From the Library - Joe Zitarelli

"Bite-Sized, cutting-edge science delivered with enormous enthusiasm – all you need to travel the cosmos" – Chris Lintott

"A lot of astrophysics is packed into this neat little book" – Jim Al-Khalili

Dr. Becky Smethurst is a young Astrophysicist at the University of Oxford who has become quite popular with her Social Media posts especially on YouTube and Instagram. My first introduction to her was a video she posted about how Pulsar Timing Arrays were used to confirm gravitational waves and that they travel at the speed of light further confirming the Theory of General Relativity and favoring dark matter over the alternative Theory of Modified Newtonian Dynamics. If that previous sentence sounded like Greek to you, and not just a run on sentence, she is someone you may want to follow because you can learn a lot. She has that ability to explain complex Astrophysics in a way that can be easily understood. I find her to be a younger, female version of Neil deGrasse Tyson, but with a British accent and a touch of British humor. She does all this with excitement in her voice. You can tell she loves her work, and she wants to share what she has learned with you. Ever wonder what a young female Astrophysicist wears to an international symposium? She covers that too.

When I saw Dr. Becky, as she is commonly known, had written a book, *A Brief History of Black Holes – and why nearly everything you know about them is wrong*, I was anxious to read it. I was not disappointed. And of course, who isn't fascinated by these massive freaks of nature? A Black Hole can be described by three properties: mass, charge and angular momentum or spin. But you will learn so much more in the 264 pages of this book.

Chapter 1 is *Why the stars shine.* It's good to have a little background on normal stars. The first couple of chapters will explain all the Science you need to know behind fusion, what powers stars, and nucleogenesis, how the heavier atoms, known as metals, are formed from inside the cores of massive stars as they run out of fuel. She even explains "supernova poop". Please do not confuse this with the "deer poop" problem at Pulpit Rock.

Without the use of equations, she explains the term *escape velocity* and how this increases as you approach a black hole. Get too close and the escape velocity becomes more than the speed of light. You've now crossed the threshold, or Schwarzschild radius, and there is no turning back. From then on, don't even try to get any information out.

Chapter 4 is titled *Why black holes are "black".* In contrast, Chapter 7 is *Why black holes are not "black".* You are going to have to read the book to know why those two chapter titles both make sense. She goes on to talk about what happens when two massive objects rotate around each other and finally merge. I'll give away the answer – they form a more massive object and give off gravitational waves. From there it is on to *Your friendly neighborhood black hole* in Chapter 9 and then supermassive black holes. But my favorite chapter is *Black holes don't suck.* I'll bet you thought otherwise. Are there limits to how much a black hole can devour? Will galaxies die? Will black holes go on forever? How does it all end? The answers are all in this book.

I found this book not only full of a lot of information, but it was a true joy to read. As I was reading, I sometimes would visualize Dr. Becky's smiling face and hear the enthusiasm in her words. She writes like she speaks, and I found her very easy to read and to understand. I don't feel you need an extensive knowledge of Astrophysics to enjoy and learn a lot from this book. Don't get me wrong, this book is not Black Holes for Dummies, this book is for the person who finds the idea of black holes intriguing and wants to learn more about the Science. While taking this journey you will learn a lot more about lots of other astronomical objects as well, and you will probably feel like you've really learned something. If nothing else, if you hear someone say at a party that black holes really suck, you'll know they have no idea what they are talking about. I hope anyone who reads this book enjoys it as much as I did. I plan to keep a copy nearby as I have used it as a reference and will probably re-read it in its entirety at some point.

A Time of Transition

By Sandy Mesics

The forerunner of the LVAAS was the Lehigh Valley Astronomical Society (LVAS) which existed from 1936 until 1957, with a brief hiatus during World War II. Since its inception, the group met regularly at the West Allentown home of L.H. Cutten. While the author has a fairly complete record of the group, the records from the 1950s are incomplete, and it is difficult to piece together the activities of the group during that time. But we can glean from what we have that it was a time of struggle for the club.

The postwar era of the 1950s brought a lot of changes to American society: the baby boom was underway, the economy was booming, Americans were becoming highly mobile, and television proved a big distraction. The space race had not yet started, so it seemed inevitable that groups such as the LVAS were struggling. A bulletin was sent out to the 61 members of the LVAS in November 1954, encouraging them to become more involved, and remarking that only 10 to 20 members attended the regular meetings.

PICNIC TONIGHT

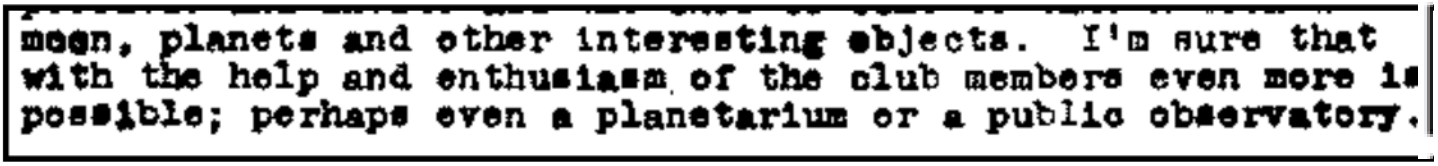
The first annual picnic of the Lehigh Valley Astronomical Society will be held at 7 p.m. today at Rose Garden picnic area 2. The public is invited to use the star gazing equipment of the group after dark.

Allentown Morning Call, Friday, July 30, 1954.

Attempting to increase membership through public outreach, in July 1954 LVAS held a public picnic at the Rose Garden in Allentown. Unfortunately, there is no record of whether the event was successful, but a clue surfaced in the March 1955 LVAS Bulletin saying that indeed, the event was successful. Another such event was planned for June 20, 1955.

Curiously, some of the newsletters from 1955 give the date and time of the monthly meetings, but not the location. It seems that 1955 was a period of transition, with the meetings moving from the Cutten Home to the Swain School. LVAS would continue to meet at the Swain School until February 1957. In October of that year, the LVAAS would be founded, and many members of the LVAS moved their membership to the new group.

The "help and enthusiasm" of those members of the new club would fulfil the prediction made in that November 1954 plea for members:



moon, planets and other interesting objects. I'm sure that with the help and enthusiasm of the club members even more is possible; perhaps even a planetarium or a public observatory.

References

LVAS Newsletter, November 1954
Allentown Morning Call.

SILK PURSE FROM A SEESTAR'S EAR?

ZWO'S SMART SCOPE MEETS MODERN PROCESSING

by David M. Moll, image processing by Paul H. Tracy

Since its introduction by ZWO in April 2023, the Seestar S50 "smart telescope" has become a popular and prolific electronic assisted astronomy (EAA) tool. It is arguably one of the best assets for introducing prospective new astronomers to the hobby. But in addition to being a valuable tool for educators and astronomical outreach, the Seestar has enough going for it to fascinate even the most advanced amateur or professional astronomer.

The Seestar essentially is a self-contained astro-imaging rig. Along with its supporting software, it is telescope, camera, mount, guiding system, and image data processing tool all wrapped into one. But it is NOT a true astro-imaging rig. The Seestar is a 50mm f5 instrument with a tiny imaging chip. It is an alt-az setup, so imaging sub-exposure time is limited to 10 seconds max to avoid field rotation. The supplied proprietary software has very little flexibility. But the package is cheap and FAST!

Many of us have seen Seestar images in person and in publication. Most are grainy, blocky, contrasty representations of the intended targets. They are great for the purpose for which the instrument was designed, and truly amazing given the cost and simplicity of the system.

But how good can a Seestar image actually be if processed with state-of-the-art imaging software? Paul Tracy and I wondered this as we were working on a project to "resurrect" my 8-10 year old imaging data using Pleiades Software's PixInsight and add-ons. Paul presented the amazing results of that project to the Astro-Imaging group on August 31. Given the success of that endeavor, we asked ourselves "How would a Seestar image respond to this treatment?" Well, the answer to that question turned out to be "Pretty darned good".

Our experiment was simple: Subject several original Seestar .fits image stacks to the PixInsight treatment and compare with Photoshopped versions, as presented below.

The cost of this is very modest, by astro-equipment standards. The Seestar S-50 currently lists for $499; PixInsight is right around $500. So, total cost of the tools used in this experiment was right around $1,000. Also, keep in mind…there is a steep learning curve to PixInsight (as Paul will attest!), but it is not insurmountable.

On the following pages are some "before" and "after" examples of "original" Seestar images processed with Photoshop, and the same processed with PixInsight.

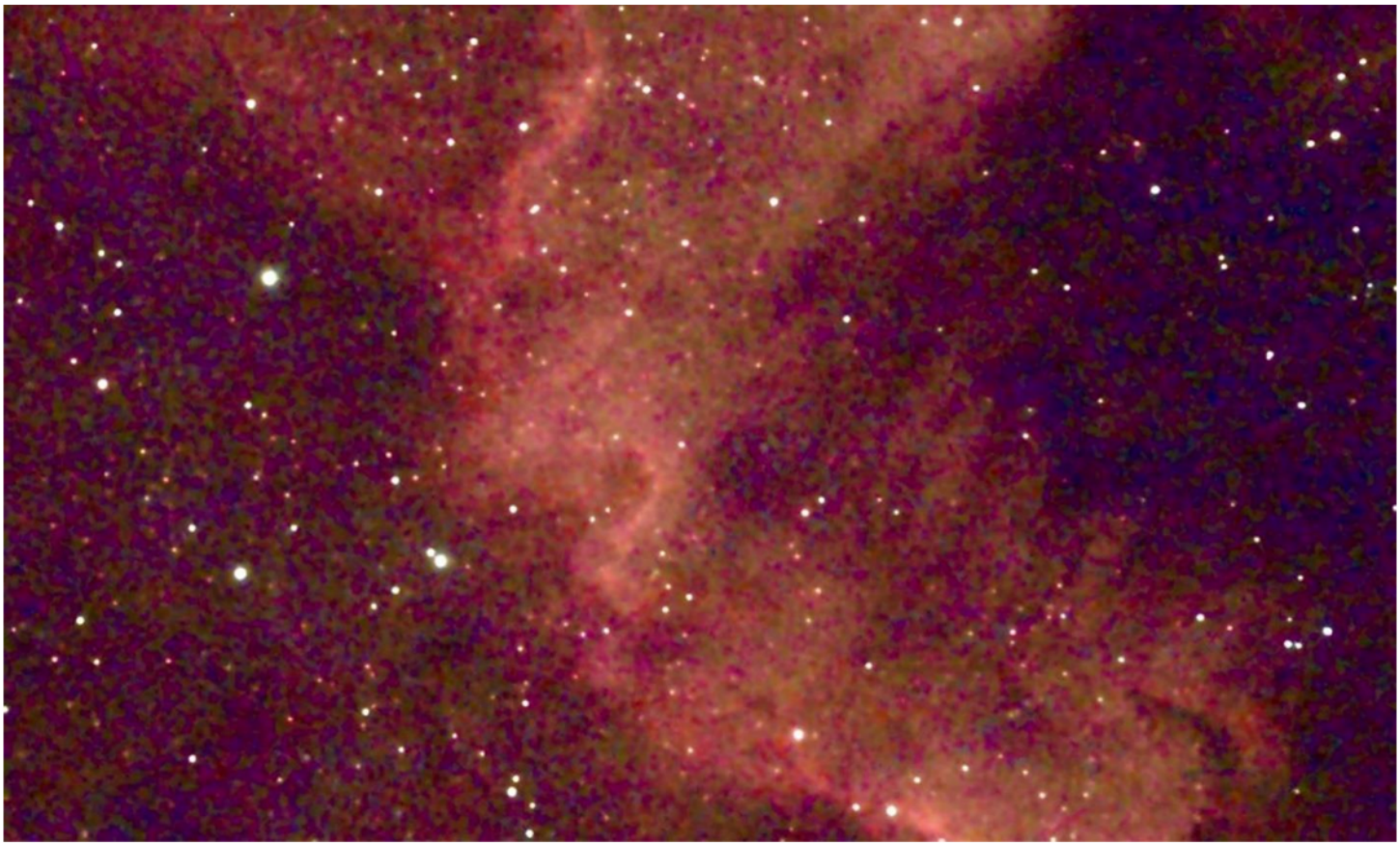
M27, processed in Seestar and Photoshop 2024 (10 minutes total integration)

Same image – M27, processed from Seestar .fit stack with PixInsight:

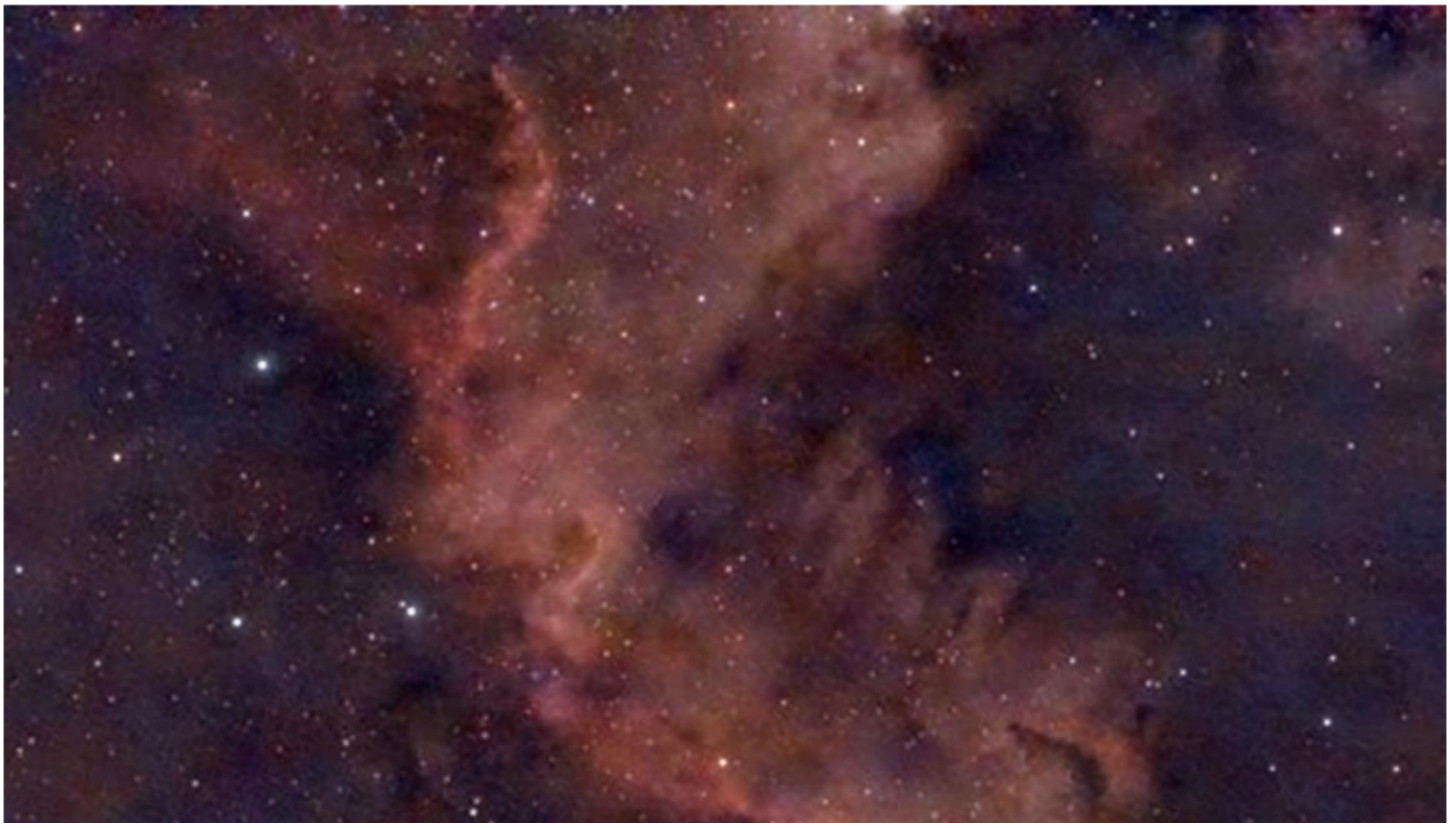
M51, processed in Seestar and Photoshop 2024 (13 minutes total integration)

Same image – M51, processed from Seestar .fit stack with PixInsight

NGC7000, processed in Seestar and Photoshop 2024 (10 minutes total integration)



Same image – NGC7000, processed from Seestar .fit stack with PixInsight



StarWatch

Saturn's Rings Do A Disappearing Act

There are some spectacular objects in the nighttime sky, such as the Ring Nebula, a star that recently came to the end of its life and expelled a circular, nearly perfect "smoke ring" of gas and dust, revealing its dead core which had become a white dwarf. Ultraviolet light from the white dwarf excites the gases of this planetary nebula, causing them to glow, thus revealing the ring. How about its nearby neighbor in the heavens, the Great Globular Cluster in Hercules, M13, with estimates varying between 300,000 to a half-million stars? Globulars represent some of the earliest objects that evolved in our universe. As these massive systems amalgamated into one another during the early, less spacious universe, galaxies may have resulted. * However, nothing can compare to the oohs and aahs of delight when someone views Saturn through the eyepiece of a telescope for the first time. It is just such a spectacular sight. Most novices do not believe that a telescope will easily reveal the rings, but even a good pair of binoculars at ten power will show an elongation to the planet's form. * Galileo drew Saturn that way, calling it oblong ("Saturno hora oblongo") in one of his sketches or in another drawing showing the planet with two moons or attendants, one on either side. Although the refractors he built, the best in the world for the early 17th century, were vastly inferior to today's mass-produced instruments, Galileo never made the connection that the elongations represented a ring system. * That discovery fell to the Dutch astronomer and mathematician, Christiaan Huygens. With a greatly improved telescope and eyepiece that he had constructed with his brother, Constantyn in the spring of 1655, Huygens discovered Saturn's largest satellite, Titan, and resolved the appendages as a detached ring that girded the planet. He explained, as others could not, why the rings disappeared. * The rings that can be easily observed through an earthbound telescope, *imaginatively* named A and B, vary between 5 to 30 meters in thickness. That is equivalent to 16 to 100 feet in English units. From an Earth to Saturn distance, which varies between 0.9 to 1.1 billion miles, no terrestrial-based telescope can resolve that small an angular measure when the rings become edge-on. So they must disappear. * Saturn's axial tilt and its orbital tilt allow the rings to be observed above and below the ring plane by as much as 26.7 degrees, giving observers magnificent views of the planet's encircling ring system every 13-16 years. Likewise, since Saturn's axial tilt remains essentially fixed in one direction like Earth's axial tilt, Saturn's rings appear to wobble as observed from Earth during its 29.4-year orbital period. When the axis points towards or away from Earth, we witness the rings fully open, either looking down upon the rings if the axis points towards Earth or from below if the axis points away from our planet. A sideways view of Saturn causes the rings to disappear as they will during March of 2025. They will become visible again, only to disappear for a second time in November. That second disappearance will result from Earth's changing orbital position relative to Saturn. * The ring disappearance provides an excellent opportunity to search for more Saturnian satellites to add to the 146 already confirmed. See a series of images depicting the many faces of **Saturn's** rings and take a look for yourself as the rings do a disappearing act if you own a telescope. Ad Astra!

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Moravian University Astronomy - astronomy.org

Price Dropped $1000!

Astrophotography Rig - Only out under the stars twice. Rig consists of Redcat 51 Gen 3 250mm F4.9 scope, Celestron StarSense Autoguider, 9x50 finderscope, ZWO EAF electronic focuser, ZWO ASI533MC Pro cooled color camera, 2" filter drawer with Moon and UHC filters, telescope heater strap with manual PWM temperature controller, Celestron AVX equatorial mount, external GPS receiver, (3) 12vdc power supplies, powered USB hub and Windows 10 laptop for equipment interface and image processing. $1800 bodhi.black@1791.com (267) 377–6229

2024

What are the Stats of your LVAAS Membership?

LVAAS PayPal link: https://www.paypal.com/donate/?hosted_button_id=FBP8Y5VX5QXNW

(remember to add a note with your name, and membership type)

If your information has changed:

Online information update form: https://form.jotform.com/233314308714147

Printable form:
https://lvaas.org/filemgmt_data/files/LVAAS_Membership_Renewal_Form.pdf

Complete instructions: https://lvaas.org/page.php?page=Renewing

Questions? email membership@lvaas.org

New members who joined after October 1st are paid up for the following year.
Regular: $45
Family: $65
Junior/Student: $15
Sustaining: $90

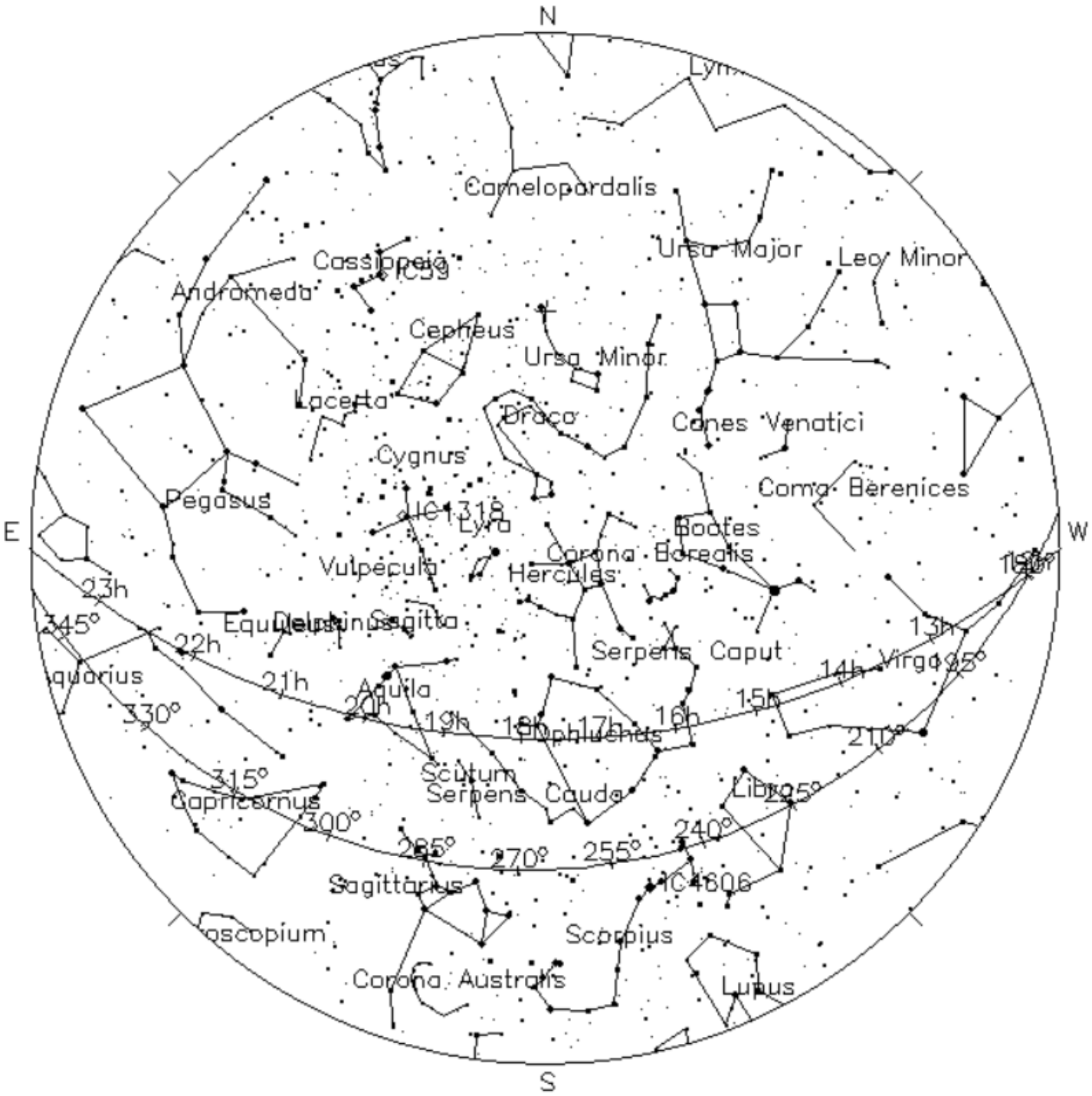
SEPTEMBER 2024

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
01	Labor Day 02	Adventures in Astronomy 03	04	05	06	07
General Meeting 7:00 PM South Mountain 08	09	Adventures in Astronomy 10	First Quarter Moon 11	12	Scout Camping 13 Stargazers Group Meeting	Scout Camping 14 Star Party
Scout Camping 15	16	Full Moon 17 Adventures in Astronomy	18	19	20	21
Autumn Equinox 22 Deadline for submissions to the Observer	23	Last Quarter Moon 24	25	26	27	28
LVAAS Board of Governors Meeting 29	30					

OCTOBER 2024

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
		01	02	03	04	Astroimaging Meeting - 7:00 PM 05
06	07	08	09	First Quarter Moon 10	Stargazers Group Meeting 11	Star Party 12
General Meeting 7:00 PM South Mountain 13	14	15	16	Full Moon 17	Scout Camping 18	Scout Camping 19
Scout Camping 20 Deadline for submissions to the Observer	Scout Camping 21	22	23	Last Quarter Moon 24	25	26
LVAAS Board of Governors Meeting 27	28	29	30	Halloween 31		

Sky Above 40°33'58"N 75°26'5"W Sunday Sept 01 2024 00:00 UTC



Your Sky was implemented by John Walker in January and February of 1998. The calculation and display software was 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

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

2024 LVAAS EVENT CALENDAR

Contributed by Bill Dahlenburg

2024 LVAAS Event Calendar

	Sundays			Saturday			Moon Phase			
	General Meeting time	location	Board meeting	Astro-Imaging	Star Parties	Stargazers Group	Observer Submission Deadline	New	1st	Full	3rd
January	14	3:00 PM Muhlenberg	28	no meeting	no meeting	no meeting	1/21/24	11	17	25	3
February	4	3:00 PM Muhlenberg	25	no meeting	no meeting	no meeting	2/18/24	9	16	24	2
March	10	3:00 PM Muhlenberg	24	no meeting	16	8	3/17/24	10	17	25	3
April	14	7:00 PM S.M.	28	6	13	12	4/21/24	8	15	23	1
May	5	7:00 PM S.M.	19	11	18	10	5/12/24	7	15	23	1 30
June	9	7:00 PM S.M.	30	1 29	15	14	6/23/24	6	14	21	28
July	13/14	5:00 PM S.M.	28	x	20	12	7/21/24	5	13	21	27
August	10/11	7:00 PM Pulpit	25	3 31	17	9	8/18/24	4	12	19	26
September	8	7:00 PM S.M.	29	x	14	13	9/22/24	2	11	17	24
October	13	7:00 PM S.M.	27	5	12	11	10/20/24	2	10	17	24
November	10	2:00 PM S.M.	24	2	9	8	11/17/24	1	9	15	22
December	8	2:00 PM ?	29	7	no meeting	no meeting	12/22/24	1 30	8	15	22

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

NEAF	4/20 - 4/21
Mega Meet	8/9 - 8/11
CSSP	6/6 – 6/9
Stellafane	8/1 – 8/4
BFSP	October 4-5-6?

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 observer@lvaas.org.

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. Early submissions are greatly appreciated. PDF format is preferred. 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.

Every effort will be made to properly credit the sources of the material used in this publication. If additional credit is required, please notify the editor.

If you are interested in becoming a member of LVAAS, please visit our membership page for information on applying.

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