



Newsletter of the Pomona Valley Amateur Astronomers

Everything changes the moment the stars come out
Vincent Van Gogh



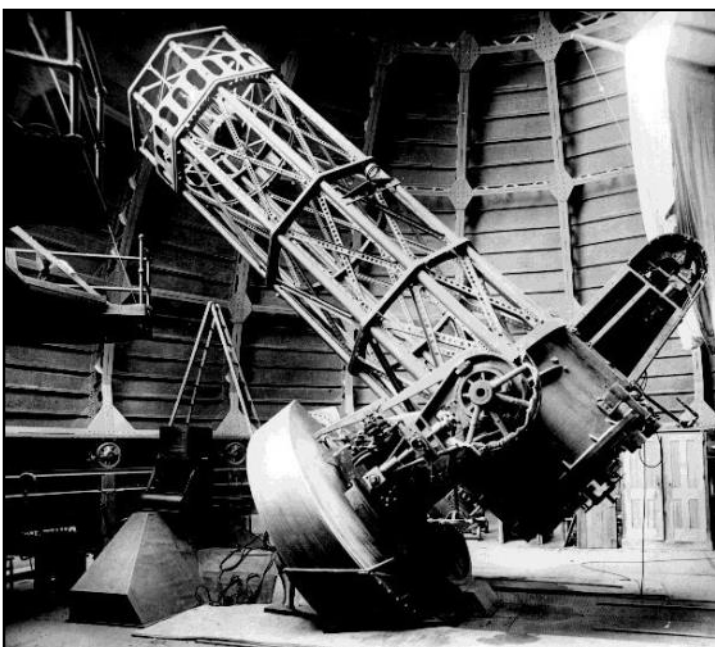
Volume 45 Number 8

nightwatch

August 2025

Club Events Calendar

July 30	Board Meeting
Aug 2	Joat (Cahuilla) Park Star Party 7:30pm
Aug 8	General Meeting 6:30 PM
Aug 23	Star Party – GMARS
Aug 27	Board Meeting
Aug 30	Joat (Cahuilla) Park Star Party 7pm
Sep 5	General Meeting 7:30 PM
Sept 20	Star Party – GMARS
Oct 1	Board Meeting 6:15 PM
Oct 10	General Meeting 7:30 PM
Oct 18	Star Party – GMARS
Oct 29	Board Meeting 6:15 PM
Nov 7	General Meeting 7:30 PM
Nov 22	Star Party – GMARS
Dec 3	Board Meeting 6:15 PM
Dec 6	Holiday Party



MtWilson

PVAA Officers and Board

Officers

President	Ken Elchert	thespaceshuttle@aol.com
Vice President ..	Joe Hillberg	909-949-3650
Secretary	Richard Wismer	
Treasurer	Gary Thompson	909-935-5509

Board

Jim Bridgewater (2026).....	909-599-7123
Claire Stover(2026)	pvaanightwatch@gmail.com
Ron Hoekwater (2027).....	909-445-9282
Howard Maculsay (2027).....	909-913-1195

Directors

Membership / Publicity....	Gary Thompson	909-935-5509
Outreach	Jeff Schroeder	909-758-1840
Programs	Ron Hoekwater	909-445-9282

President's Message

This past month, the United States began its 250th year as a nation. That coincided with the first issue of Nightwatch to incorporate the table of upcoming celestial events which I compile and present at the beginning of each general meeting of the PVAA. Thus, this issue has the second installment of this table. However, there is a fairly rare celestial event that can be seen from southern California that does not appear in the table. This is the transits of Titan's shadow across the cloud tops of Saturn. About every 15 years, Earth crosses Saturn's ring planes and it occurred this year on March 23. Since Titan's orbital plane nearly coincides with the plane of Saturn's rings, it provides an opportunity for us Earthlings to not only see the rings at a very small viewing angle but also see the shadow of Titan traverse the surface of Saturn's clouds. But this opportunity is provided to only one hemisphere of Earth at each occurrence. Luckily for us, this time it's the western hemisphere's turn. For southern California, there will be two shadow transits that will be viewable this month:

- 1) from 11:25 pm PDT in the East on August 2 to 4:04 am PDT in the SSW on August 3
- 2) from 10:52 pm PDT in the ESE on August 18 to 3:00 am PDT in the SSW on August 19

To see these, you'll need at least 200x magnification and at least a 3-inch refractor telescope or a 4-inch reflector telescope. Hopefully, the skies will be clear on at least one of those nights. Otherwise, you'll have to wait until 2038 – 2039 for the next opportunity!

Finally, don't forget to come out for the public telescope viewing of the Moon and planets at Joat Park (formerly Cahuilla Park) in Claremont at Scripps Drive and Indian Hill Blvd. just north of Claremont High School. We'll be starting at 7:30 pm on August 2 and 7:00 pm on August 30. If you have a telescope, please bring it. If not, just come and enjoy the views with us!

Ad Astra Per Aspera!

Ken Elchert

Upcoming Celestial Events

events visible in southern California
highlighted in yellow

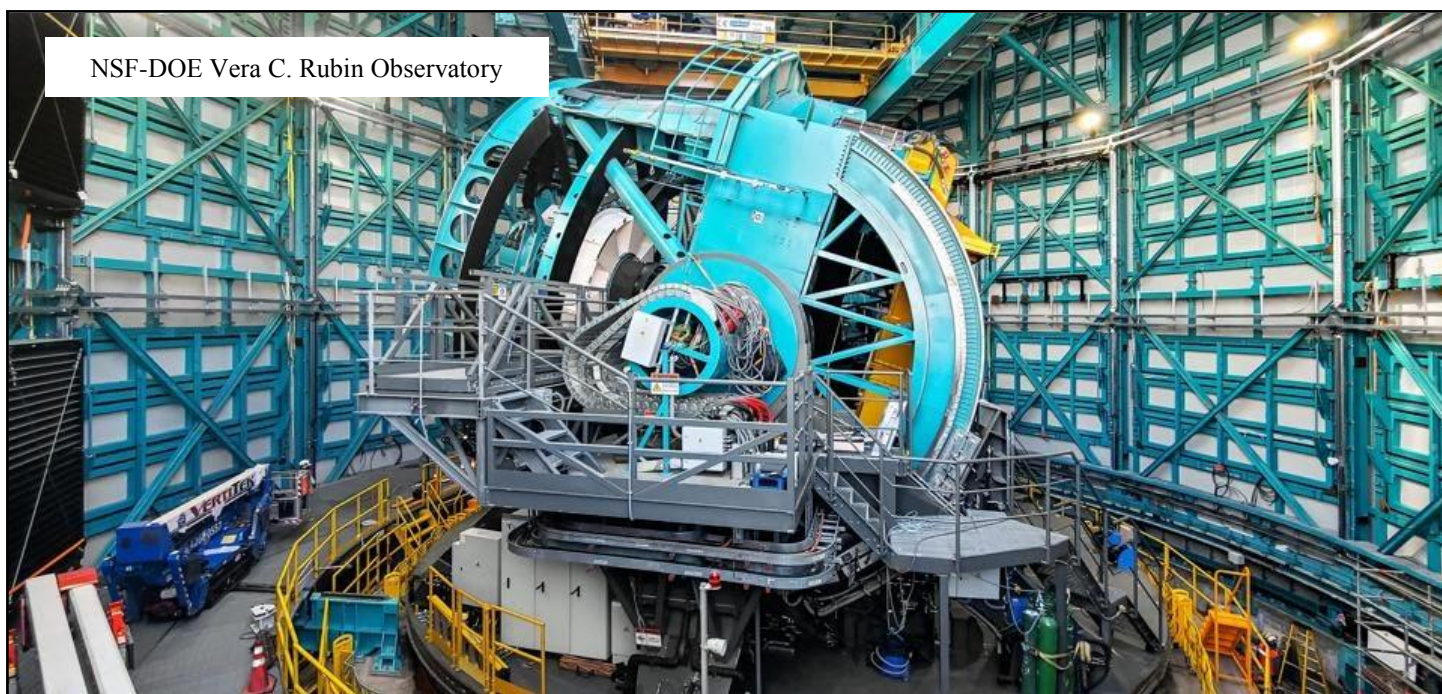
PST = UTC – 8 hrs
PDT = UTC – 7 hrs
PDT = PST + 1 hr

Date	Day	Visibility (LA Time)	Event	Direction	Altitude (deg)	Moon Phase/Illumination
Aug 9	Sat	12:56 am	Full Moon	E-S-W	0 – 43 – 0	Full Moon 100%
Aug 11 & Aug 12	Mon & Tue	3:00 am – 5:00 am	Jupiter-Venus Appulse sep = 51.6'	ENE - E	7 - 30	Waning Gibbous 85%
Aug 11-12	Mon-Tue	9:00 pm – 4:45 am	Moon-Saturn-Neptune Close Approach sep = 3° 33'	E-S-SW	0 – 54 - 44	Waning Gibbous 83%
Aug 12-13	Tue-Wed	Late Night – Early Morning	Perseid Meteor Shower Peaks	NNE	-----	Waning Gibbous 81.8%
Aug 15-16	Fri-Sat	11:30 pm – 4:45 am	Moon – M45 Appulse sep = 55.3'	E	8 – 70	Waning Crescent 38%
Aug 19	Tue	3:00 am – 4:30 am	Moon – Jupiter – Venus Grouping	E	10 - 30	Waning Crescent 15%
Aug 19	Tue	4:15 am – 4:45 am	Mercury at Greatest Western Elongation elong = 18.6°	E	5 - 10	Waning Crescent 15.0%
Aug 20	Wed	2:57 am – 5:58 am	Moon-Jupiter Close Approach sep = 4° 42'	E	0 - 35	Waning Crescent 9%
Aug 20	Wed	3:00 am – 5:00 am	Moon-Venus Conjunction sep = 4° 52'	E	5 - 28	Waning Crescent 6%
Aug 22	Fri	11:08 pm	New Moon	-----	-----	New Moon 0%

July 11 2025 General Meeting

We started out the meeting with our slightly late annual elections. Since there was only one candidate for each office, everyone that ran won. Our new president is Ken Elchert. VP is Joe Hildenbrand, Treasurer is Gary Thompson. Our new secretary is Richard Wismer. Our at-large board members are Ron Hoekwater, Jim Bridgewater, Howard Maculsay, and new member Claire Stover. (Richard moved from at-large to secretary which was currently open, and Claire took Richard's at-large spot.)

After the elections, Ken Elchert let us know of his desire to grow the club. He also let us know that two NASA astronauts graduated from Harvey Mudd College. – So, we are meeting in a good place. He then gave his monthly presentation of 'Astronomical & Aerospace Events' from July 11th – August 8th. You can see this presentation on the PVAA YouTube channel. There are a lot of conjunctions this month. You can see Titan's shadow on the surface of Saturn on August 3rd, 19th, Sept 4th, 20th and Oct 6th.



NSF-DOE Vera C. Rubin Observatory

The new Vera C. Rubin Observatory came online and saw its first light and is helping astronomers with the largest (3.2 gigapixel) digital camera ever built.

On the aerospace side: The private Axiom 4 mission, as of this writing, has been completed. The Crew-11 is scheduled to launch on July 31st. The Resilience lunar lander crashed on the moon on June 5th.

The main speaker of the night was Dr. Sujoy Modak – of California Polytechnic University, Pomona. His topic was 'Black Holes: Ubiquitous in the Universe and Essential for a "Unified Theory"'. A few months after Einstein published his General Theory of Relativity, Karl Schwarzschild solved the Einstein equation to a particular solution we call a "Black Hole" and an "Event Horizon." In 2020 Roger Penrose, Reinhard Genzel, and Andrea Ghez received a Nobel Prize 'for the discovery of a supermassive compact object at the center of our galaxy.' A black hole is defined by a region in space where gravity dominates and nothing, not even light, can escape. It is an observed fact that the gravitational force bends the light propagation. A black hole can be formed by the collapse of a massive star after the star runs out of nuclear fuel. The collapse and resulting explosion throw a lot of its mass away, but the remaining mass shrinks down to become a black hole. If it does not have enough mass to become a black hole, it can become a neutron star. Supermassive black holes are formed when a stellar mass black hole consumes nearby stars. The closest black hole is Gaia BH1 at about 1,500 light years away. The farthest we have found is around 13 billion light years away. The biggest found so far is TON 618 which has a mass of 66 billion times the mass of the Sun. The smallest is 3.8 times the Sun's mass. The fastest spin (they all spin) is named GRS 1919+105 which clocks in at over 1,000 rotations per second. At the center of our galaxy is Sagittarius A*, with 4 million times the Sun's mass.

Occasionally black holes circle each other and combine creating gravitational waves. This can be detected by our Laser Interferometer Gravitational-Wave Observatories (LIGO).

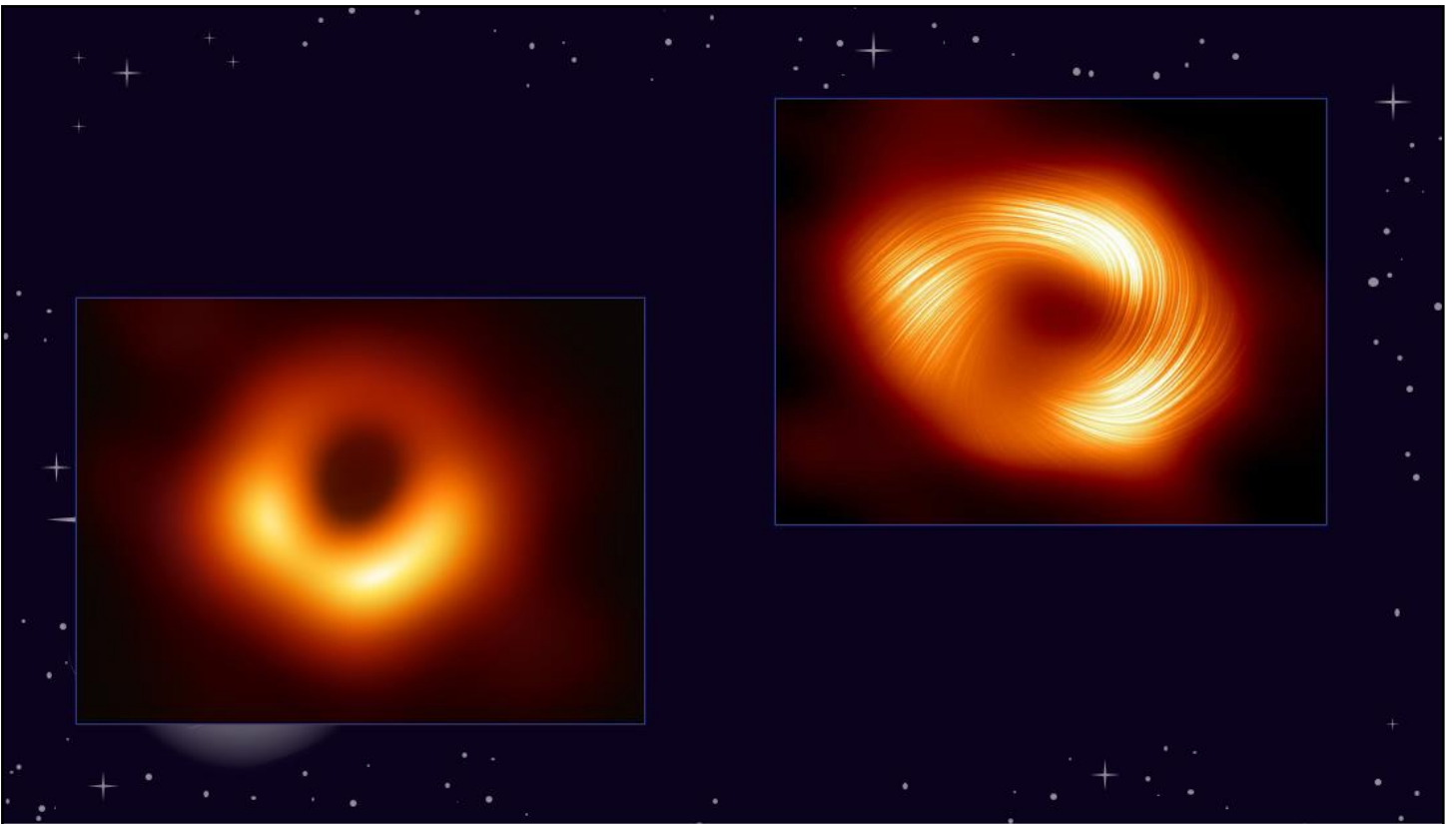
On the quantum level Stephan Hawking postulated in 1975 that black holes emit radiation. This is known as Hawking Radiation. Using Hawking radiation, even small black holes will eventually die. It is calculated that a small black hole, left alone, will only last one with 67 zeroes years, and a large black hole will last one with 100 zeroes years, both of which are longer than the universe as we know it has existed.

So, as Carl Sagan once said: "The cosmos is all that is, or ever was, or ever will be."

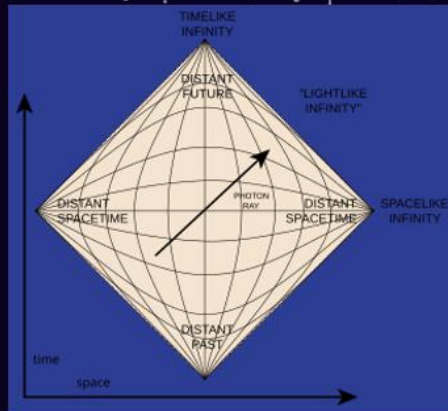
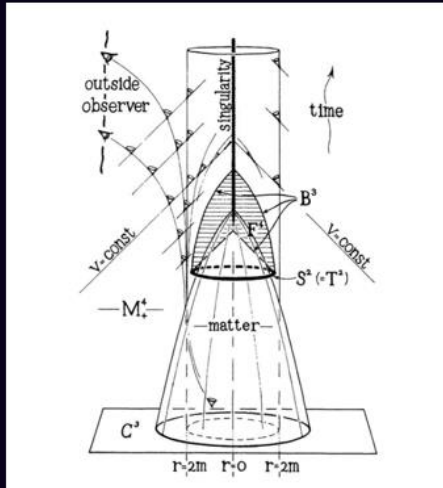
Gary Thompson



Composite image combining 678 separate images taken in just over 7 hrs. of observing time.

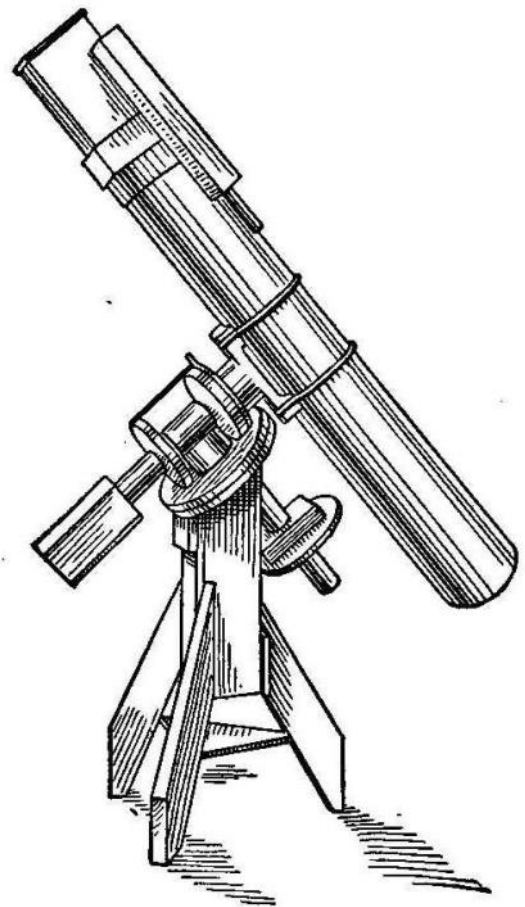
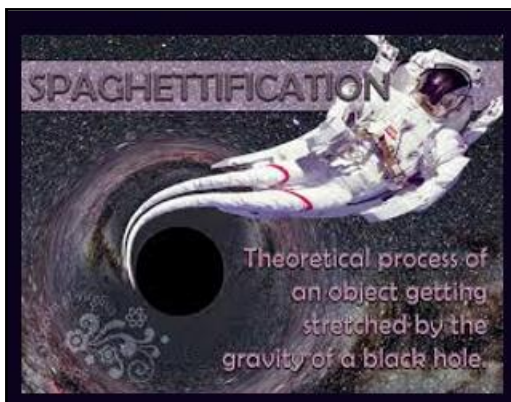
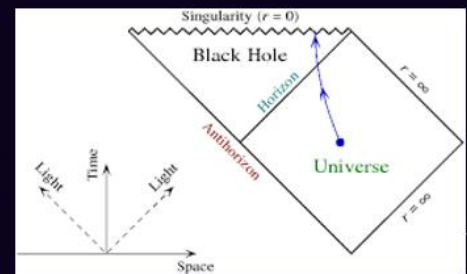


Black Hole pic & enhanced photo.



Theoretical Physics

Penrose Conformal Diagrams





This article is distributed by NASA's Night Sky Network (NSN).

The NSN program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, and more!

August's Night Sky Notes: The Great Rift

By Dave Prosper

Updated by Kat Troche

Summer skies bring glorious views of our own Milky Way galaxy to observers blessed with dark skies. For many city dwellers, their first sight of the Milky Way comes during trips to rural areas - so if you are traveling away from city lights, do yourself a favor and look up!

To observe the Milky Way, you need clear, dark skies and enough time to adapt your eyes to the dark. Photos of the Milky Way are breathtaking, but they usually show far more detail and color than the human eye can see – that's the beauty and quietly deceptive nature of long exposure photography. For Northern Hemisphere observers, the most prominent portion of the Milky Way rises in the southeast as marked by the constellations Scorpius and Sagittarius. Take note that, even in dark skies, the Milky Way isn't easily visible until it rises a bit above the horizon, and the thick, turbulent air obscures the view. The Milky Way is huge, but it is also rather faint, and our eyes need time to truly adjust to the dark and see it in any detail. Avoid bright lights as they will ruin your night vision. It's best to attempt to view the Milky Way when the Moon is at a new or crescent phase; a full Moon will wash out any potential views.



The Vera C. Rubin Observatory, located at Cerro Pachón, Chile, under the Milky Way. The bright halo of gas and stars on the left side of the image highlights the very center of the Milky Way galaxy. The dark path that cuts through this center is known as the Great Rift, because it gives the appearance that the Milky Way has been split in half. Image Credit:

[RubinObs/NOIRLab/SLAC/NSF/DOE/AURA/B. Quint](https://www.noirlab.org/)

Keeping your eyes dark-adapted is especially important if you want to not only see the haze of the Milky Way, but also the dark lane cutting into that haze, stretching from the Summer Triangle to Sagittarius. This dark detail is known as the Great Rift, and is seen more readily in very dark skies, especially dark, dry skies found in high desert regions. What exactly is the Great Rift? You are looking at massive clouds of galactic dust lying between Earth and the interior of the Milky Way.

Other “dark nebulae” of cosmic clouds pepper the Milky Way, including the famed [Coalsack](#), found in the Southern Hemisphere constellation of Crux. Many cultures celebrate these dark clouds in their traditional stories along with the constellations and the Milky Way. One such story tells of a [Yacana the Llama](#), and her baby, wandering along a river that crossed the sky – the Milky Way. The bright stars Alpha and Beta Centauri serve as the llama's eyes, with the dark sections representing the bodies of mother and baby, with the baby below the mother, nursing.



In the activity, “Our Place In Our Galaxy”, if the Milky Way were shrunk down to the size of North America, our solar system would be about the size of a quarter. At that scale, Polaris - which is about 433 light years distant from us - would be 11 miles away. Image Credit: [Astronomical Society of the Pacific](#)

Where exactly is our solar system within the Milky Way? Is there a way to [get a sense of scale](#)? The “[Our Place in Our Galaxy](#)” activity can help you do just that, with only birdseed, a coin, and your imagination. You can also discover the amazing science NASA is doing to understand our galaxy – and our place in it - in the [Galaxies](#) section of [NASA's Universe](#) page.

Originally posted by Dave Prosper: June 2021

Last Updated by Kat Troche: July 2025

Butterflies in the Night

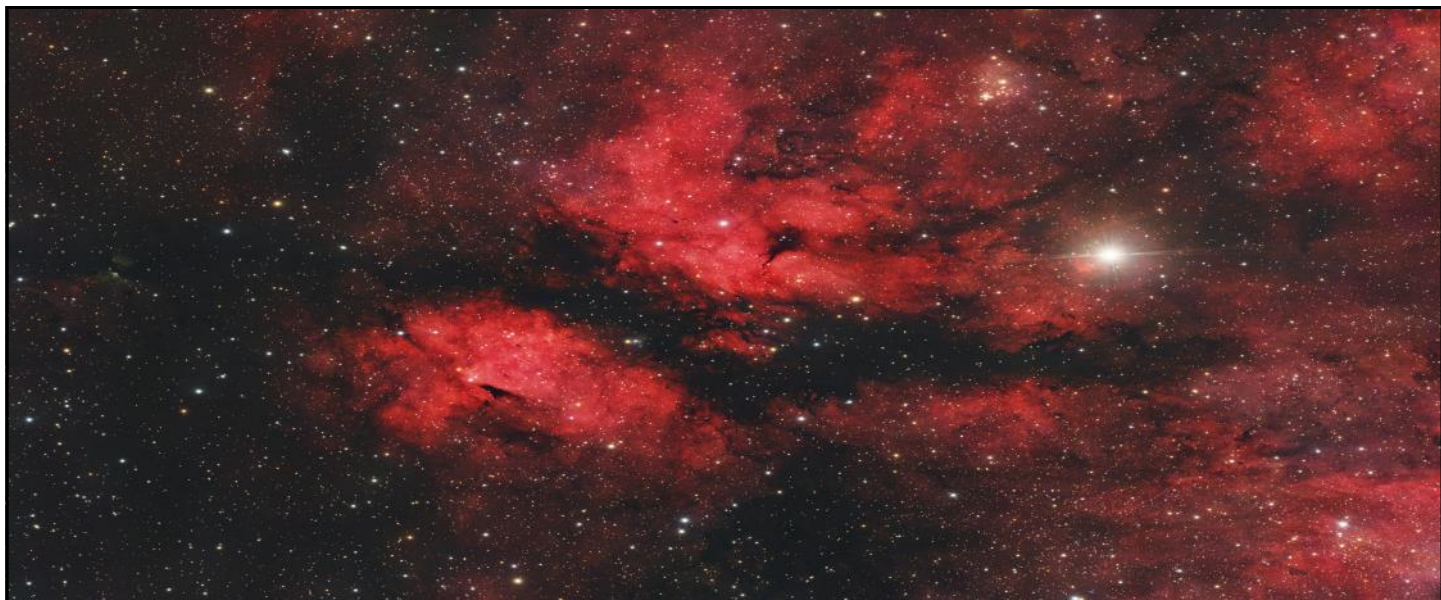
We were all set to go camping in June with the new moon occurring on 25th. We returned from a nearly 3-week trip to Europe on June 24. Our usual campsite was taken for the weekend of June 27, but we were able to get a very nice site reserved that would fit our entire imaging group. But camping was not to be. I caught a slight cold the weekend before we returned that ended up being COVID. Cindy caught a bad cold, not COVID, just after we returned. So once again, I had to image from home!

I got good feedback on the format I used last month, so I'll stick with it at least for a while.

TARGETS

Technically, the image was taken in July but should have been June. I really didn't have anything in mind because I wasn't sure how long we'd be ill. One of my friends that went to the campsite shot the Butterfly Nebula which seemed like a good target from home. There are several different nebulae with the same name, but this is the one in Cygnus and is part of IC 1318 that surrounds the star Sadr.

Sadr is the magnitude 2.2 bright star in the image. If you're familiar with Cygnus, it's located where the swan's wings attach to its body. It's also the center of the Northern Cross asterism. Sadr is about 1,800 light years from Earth and is probably the source that illuminates the nebulae in the region.



The "butterfly," at least the way I see it, is left of center with two red wings of the butterfly being separated by its black body. The upper wing is designated as LBN 249, the lower wing is LBN 245, and the body is LDN 889.

Above Sadr and a little to the left is NGC 6910, an open cluster of stars. It's not large in the image, and appears to cast light onto the nebula behind it, but the glow might be a halo from the camera. The cluster is between 7 and 13 million years old and lies about 3,700 light years away. There are probably about 280 stars in the cluster spanning about 13.7 light years.

IMAGING AND PROCESSING

The image is stack of 101 5-minute shots taken with the StellarVue SVR90T and the ZWO ASI2600MC Pro one-shot color camera for a total exposure time of 8 hours 25 minutes. No filters were used even though there we have heavy light pollution at home. The images were stacked and deBayered using *WeightedBatchPreprocessing* in PixInsight. Calibration of the frames was done with 15 darks, 15 flats, and 15 flat darks. Even though the light frames were taken on the nights of July 4 and 5, the haze on the evening of July 4 surprisingly didn't seem to interfere with the image contrast.

Processing was done in PixInsight but was less complicated this time because the camera shoots in color. The first step was to clean up the stars using *BlurXterminator*. Then I used a new, at least new to me, process called *MultiscaleGradientCorrection* to remove a green to magenta gradient. Color gradients show up especially under light-polluted skies and produce a color cast across the image. Stacking the frames tends to make removal more difficult, but this process uses reference images to determine the correct background. I found this process to be very effective at removing difficult gradients in images of nebulae, but it only works if the region of the sky is in the processes database.

After removal of the gradient, the image was color corrected and the stars removed using *StarXterminator*. A simple screen stretch was used on the stars and the color saturation was increased to improve star color. The nebula image was gently denoised using *NoiseXterminator* before using *GeneralizedHyperbolicStretch* for stretching. Afterward, the nebula image was adjusted for color saturation and contrast enhancement using *Curves*. Finally, the nebula and stars were recombined using *ImageBlend*, with the midtones of the stars image being adjusted to prevent them from overwhelming the nebula.

It looks like we're finally going to get back to the dark site this coming new moon. I'm really looking forward to being there! Clear skies until next time.

<https://www.astrobin.com/users/ruccdu/>

Ron Ugolick