

Celestial



Observer

Volume 40 Issue 2

February 2020



CCAS Member Peter Bresler captures the Flame and Horsehead Nebula NGC2024

Next Meeting:

Thursday, Feb. 27th with guest speaker Dr. Pamela Gay on *The Future of Ground Based Observing*, 7pm.

Free and open to the public!

Next Star Gazing:

Saturday, February 15th, at sunset at the new location at Santa Margarita Lake.

www.CentralCoastAstronomy.org/starparty

February 27th Meeting:
“The Future of Ground-Based Observing”
with Dr. Pamela Gay
from Southern Illinois University
Wesley Room, 1515 Fredericks Street, San Luis Obispo
6:30pm Doors Open | 6:45 Refreshments | 7:00 Meeting Starts

Dr. Pamela Gay is our speaker for February on the future of ground-based astronomy!



Month by month, our skies are getting filled with space stations, can sats, cube sats, new constellations of comm satellites, and an expanding suite of space telescopes, weather stations, and more. Each of these objects is one more piece of hardware that can pass through an astronomical image and make it just that harder to observe our skies. In this talk, we'll review what is expected, how astronomy will cope, and what techniques you'll need to learn to keep making beautiful images with an ever busier sky.

Pamela L. Gay is an astronomer, educator, podcaster, and writer, best known for her work in astronomical podcasting and citizen science astronomy projects. She is the Director

of Technology and Citizen Science for the Astronomical Society of the Pacific. Her research interests include analysis of astronomy data, as well as the examination of the impact of citizen science initiatives.



Dr. Gay received her PhD in Astronomy from the University of Texas, Austin, in 2002 and a BS degree in Astrophysics from Michigan State University in 1996. Dr. Gay takes part in science popularization efforts and educational outreach as director of CosmoQuest, a citizen science project aimed at



engaging the public in astronomy research, speaking on science and scientific skepticism topics internationally, and through educational podcasting.

Me & My Telescopes: Peter Bresler



My first serious telescope arrived at my house in late November 2018. I had an old Bushnell refractor which I never found more useful than looking at the moon. Had I known previously that sophisticated astronomy equipment was available for amateurs, I would have been in the hobby long ago. Now I am left to pursue the hobby in my dotage!

In the past year it really has become almost an obsession. Nothing beats the excitement of finding a deep space object I have never before seen pop up on my computer screen! In getting into the hobby I did realize that to look at the galaxies and nebulae I was interested in I would need to do astrophotography. To me visual observing was seeing the Moon, small bright planets (Jupiter and Saturn) and a glimpse of a fuzzy blob like Andromeda or Orion. I wanted more

than that. I did a little mostly online research about equipment, noting that telescope aperture actually is the main determinant of what it is possible to see, and settled on a Celestron 8SE (8 inch) kit, which came with the Alt-Az mount. I also purchased the Celestron wedge, which I knew I would need for photography.

That combination of equipment did not last too long. First, I had an accident with my scope after three weeks; it fell off the mount breaking the collector after a false engagement with that mount, which I actually do regard as problematic. I also found that using the 15 pound wedge was a limitation, and the scope did not have a full excursion of the sky with it. Ultimately my credit card company paid for the repair of the scope.

I could not be where I am now without YouTube videos! With the information I gained there I learned that for my goals an equatorial mount would be the way to go. I found a Celestron Advanced GT mount on Ebay for \$450.00. It is the predecessor to the AVX mount, and I don't think there is much difference. I have had good results with it, and if you see me at a star party that is what I will have.

I also quickly found that setting up in my yard, doing a polar alignment, and having to tear down and set up again was a non-starter for me. We were fortunate in having space in our yard for a permanent setup. In a period of less than a month I threw together my "observatory", a Lowe's seven-foot shed on a concrete slab, moved with \$50.00 Harbor Freight Tools winches. This setup costs less than \$3000.00. It has made a huge difference in my ability to take advantage of breaks in the weather for short observing sessions, and the permanent accurate polar alignment is a blessing. If you have 200 square feet of unobstructed space in your yard and a serious interest in the hobby, go for it!

After the accident with the 8SE, I engaged in a series of equipment trades, sales and purchases which have resulted in my current armamentarium....four telescopes! I also had soon learned that different celestial objects require scopes with different focal lengths, and focal ratios (the "f-stop"). I would say that at least two are needed for a serious astrophotographer. I currently have the Celestron 8SE, a Bresser AR 152 six-inch refractor, which I bought on Cloudynights for \$450.00, an Explore

Scientific 8 inch Newtonian, and the queen, my recently acquired Celestron Edge HD 11 inch Schmidt-Cassegrain scope. I also quite recently got the Hyperstar unit for the 11 inch SCT. Initial results with it have been very pleasing! The only item I bought new was the ES Newtonian.

For most of the past year, I have been using an "astro-modified" Canon T3i DSLR camera, purchased used on Cloudynights. It produces excellent results, and with Backyard EOS software is almost point and shoot. Observing what the high-end astrophotographers on Astrobin are using, I just started using a dedicated AP camera, the ZWO 294 MC Pro. There's no going back to the DSLR! Exposure times are a fraction of what they were with the DSLR, and guiding almost is a non-issue (but not quite!)

At the advice of a highly knowledgeable astrophotographer on Cloudynights, and actually, in imitation of a couple of people in the area, I sold the Celestron CGEM mount which I had traded up to, and bought an Astrophysics Mach 1 mount, able to handle the Edge 11 inch, which also does provide much better guiding, and, having gotten past the learning curve for it, quick and accurate Go To telescopes. It may well be my final mount!

The beauty of this hobby is that one can engage in it at many levels, and it really is limitless. You can always do a better image of something you already have taken, with better detail and colors. Check out Astrobin.com! The learning also never ceases!

Next Star Gazing

Saturday, February 15th at sunset (5:45 PM) at the Santa Margarita Lake Our Sky Star Parties occur once a month, and are free and open to the public, and also weather-permitting. Check our website for all the details:

www.CentralCoastAstronomy.org/starparty

CCAS Member Peter Bresler captured PanSTARRS C/ 2017 T2, complete with the dust tail. Great job!



Volunteer with CCAS!

We need your help! The CCAS has a lot going on in San Luis Obispo county. When you fill out this information, we'll add you to an email list that will allow you to sign up for specific tasks and dates.



If you can help hand out flyers, set up cookies, answer questions about the club, put away chairs, provide telescope support at local schools and other astronomy related events, we want to hear from you! You decide whether you help out once a month or just for an hour when you have time. THANK YOU!

Go here to get on the email list – you get to decide which tasks you want to do:

www.SurveyMonkey.com/r/DRJ3WHT

Tarantula Nebula Spins Web of Mystery in Spitzer Image

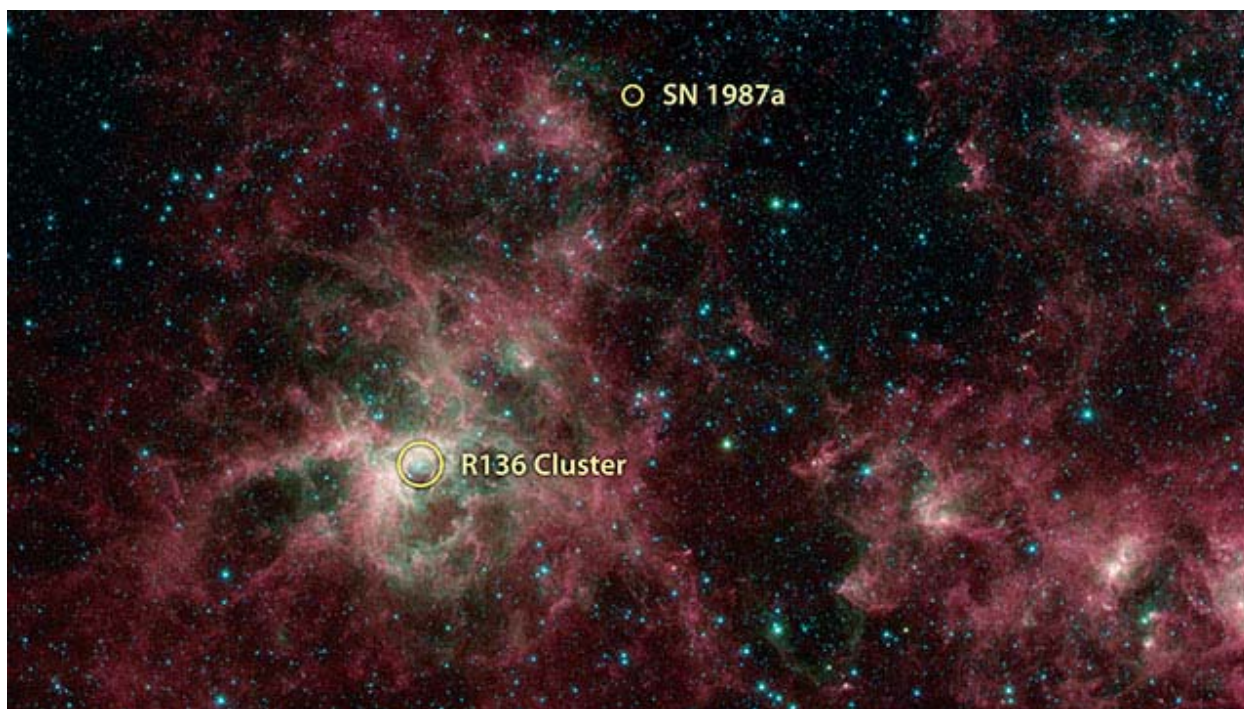
Credit: NASA JPL

The Tarantula Nebula, seen in this image by the Spitzer Space Telescope, was one of the first targets studied by the infrared observatory after its launch in 2003, and the telescope has revisited it many times since. Now that Spitzer is set to be retired on Jan. 30, 2020, scientists have generated a new view of the nebula from Spitzer data.



This high-resolution image combines data from multiple Spitzer observations, most recently in February and September 2019.

"I think we chose the Tarantula Nebula as one of our first targets because we knew it would demonstrate the breadth of Spitzer's capabilities," said Michael Werner, who has been Spitzer's project scientist since the mission's inception and is based at NASA's Jet Propulsion Laboratory in Pasadena, California. "That region has a lot of interesting dust structures and a lot of star formation happening, and those are both areas where infrared observatories can see a lot of things that you can't see in other wavelengths."



This annotated image from NASA's Spitzer Space Telescope shows the Tarantula Nebula in infrared light. The supernova 1987A and the starburst region R136 are noted. The magenta-colored regions are primarily interstellar dust that is similar in composition to ash from coal or wood fires on Earth. Credit: NASA/JPL-Caltech

Infrared light is invisible to the human eye, but some wavelengths of infrared can pass through clouds of gas and dust where visible light cannot. So scientists use infrared observations to view newborn stars and still-forming "protostars," swaddled in the clouds of gas and dust from which they formed.

Located in the Large Magellanic Cloud - a dwarf galaxy gravitationally bound to our Milky Way galaxy - the Tarantula Nebula is a hotbed of star formation. In the case of the Large Magellanic Cloud, such studies have helped scientists learn about rates of star formation in galaxies other than the Milky Way.

The nebula also hosts R136, a "starburst" region, where massive stars form in extremely close proximity and at a rate far higher than in the rest of the galaxy. Within R136, in an area less than 1 light-year across (about 6 trillion miles, or 9 trillion kilometers), there are more than 40 massive stars, each containing at least 50 times the mass of our Sun. By contrast, there are no stars at all within 1 light-year of our Sun. Similar starburst regions

have been found in other galaxies, containing dozens of massive stars - a higher number of massive stars than what is typically found in the rest of their host galaxies. How these starburst regions arise remains a mystery.

On the outskirts of the Tarantula Nebula, you can also find one of astronomy's most-studied stars that has exploded in a supernova. Dubbed 1987A because it was the first supernova spotted in 1987, the exploded star burned with the power of 100 million Suns for months. The shockwave from that event continues to move outward into space, encountering material ejected from the star during its dramatic death.

When the shockwave collides with dust, the dust heats up and begins to radiate in infrared light. In 2006, Spitzer observations saw that light and determined that the dust is largely composed of silicates, a key ingredient in the formation of rocky planets in our solar system. In 2019, scientists used Spitzer to study 1987A to monitor the changing brightness of the expanding shockwave and debris to learn more about how these explosions change their surrounding environment.

More From Spitzer

To see more amazing images from Spitzer, check out the NASA Selfies App, which has a bundle of new Spitzer images. Available for iOS and Android, the app lets you create a snapshot of yourself in a virtual spacesuit, posing in front of gorgeous cosmic locations, including the Tarantula Nebula. Its simple interface lets you snap a photo of yourself, pick your background and share on social media while also providing you some of the science behind the images.

More information about Spitzer is available at the following site:

https://www.nasa.gov/mission_pages/spitzer/main

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CCAS Information

Founded in 1979, the Central Coast Astronomical Society (CCAS) is an association of people who share a common interest in astronomy and related sciences.

Central Coast Astronomical Society

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