



Volume 45 Issue 2

April - June 2025

Celestial Observer



Do you see the resemblance? CCAS member Peter Bresler captured this image of the Dolphin Head Nebula. Located near Sirius, the brightest star in the sky, and within the constellation Canis Major, this nebula envelops a Wolf-Rayet star and covers slightly more of the night sky than the Full Moon. Using filters, this object can be viewed with a telescope through the month of April.

Upcoming in-person Star Parties:

April 26th, May 24th, June 28th

Location: Santa Maria Lake Park

Star Parties are dependent on weather. No fee to enter the park for members attending. Please see our website for more detail.

Club Meeting: Thursday, Apr. 17th at 7^{pm} (in-person only)

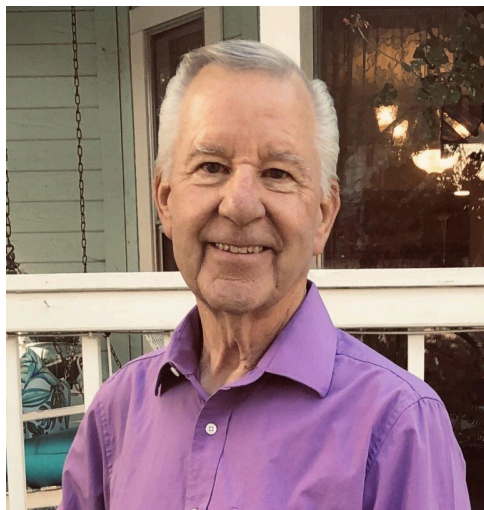
Speaker: Glen Smeltzer

Topic: From Fuzzy to Focused: A Stargazer's Starter Guide to Eyepieces & Filters

Location: United Methodist Church, Wesley Room - San Luis Obispo, CA

Central Coast Astronomical Society Events

In-Person Club Meeting: Thursday, April 17th - 7:00pm-9:00pm



Topic: From Fuzzy to Focused: A Stargazer's Starter Guide to Eyepieces & Filters

Join us for an evening of education with Glen Smeltzer. A life-long resident of Paso Robles, Glen attended Cal Poly San Luis Obispo, earning a degree in English with a minor in Speech. After earning his teaching credential, he taught English and drama at Paso Robles High and retired in 2008. In 2012, while on a road trip throughout the western states, he visited Kitt Peak National

Observatory near Tucson, AZ where he was infected by the astronomy bug and hasn't been able to cure it since. Shortly thereafter, he joined CCAS and bought his first telescope, a 6 inch Celestron SCT. An active member of CCAS, he has been learning about the cosmos ever since, and often volunteers at local school STEAM events.

In this talk, Glen will be giving a friendly, hands-on talk about eyepieces—what they do, how they affect what you see, and how to choose the right one. Glen will bring a variety from his personal collection so you can see the differences for yourself. You'll also get introduced to some very useful filters like moon, nebula, and light pollution filters. Whether you're brand new or just curious, this talk is designed to make astronomy easier and more accessible. Come join us—no experience needed!

Meetings are held at: United Methodist Church, Wesley Room.
1515 Fredericks Street, San Luis Obsipo, CA 93405

For directions and guest speaker details, visit:

CentralCoastAstronomy.org/glen-smeltzer

In-Person Star Parties at Santa Margarita Lake Park:

Arrive before sunset:

- April 26th ● May 24th ● June 28th



CCAS member Paul Wilson took this photo of The Milky Way at the June 2022 Star Party at Santa Margarita Lake Park.

Location:

Our stargazing site is located in the parking lot of the marina and boat launch at Santa Margarita Lake Park (SMLP). The park is approximately 8 miles south of the town of Santa Margarita, off of Pozo Road.

Address: 4695 Santa Margarita Lake Road, Santa Margarita, CA 93453.

Join other amateur astronomers and night sky enthusiasts at Santa Margarita Lake Park to mingle and view the night sky. Bring your own binoculars or telescope, or enjoy looking through others' equipment. These events are weather-dependent, but are scheduled monthly on the weekend closest to the new Moon (when possible), and in conjunction with certain holidays.

For directions, more information, and best practices visit:

CentralCoastAstronomy.org/star-parties

NASA Launches Missions to Study Sun, Universe's Beginning by NASA/JPL



NASA's SPHEREx (Spectro-Photometer for the History of the Universe, Epoch of Reionization and Ices Explorer) observatory and PUNCH (Polarimeter to Unify the Corona and Heliosphere) satellites lift off on a SpaceX Falcon 9 rocket from Vandenberg Space Force Base in California on March 11, 2025. Credit: SpaceX

The agency's PUNCH mission caught a ride to Earth orbit with SPHEREx, which will map the entire sky to learn more about what happened in the first second after the big bang.

NASA's newest astrophysics observatory, SPHEREx, is on its way to study the origins of our universe and the history of galaxies, and to search for the ingredients of life in our galaxy. Short for Spectro-Photometer for the History of the Universe, Epoch of Reionization and Ices Explorer, SPHEREx lifted off at 8:10 p.m. PDT

on March 11 aboard a SpaceX Falcon 9 rocket from Space Launch Complex 4 East at Vandenberg Space Force Base in California.

Riding with SPHEREx aboard the Falcon 9 were four small satellites that make up the agency's PUNCH (Polarimeter to Unify the Corona and Heliosphere) mission, which will study how the Sun's outer atmosphere becomes the solar wind.

"Everything in NASA science is interconnected, and sending both SPHEREx and PUNCH up on a single

rocket doubles the opportunities to do incredible science in space,” said Nicky Fox, associate administrator, Science Mission Directorate at NASA Headquarters in Washington. “Congratulations to both mission teams as they explore the cosmos from far-out galaxies to our neighborhood star. I am excited to see the data returned in the years to come.”

Ground controllers at NASA’s Jet Propulsion Laboratory in Southern California, which manages SPHEREx, established communications with the space observatory at 9:31 p.m. PDT. The observatory will begin its two-year prime mission after a roughly one-month checkout period, during which engineers and scientists will make sure the spacecraft is working properly.

“The fact our amazing SPHEREx team kept this mission on track even as the Southern California wildfires swept through our community is a testament to their remarkable commitment to deepening humanity’s understanding of our universe,” said Laurie Leshin, director, NASA JPL. “We now eagerly await the scientific breakthroughs from SPHEREx’s all-sky survey — including insights into how the universe began and where the ingredients of life reside.”

The PUNCH satellites successfully separated about 53 minutes after launch, and ground controllers have established communication with all four PUNCH spacecraft. Now, PUNCH begins a 90-day commissioning period where the four satellites will enter the correct orbital formation, and the instruments will be calibrated as a

single “virtual instrument” before the scientists start to analyze images of the solar wind.

The two missions are designed to operate in a low Earth, Sun-synchronous orbit over the day-night line (also known as the terminator) so the Sun always remains in the same position relative to the spacecraft. This is essential for SPHEREx to keep its telescope shielded from the Sun’s light and heat (both would inhibit its observations) and for PUNCH to have a clear view in all directions around the Sun.

To achieve its wide-ranging science goals, SPHEREx will create a 3D map of the entire celestial sky every six months, providing a wide perspective to complement the work of space telescopes that observe smaller sections of the sky in more detail, such as NASA’s James Webb Space Telescope and Hubble Space Telescope.

The mission will use a technique called spectroscopy to measure the distance to 450 million galaxies in the nearby universe. Their large-scale distribution was subtly influenced by an event that took place almost 14 billion years ago known as inflation, which caused the universe to expand in size a trillion-trillionfold in a fraction of a second after the big bang. The mission also will measure the total collective glow of all the galaxies in the universe, providing new insights about how galaxies have formed and evolved over cosmic time.

Spectroscopy also can reveal the composition of cosmic objects, and SPHEREx will survey our home galaxy

for hidden reservoirs of frozen water ice and other molecules, like carbon dioxide, that are essential to life as we know it.

“Questions like ‘How did we get here?’ and ‘Are we alone?’ have been asked by humans for all of history,” said James Fanson, SPHEREx project manager at JPL. “I think it’s incredible that we are alive at a time when we have the scientific tools to actually start to answer them.”

NASA’s PUNCH will make global, 3D observations of the inner solar system and the Sun’s outer atmosphere, the corona, to learn how its mass and energy become the solar wind, a stream of charged particles blowing outward from the Sun in all directions. The mission will explore the formation and evolution of space weather events such as coronal mass ejections, which can create storms of energetic particle radiation that can endanger spacecraft and astronauts.

“The space between planets is not an empty void. It’s full of turbulent solar wind that washes over Earth,” said Craig DeForest, the mission’s principal investigator, at the Southwest Research Institute. “The PUNCH mission is designed to answer basic questions about how stars like our Sun produce stellar winds, and how they give rise to dangerous space weather events right here on Earth.”

More About SPHEREx, PUNCH

The SPHEREx mission is managed by NASA JPL for the agency’s Astrophysics Division within the Science Mission Directorate at NASA Headquarters. BAE Systems (formerly Central Coast Astronomy

Ball Aerospace) built the telescope and the spacecraft bus. The science analysis of the SPHEREx data will be conducted by a team of scientists located at 10 institutions in the U.S., two in South Korea, and one in Taiwan. Data will be processed and archived at IPAC at Caltech, which manages JPL for NASA. The mission’s principal investigator is based at Caltech with a joint JPL appointment. The SPHEREx dataset will be publicly available at the NASA-IPAC Infrared Science Archive.

Southwest Research Institute (SwRI) leads the PUNCH mission and built the four spacecraft and Wide Field Imager instruments at its headquarters in San Antonio, Texas. The Narrow Field Imager instrument was built by the Naval Research Laboratory in Washington. The mission is operated from SwRI’s offices in Boulder, Colorado, and is managed by the Explorers Program Office at NASA’s Goddard Space Flight Center in Greenbelt, Maryland, for NASA’s Science Mission Directorate in Washington.

NASA’s Launch Services Program, based out of the agency’s Kennedy Space Center in Florida, provided the launch service for SPHEREx and PUNCH.

For more about NASA’s science missions, visit:

<http://science.nasa.gov>

CCAS Contacts

President	Aurora Lipper
Vice President	Tom Frey
Treasurer	Lee Coombs

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.

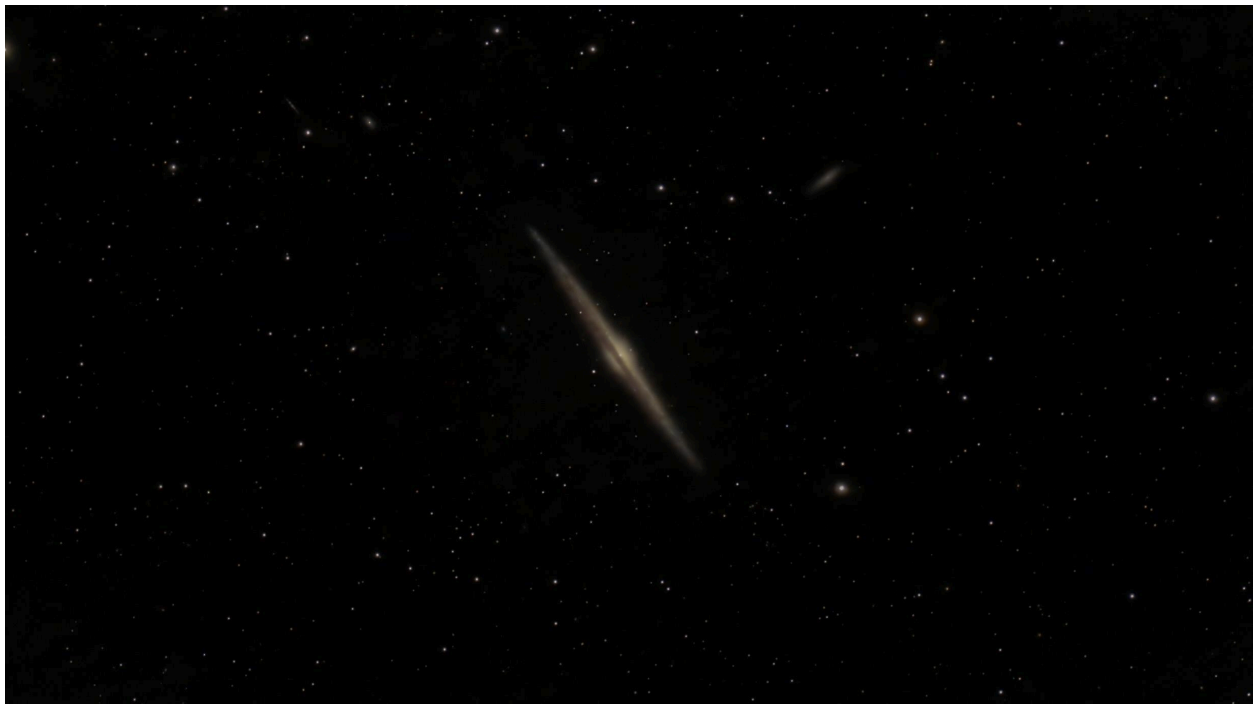
Central Coast Astronomical Society

PO Box 1415

San Luis Obispo, CA 93406

Website: CentralCoastAstronomy.org

Facebook: facebook.com/CentralCoastAstronomicalSociety



CCAS member Michael Perez took this photo of the Needle Galaxy (NGC 4565) using a Celestron Origin telescope. Located 40 million light-years away, this spiral galaxy is viewed edge-on from Earth, appearing as thin as a needle within the Coma Berenices constellation.