



AU AstroNews

The Newsletter of the Astronomical Unit

September 2026

Sponsored by the Santa Barbara Museum of Natural History



Pat and David enjoying Telescope Tuesday. Photo credit: Chuck McPartlin.

OUTREACH SUMMARY

Since the last newsletter, certified SBAU/SBMNH volunteers Brandy Ackerman, Andy Allen, Tim Crawford, Joe Doyle, Tessa Flanagan, Brian Green, Art Harris, Ronnie Herron, Shannon Gerow & Quasars, David Larson, Pat & Chuck McPartlin, Janet & Martin Meza, Edgar Ocampo, Javier Rivera, Michael Robertson, Woody Schlom, Charles Schueler, Sohini Sengupta, Tom Totton, Diane Welcenbach, Tom Whittemore, and Andre Yew showed the sky to 1981 guests.

SBAU volunteers must have undergone the SBMNH background check, and conform with the SBMNH policies for dealing with the public, to participate in outreach activities. To get vetted, contact SBMNH Volunteer Manager Rebecca Coulter <rcoulter@sbnature2.org>. It's quick and painless.

OUTREACH EVENTS

FRIDAY, SEPTEMBER 4, 6:30 PM

Short planetarium show, followed by our monthly meeting in Farrand Auditorium at 7 PM. Our speaker at 7:30 PM will be UCSB Physics graduate student Dariush Imani, on "The Universe of Particle Physics".

SATURDAY, SEPTEMBER 5, SETUP 7 PM

Telescopes for campers at Refugio State Beach, setup in the southwest corner of the day use parking lot.

WEDNESDAY, SEPTEMBER 9, SETUP 7 PM

Telescopes for Carpinteria State Beach. We set up next to the sidewalk to the south of the entry kiosk.

SATURDAY, SEPTEMBER 12, SETUP 7 PM

Monthly Public Star Party at SBMNH, next to Palmer Observatory, 8 PM to 10 PM.

SUNDAY, SEPTEMBER 13, 4:30 PM

AU monthly planning meeting on Zoom. Watch your email for the link.

TUESDAY, SEPTEMBER 15, SETUP 7 PM

Telescope Tuesday at the Camino Real Marketplace, in the plaza by the theater.

FRIDAY, SEPTEMBER 18, SETUP 7 PM

Monthly Public Telescope Night at Westmont, at the Keck Observatory, next to the athletic fields.

SATURDAY, SEPTEMBER 19, 6 PM TO 9 PM,

SETUP 5 PM

International Observe the Moon Night. Telescopes for a harvest star party at Seagrape Wine Company, 2625 Santa Barbara Avenue in Los Olivos. Catering truck for pre-viewing noshing.

TUESDAY, SEPTEMBER 22, 5:05 PM PDT - AUTUMNAL EQUINOX

SATURDAY, SEPTEMBER 26, 10 AM TO NOON

Astrofest at SBMNH with solar viewing by Palmer Observatory.

The Dual Nature of "Noise" in Astroimaging

Jerry Wilson

Astroimagers are deeply familiar with the term "noise" from their processing software. However, a fundamental problem exists: the hobby uses two different, mutually exclusive definitions of the word. One comes from physics; the other comes from everyday speech.

Mixing these two definitions causes massive confusion when reading published processing guides. Many imagers seem to have developed their own unique vocabulary. Having spent over 34 years working in electronic systems and image processing, I strictly use the physics framework. Yet, I have met incredibly talented imagers who find success using either definition. In this hobby, neither approach is inherently right or wrong, but understanding the distinction will fundamentally change how you approach your data.

Defining the Two Camps

- The Colloquial Definition: Noise is any unwanted visual artifact in an image.
- The Physics Definition: Noise is a temporally stochastic (random over time) fluctuation in a given signal.

To understand the difference, imagine trying to take a Sunday afternoon nap. Suddenly, the teenager next door starts practicing a loud, new drum set. In everyday speech, you would call that "noise." In physics, however, that drumming is actually an unwanted signal.

Why Physics Noise Happens

True noise exists because things we perceive as continuous are actually discrete at the atomic scale. Consider electrical current. We often imagine it flowing smoothly like water through a pipe. In reality, it is a stream of discrete electrons. At any microscopic fraction of a second, a few more or a few less electrons pass a specific point. This instantaneous fluctuation over time is what physicists call noise.

The Dark Current Dilemma

Inside our camera sensors, heat generates random electron-hole pairs that have nothing to do with starlight. This is known as dark current. Colloquially, imagers call dark current "noise" because it is an unwanted artifact. In physics, dark current is a signal—it just happens to be a signal we do not want. The true physics noise is the tiny, random variation of those electrons from frame to frame, known as dark noise.

Subtraction vs. Stacking

Understanding this distinction dictates how you clean your images, as unwanted signals and true noise must be treated with completely different math.

Unwanted Signals Can Be Subtracted

Because dark current is predictable and highly dependent on temperature, we cool our cameras to minimize it. We can then map the remaining dark current by shooting dark frames and mathematically subtracting it from our light frames.

True Noise Can Only Be Averaged

You cannot subtract true physics noise from an image. Instead, we overcome it by increasing our total exposure or integration time. When stacking images, the starlight signal adds up linearly. True noise, being completely random, adds up as a Root Sum Square (RSS). Because the signal grows much faster than the noise, your Signal-to-Noise Ratio (SNR) improves. When the final stack is normalized, the random noise gets smoothed out. The Golden Rule: Remember that unwanted signals (colloquial noise) are removed by subtraction, but true physics noise can only be beaten by adding more time.

NEWS FLASH! UPCOMING ELECTIONS!

SBAU's V.P. Ronnie Herron reminds our members that he will add your name to our slate of candidates for the four board members we vote on at our December meeting...should you like to run for President, Vice President, Treasurer, or Secretary. Contact BRHerron@Gmail.Com.



Setting up for a star party at Lopez Lake this past June. Photo credit: Tom Totton.

SEVEN SISTERS

by Mary Freericks

Foraging for food
find wild onions to eat.
Their breath begins to smell
Their husbands
pull away.

Seven sisters
lift into the sky.
Transform into stars
form the Pleiades
constellation.

Lonely, their husbands
fly up
become a V of stars
trail behind
their wives.
They are the Hyades cluster.

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SEPTEMBER 2026						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3	4 LQ MOON MONTHLY MEETING 6:30PM	5 REFUGIO STATE BEACH 7PM
6	7	8	9 CARPINTERIA STATE BEACH 7PM	10 NEW MOON	11	12 SBMNH STAR PARTY SETUP 7PM
13 PLANNING MEETING ON ZOOM 4:30PM	14	15 CAMINO REAL MARKETPLACE 7PM	16	17	18 FQ MOON WESTMONT 7PM	19 SEAGRAPE SETUP 5PM
20	21	22 AUTUMNAL EQUINOX 5:05PDT	23	24	25	26 FULL MOON ASTROFEST 10AM-NOON SBMNH
27	28	29	30	27	28	29
30	31					