



AU AstroNews

The Newsletter of the Astronomical Unit

July 2021

Sponsored by the Santa Barbara Museum of Natural History



All hands “on deck” at a Third Friday public viewing at Westmont College. Photo credit: Tom Totton.

OUTREACH SUMMARY

There was minimal outreach in late May/June. With the Delta variant increasing, please get vaccinated, then stay safe and healthy by wearing masks when necessary, washing your hands frequently, and practicing physical distancing.

OUTREACH EVENTS

The SBAU radio hour has been replaced by a weekly Zoom/YouTube Live event every Monday at 11 AM. If you watch, the live video should be able to take comments and questions in its Chat area: <https://tinyurl.com/2vss2yam>

For July, there will be no in-person SBAU meetings or public telescope outreach. We are tentatively restarting the slide show portion of the Cachuma Lake and Carpinteria State Beach outreaches, but no scopes as yet. Stay tuned.

SATURDAY, JULY 3, 8:30 PM

Slide show for campers at Cachuma Lake, in their Fireside Theater.

WEDNESDAY, JULY 14, 8:30 PM

Slide show for campers at Carpinteria State Beach, in their Fireside Theater.

SATURDAY, JULY 17, 8:30 PM

Slide show for campers at Cachuma Lake, in their Fireside Theater.

SATURDAY, JULY 31, 8:30 PM

Slide show for campers at Carpinteria State Beach, in their Fireside Theater.

THE JULY SKY

The International Space Station will be making some visible passes through our evening skies during July. It will also be appearing in the predawn sky, and its orbit may change from time to time, so to get the latest and most complete predictions, visit Heavens Above <https://tinyurl.com/y5yt22ch>

You can also get predictions for the new Chinese space station, Tianhe-1. It is much smaller and dimmer than the ISS.

It's July, and the summertime Milky Way is again becoming prominent, and globular cluster season is back, with favorite showpieces like M5, M13, M92, and M22 returning to our evening sky.

The Earth is at aphelion, our most distant from the Sun, on July 5. We'll be about 3.4% farther away than we were in January.

On the evening of July 12, catch Venus and Mars about half a degree apart low in the western sky at dusk, and a very thin crescent Moon to their upper left.

Look with binoculars or a telescope along the Moon's day/night terminator on Friday, July 16, between 3 PM and 5:30 PM PDT to see the Lunar X formed by illuminated crater rims peeking out of the darkness.

FROM THE PRESIDENT

Jerry Wilson

It's an empirical rule that the brightness of a star is proportional to its color (i.e., predominant emitted wavelength). The proportionality is roughly the same for all stars. If we make a chart that plots brightness against color, we obtain what is called a Hertzsprung-Russell diagram in which most stars fall within a linear strip called the main sequence. There are, however exceptions to this rule.

There are red giant stars - huge stars which are abnormally bright for their red color, and white dwarf stars - small stars which are abnormally faint for their white color. The white dwarf is very interesting since, to a very good approximation, it is a degenerate Fermi gas.

A Fermi gas is a collection of spin 1/2 particles - in this case electrons - that do not interact strongly with each other. If they did interact strongly with each other, they would be a Fermi liquid, as occurs in superconductors. But that's another story.

The Pauli exclusion principle applies to electrons, which cannot occupy the same energy state. In this case the star's strong gravity tries to force them together. When electrons are forced to fight the exclusion principle, they are referred to as "degenerate" and behave in a special way.

White dwarf stars lack brightness because the hydrogen supply - which is the main energy source of stars - is used up. These stars are composed mainly of helium. What little brightness they do have is derived from the gravitational energy released through a slow contraction of the star. These stars have reached the end point of their life.

A famous example of a white dwarf is the companion star to Sirius. Since Sirius is referred to as the dog star, its tiny white dwarf companion is called the 'pup'.



Tim Crawford explains the art and science of mirror making at Astronomy Day. Photo credit: Tom Totton.

ARTS CORNER

Telescope

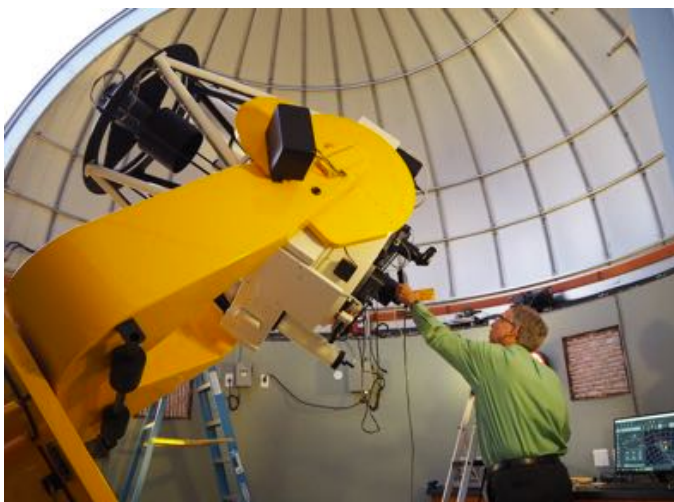
Ted Kooser

This is the pipe that pierces the dam
that holds back the universe,
that takes off some of the pressure,
keeping the weight of the unknown
from breaking through
and washing us all down the valley.
Because of this small tube,
through which a cold light rushes
from the bottom of time,
the depth of the stars stays always constant
and we are able to sleep, at least for now,
beneath the straining wall of darkness.

Starlight

Ted Kooser

All night, this soft rain from the distant past.
No wonder I sometimes waken as a child.



“Well. I’ll be darned! This stick of chewing gum is actually holding the eyepiece in place!” Photo credit: Tom Totton.



“Are you sure, Tim, that this is the spot where you dropped your quarter?” Photo credit: Tom Totton.



“check this out! My star chart says that there will be a conjunction of four major planets this evening!” Photo credit: Tom Totton.

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July 2021						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1 LAST QUARTER	2	3 CACHUMA LAKE
4	5 APHELION	6	7	8	9 NEW MOON	10
11	12 Venus and Mars	13	14 CARPINTERIA STATE BEACH	15	16 LUNAR X 3 PM - 5:30 PM	17 FIRST QUARTER CACHUMA LAKE
18	19	20	21	22	23 FULL MOON	24
25	26	27	28	29	30	31 CARPINTERIA STATE BEACH