AU AstroNews

The Newsletter of the Astronomical Unit

July 2022 **Sponsored by the Santa Barbara Museum of Natural History**

The June "Strawberry Moon" rises over Northridge Canyon. Photo taken by Dr. Mark O'Rourke using a hand-held iPhone.

OUTREACH SUMMARY

To get full outreach credit, SBAU volunteers must be fully vaccinated and boosted, and have undergone the SBMNH background check to participate in outreach activities. To get vetted, contact SBMNH Volunteer Manager Rebecca Coulter <rcoulter@sbnature2.org>. It's quick and painless.

Since the last newsletter, certified SBAU volunteers Brandy Ackerman, Krissie Cook, Sean Fox, Art Harris, Pat & Chuck McPartlin, Janet & Martin Meza, Charles Schueler, Tom Totton & Cezanne, and Tom Whittemore showed the sky to 1006 guests. Morgan & Brian Green, Natalie & Brad Mechling, Peggy O'Rork, and Andre Yew also helped out.

OUTREACH EVENTS

FRIDAY, JULY 1, 7:30 PM
The SBAU monthly meeting will be on YouTube again this month. The speaker will be Dr. Zellam of UCLA, speaking on exoplanet atmospheres.

SATURDAY, JULY 2, SETUP 7:30 PM
Slide show and telescopes for campers at Cachuma Lake. We set up in the field at Dakota Plains.

TUESDAY, JULY 5, SETUP 7 PM
Telescope Tuesday at the Camino Real Marketplace, in the plaza by the theater.

FRIDAY, JULY 8, SETUP 7:30 PM
Telescopes for campers at Refugio State Beach, setup in the southwest corner of the day use parking lot.

SATURDAY, JULY 9, SETUP 6:30 PM
Monthly AU planning meeting at SBMNH, outdoors at Palmer Observatory.

SATURDAY, JULY 9, SETUP 7:30 PM
Monthly Public Star Party at SBMNH, next to Palmer Observatory, 8:30 to 10 PM.

THURSDAY, JULY 14, SETUP 7:30 PM
Telescopes for campers at Refugio State Beach, setup in the southwest corner of the day use parking lot.

FRIDAY, JULY 15, SETUP 7 PM
Monthly Public Telescope Night at Westmont, at their Keck Observatory, next to the athletic fields.

SATURDAY, JULY 16, SETUP 7:30 PM
Telescopes and slide show for campers at Carpinteria State Beach. We set up on the sidewalk towards the beach from the entry kiosk.

FRIDAY, JULY 22 SETUP 7:30 PM
Telescopes for campers at Refugio State Beach, setup in the southwest corner of the day use parking lot.

SATURDAY, JULY 23, SETUP 7:30 PM
Slide show and telescopes for campers at Cachuma Lake. We set up in the field at Dakota Plains.

FRIDAY, JULY 29 SETUP 7:30 PM
Telescopes for campers at Refugio State Beach, setup in the southwest corner of the day use parking lot.

SATURDAY, JULY 30, SETUP 7:30 PM
Telescopes and slide show for campers at Carpinteria State Beach. We set up on the sidewalk towards the beach from the entry kiosk.

FROM THE PRESIDENT
Jerry Wilson

We are currently seeing a very active Sun. Large sunspots are moving across the Sun's face with impressive prominences seen on several regions of the rim. Our club has a number of people interested in solar observation and imaging. There are probably half a dozen H-alpha scopes of 60 or 80 mm aperture. Recently our Webmaster, Tom Totton, captured an excellent image showing a wealth of sharp detail. It's one of the best amateur images I've seen.

Our Sun has a period of activity of 22 years determined by the winding, unwinding and reversal of the of the Sun's magnetic field. Unlike electric fields, which start and end on an electric charge, or monopole, magnetic fields are all closed loops. A magnetic monopole has never been observed by science. Moving electric charges produce magnetic fields. Since the Sun is a ball of ionized atoms, it has a lot of moving charges that can produce very strong magnetic fields.

Since it is not a solid body, the Sun does not have a single rotational speed. The equatorial regions rotate faster than do the polar regions. This differential rotation produces our 22-year Sunspot cycle.

Imagine we start with a dipole field, similar to the Earth's. As the Sun rotates, its magnetic field begins to wind up with twists and bulges - much like a rubber band that is twisted too far. Magnetic field lines begin to protrude through the Sun's surface with the points of egress showing up as sunspots. They happen as pairs with one spot being "north" and the other being "south" as the bulging field goes out and back into the surface. The convention is that – not unlike a bar magnet – the north field emerges from the Sun's surface and the south field reenters its surface.

Sunspot activity is empirically observed to increase and decrease with an eleven-year swing between maximum and minimum number of sunspots. Each succeeding eleven-year cycle shows a major magnetic field reversal, so a complete sunspot cycle is 22 years.

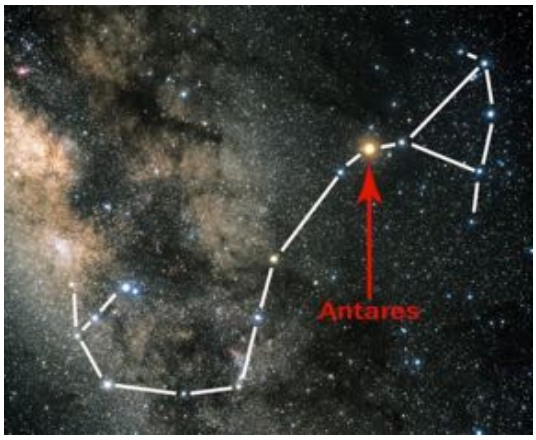
An H-alpha scope is not necessary to view sunspot activity. A neutral density filter placed over and completely covering the objective of a small telescope will show sunspots. Never view the sun through a sun-filtered eyepiece! Since the Sun's rays come to a blazing focus at this location its rays are extremely intense here. These filters were sold in the 1960s as a safe way to look at the Sun. They are not safe! Probably the safest way to observe sunspots is by projection from a pinhole aperture. One can be made from a piece of cardboard or a colander can be borrowed from the kitchen. Again, be careful, and never look directly at the Sun without proper protection.

"Not bad, Honey. Now tell our guests about the Black Hole in the center of the Milky Way...." Photo credit: Tom Totton.

STAR STORIES
Antares

A true "Rival to Mars," the red supergiant Antares often surpasses Mars in brightness when Mars wanders through this region of Scorpius. It is a truly large star with a radius some 680 to 800 times that of our sun. Imagine that. Recent radio data from the Very Large Array in New Mexico suggests that, if you were to place Antares at the location of

our sun, it would reach all the way out beyond Jupiter! The diagram below shows where to find Antares in Scorpius. Notice the rich environment as Scorpius lies in one of the densest regions of our Milky Way.



As an M1 supergiant, Antares has moved off the Main Sequence and is likely still crafting heavier elements in its core. Because of this and its high mass (between 11 and 14 solar masses) it will undoubtedly end its life as a supernova and house either a neutron star or possibly a black hole. No one knows when this will happen, but when it does it should be spectacular! And, at a distance of about 550 light years, the light you see coming from this supergiant comes from around the time of Christopher Columbus. So, image this. The light you see tonight started its 550-year journey when Ferdinand and Isabella were wishing Columbus "Bon Voyage"!

"It says here that I should get another look through your telescope for the 25 cents I put in the box."
Photo credit: Tom Totton.

AU Information Box

President: Jerry Wilson 968-4056
jerryawilsonphd@gmail.com
Vice President: Ron Herron
vicepresident@sbau.org
Secretary: Colin Taylor
dancingmagpie@cox.net
Treasurer: Colin Taylor 967-8140
dancingmagpie@cox.net
Equipment: Art Harris 968-4017
n6is@cox.net
Outreach: Chuck McPartlin 964-8201
outreach@sbau.org
Newsletter: Tom Whittemore 687-2025
kometes@aol.com

Webmaster: Tom Totton 562-8795
webmaster@sbau.org
Merch Manager: Pat McPartlin 964-8201
parsnip7@yahoo.com

SBMNH Astronomy Programs Coordinator
Krissie Cook 682-4711 ext. 164
kcook@sbnature2.org

AU AstroNews, the monthly publication of the **Astronomical Unit (AU)**, is mailed to the AU membership. For publishing consideration for the next month, submit astronomical items by the 20th of the current month!

AU annual membership rates:
Single = $20 Family = $25

AU mailing address:
Astronomical Unit
c/o Santa Barbara Museum of Natural History
2559 Puesta Del Sol Road
Santa Barbara, CA 93105-2998

On the Web: http://www.sbau.org

The Astronomical Unit
c/o Santa Barbara Museum of Natural History
2559 Puesta Del Sol Road
Santa Barbara, CA 93105-2998

July 2022

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1 AU Monthly Meeting on Zoom 7:30 PM	2 Cachuma Lake 7:30 PM
3	4	5 Camino Real Marketplace 7PM	6 First Quarter	7	8 Refugio State Beach 7:30 PM	9 Monthly Star Party SBMNH 7:30PM
10	11	12	13 Full Moon	14 Refugio State Beach 7:30 PM	15 Westmont Public Star Party 7:00 PM	16 Carpinteria State Beach 7:30 PM
17	18	19	20 Last Quarter	21	22 Refugio State Beach 7:30 PM	23 Cachuma Lake 7:30 PM
24	25	26	27	28 New Moon	29 Refugio State Beach 7:30 PM	30 Carpinteria State Beach 7:30 PM
31						