Website: https://acl.universeii.com 2, July 2022

Astronomy Club of Lompoc
Presents
The Sidereal Times

Caldwell 49 (see page 5)

Meeting *News* The June club meeting was replaced by our Annual pizza party and held at River Park on June 11th. Jana did a super job in getting the Pizza's and other foods set up and delivered. Several members brought desert to share with the group. It was a classic day of friendship and great weather.

Reminder: ACL club meeting Friday July 8th at the Manzanita School Teachers Lounge 7:00 PM. Wear your masks.

Lunar Calendar:
New Moon 28th
Full Moon 13th

This Issue Pizza Party River Park

Presidents Message

Hello, ACL Members and Friends,

Here's hoping everyone is having a good summer, brief though it has been since Tuesday, the 21st of June. Yes, the Summer Solstice is now past us so we can look forward to the nights darkening earlier each evening, giving us more nocturnal observing time.

Speaking of observing, those of us who made it over the speed bumps of River Park for our Pizza Picnic on June 11th [see photos] had some excellent solar viewing through the two telescopes available. Especially thrilling were the beautiful prominences leaping from the sun's edges as seen through the hydrogen-alpha scope that Vince set up. The sunspots were few and small but a cluster of three showed up fairly well through yours truly's little Meade refractor. [To quote my wise Molly, "No matter what it isn't, it's more than Galileo had to work with." True that, Molly.]

Praise of the day certainly must go to our Vice President, Jana, for her determination that this fun event would happen. She secured not only the site at River Park and ordered the pizzas, but also bought sturdy new table coverings and wind-fighting clamps to hold them in place, among other necessities. A dozen attendees delighted in swapping stories and chowing down on Mi Amore Pizzas and huge salad, and also several different tasty sides and desserts furnished by our members. The weather was perfect, not just for solar viewing, but even the winds this year did not threaten to blow us into the nearby agricultural fence.

Currently your President is working on a couple of outreach opportunities which could happen in the near future and I will send an announcement when these fall into place. Let's hope a July Star Party or two are in our future! Thank you for your continuing support of The Astronomy Club of Lompoc. Check out and contribute to our Facebook page.

Skyward,
Tom

Events

July 9th 23rd 30th Star Party at the Observatory.

Yea !

July 13th Full Moon Super Moon will be located on the opposite side of the Earth and Sun and its face will be fully illuminated. This phase occurs at 18:38 UTC. This full Moon was known by native American tribes as the Buck Moon because the male Buck deer would begin growing their new antlers. The Moon has also been known as the Thunder Moon and the Hay Moon. This also the second of three Supermoons for 2022. The Moon will be near its closest approach to the Earth and may look slightly larger and brighter than usual.

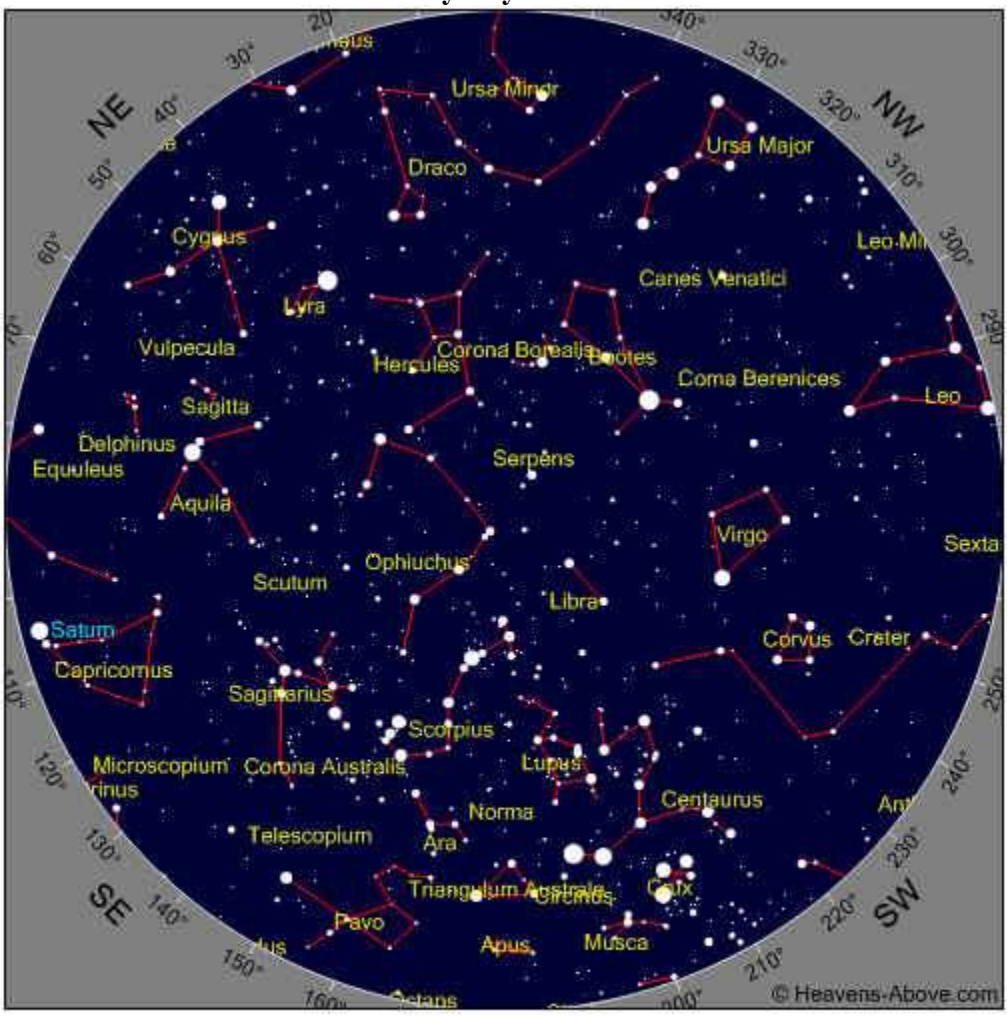
July 28th Delta Aquarids Meteor Shower is an average shower that can produce up to 20 meteors per hour at it peak. It is produced by debris left behind by comets Marsden and Kracht. The shower runs annually and peaks this year on the night of July 28th and the morning of the 29th. Meteors will radiate from the constellation of Aquarius but can appear anywhere in the sky

Star party's and Events

June 7th, 18th ,25th Star Party at the Observatory cancelled due to whatever!

Nuts!

July Sky 2022



Time

Year 2022 Month 7 Day 2 Hour 21 Minute 20

July Moon 2022

Full 13th , New 28th , Last Quarter 20th , First Quarter 7th

Photo Courtesy David McNally

The Rosette nebula Caldwell 49 NGC 2237 located near one end of the giant molecular cloud in the Monoceros region of the Milky Way Galaxy. The open cluster NGC 2244 is closely associated with the nebulosity, the stars of the cluster having been formed from the nebula's matter. The cluster and nebula lie at a distance of some 5000 light years from Earth and measure roughly 50 light years in diameter. The radiation from the young stars excites the atoms in the nebula causing them to emit radiation themselves producing the emission nebula we see. The mass of the nebula is estimated to be around 10,000 solar masses. A survey of the nebula with the Chandra X-ray observatory has revealed the presence of numerous new born stars inside the optical Rosette nebula studded with a dense molecular cloud. Altogether, approximately 2500 young stars lie in this star forming complex. This includes the massive O-type stars HD46223 and HD46150 which is responsible for blowing the ionized bubble. Most of the on going star-formation is occurring in the dense molecular cloud to the South East of the bubble. A diffuse X-ray glow is also seen between the stars in the bubble. This has been attributed to super hot plasma with temperatures ranging from 1 to 10,000,000 degrees K. This is significantly hotter than the 10,000 K plasmas seen in the H ii regions and is likely attributed to shock-heated winds from the massive O-type stars. Image capture, 400 mm telephoto lens, Canon T3i Baader modified, Celestron CGEM hypertuned mount, frames 20 x 120" and integration time 0.7 hours, image processing software DSS 3.3.4.

For What its Worth

The Sun and its atmosphere are divided into several zones and layers. The solar interior, from inside out, is made up of the core, Radiative zone and Convective zone. The solar atmosphere above that consists of the Photosphere, Chromosphere, a transition region and the Corona. Beyond that is the solar wind, an outflow of gas from the corona. The core extends from the Sun's center to about a quarter of the way to its surface. Although it only makes up roughly 2 percent of the Sun's volume it is almost 15 times the density of lead and holds nearly half of the Suns mass. Next is the Radiative zone that extends from the core to 70 percent of the way to the suns surface, making up 32 percent of the Sun's volume and 48 percent of its mass. Light from the core gets scattered in this zone so that a single photon may take a million years to pass through. The Convection zone reaches up to the Sun's surface and makes up 66 percent of the Sun's volume but only a little more than 2 percent of its mass, roiling convection cells of gas, dominate this zone. Two main kinds of solar Convection cells exist – Granulation cells about 600 miles (1,000 kilometers) wide and Super-Granulation cells about 20,000 miles (30,000 kilometers) in diameter. The Photosphere is the lowest layer of the Sun's atmosphere and emits the light we see. It is about 300 miles (500 Km) thick, although most of the light comes from its lowest third. Temperatures in the photosphere range from 11,000° F at the bottom to 7,460° F at the top. Next up is the Chromosphere, which is hotter, up to 35,500° F and is apparently made up entirely of spiky structures known as Spicules typically some 600 miles across and up to 6,000 miles high. After that is the Transition region a few hundred to a few thousand miles thick. It is heated by the corona above it and sheds most of its light as ultraviolet rays. At the top is the super-hot corona are structures such as loops and streams of ionized gas. The Corona generally ranges from 900,000° F to 10.8 million° F and can even reach tens of millions of degrees when a solar flare occurs. Matter from the Corona is blown off as the solar wind. Just like most other stars the Sun is made up of mostly hydrogen and helium. Nearly all remaining matter consists of seven other elements, oxygen, 360 carbon, neon, nitrogen, magnesium, iron and silicon. For each million atoms of hydrogen in the Sun there are 98,000 of helium, 8 oxygen, 360 of carbon, 120 of neon, 110 of nitrogen, 40 of magne iron and 35 of silicon. Still hydrogen is the lightest of all elements and accounts for 72 percent of the Sun's mass, while helium is about 26 percent. The strength of the Sun's magnetic field is only about twice as strong as Earth's field. However it becomes highly concentrated in small areas reaching up to 3000 times stronger than usual. These kinks and twists in the magnetic field develop because the Sun spins more rapidly at the equator than at higher latitudes and because the inner parts of the Sun rotate more quickly than at the surface. These distortions create features like Sun Spots to eruptions known as flares and Coronal Mass Ejections. Flares are the most violent eruptions in the solar system while Coronal Mass Ejections are less violent but involve extraordinary amounts of matter, a single eruption can spout roughly 20 billion tons of matter into space. Sun Spots are relatively cool dark features on the Sun's surface that are roughly circular. They emerge where dense bundles of magnetic field lines from the Sun's interior break through the surface. The number of Sun Spots vary as solar magnetic activity does. The change in this number from a minimum of none to a maximum of roughly 250 Sun Spots or clusters of Sun Spots is known as the solar cycle and averages about 11 years long. At the end of the cycle the magnetic field rapidly changes polarity. The Sun has enough nuclear fuel to stay much as it is now for another 5 billion years. After that it will swell to become a red giant. Eventually it will shed its outer layers and the remaining core will collapse and become a white dwarf. Slowly this will fade to enter its final phase as a dim, cool theoretical object sometimes known as a black dwarfs.

Astronomy Club Officers

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Tom Gerald

Vice President &
Treasurer
Jana Hunking

ACL Support Personnel

ACL News letter Editor
Serf / Minion Vahan Yeterian

ACL Webmaster
Serf / Minion Aaron Anderson
(New Zealand)

Club Meeting

Reminder **ACL** Club meeting Friday July 8th at the Manzanita School Teachers Lounge 7:00 PM. Wear your masks.

Star Parties (as always weather permitting)

Other Astronomy Club Meetings

Central Coast Astronomical Society
Link to web site…
http://www.centralcoastastronomy.org/

Santa Barbara Astronomical Unit
Link to web site…
http:// www.sbau.org/#AU_EVENTS_Calendar

Link to "Heavens Above" web site
http:// www.heavens-above.com/

"Astronomy compels the soul to look upward, and leads us from this world to another". (Plato)

ACL Club Logo