Website: https://acl.universeii.com July 2, 2023

Astronomy Club of Lompoc
Presents
The Sidereal Times


M5 Globular Cluster (see page 5)

Meeting *News:*
At the June club meeting Jana gave a fine presentation on Female Astronauts. We also discussed the Outreach on May 25 for Manzanita school 3rd and 4th grade classes.

Reminder: ACL club meeting July 14th 7:00PM Manzanita School Teachers Lounge.

Lunar Calendar
New Moon 17
Full Moon 3

This issue contains photos of our Outreach Manzanita Grade School classes 25 May 2023

Presidents Message

Our June Meeting was a success, with 13 attending, and getting a new member, Jose Romero. At the July Meeting Jose would like to introduce himself so we can know more about him. We have gained 3 new members in the last 2 months, bringing our total membership to 23, which is terrific! Everyone seemed to be interested in the Sally Ride/Women astronauts talk that I gave for the presentation.

I want to thank Vahan and Tom for greasing and fixing of Observatory dome track, which helped it move better into different positions when in use. Vahan, also replaced the keyboard and mouse that was needed. They, along with Vahan's daughter Carla Ann, cut down many of the weeds that were close to the observatory, which is an ongoing summer event, and will be needed to do again in the close future.

Our former member, Moksha Badarayan, has asked us for any help we can give to the Star Party on Aug 12 , at Sunburst Sanctuary- address is 7200 South Highway One, Lompoc, Ca. To get there, drive on HWY 1 towards SB, at 14 miles turn left at their sign. Their website is facebook.com/sunburst.org and a phone is 805-736-6528. You will not need a telescope, but the knowledge of the constellations we could observe at that date would really help.

This month, June 27-30, there will be a launch of Virgin Galactic -01, the first Commercial spaceflight for the company owned by billionaire Richard Branson. This June flight will carry Italian Air Force pilots, whom will conduct microgravity research. Branson was on his first flight carrying people, launched from "Spaceport America," in New Mexico. If you would like to book a seat on a Galactic flight, be ready to pay $450,000 !

Our July 14 Presentation, will be from Vahan, about the Apollo Moon Missions, that he worked upon. That should be exciting to hear about those historic times.

Hoping for Clear Skies! Jana

Events

July 1st Conjunction of Venus and Mars 3.5° from each other. The event will take place on the morning of July 1st @ 2:48 AM UTC. Visible in the Constellation of Leo.

July 8, 15, 22 ***Star Party at the Observatory.???***

July 28 & 29 Delta Aquarids Meteor Shower is an average shower that can produce up to 20 meteors per hour at its peak. It is produced by debris left behind by comets Marsden and Kracht. Meteors will radiate from the constellation of Aquarius but can appear anywhere in the sky.

Star party's and Events

July 2023 Moon

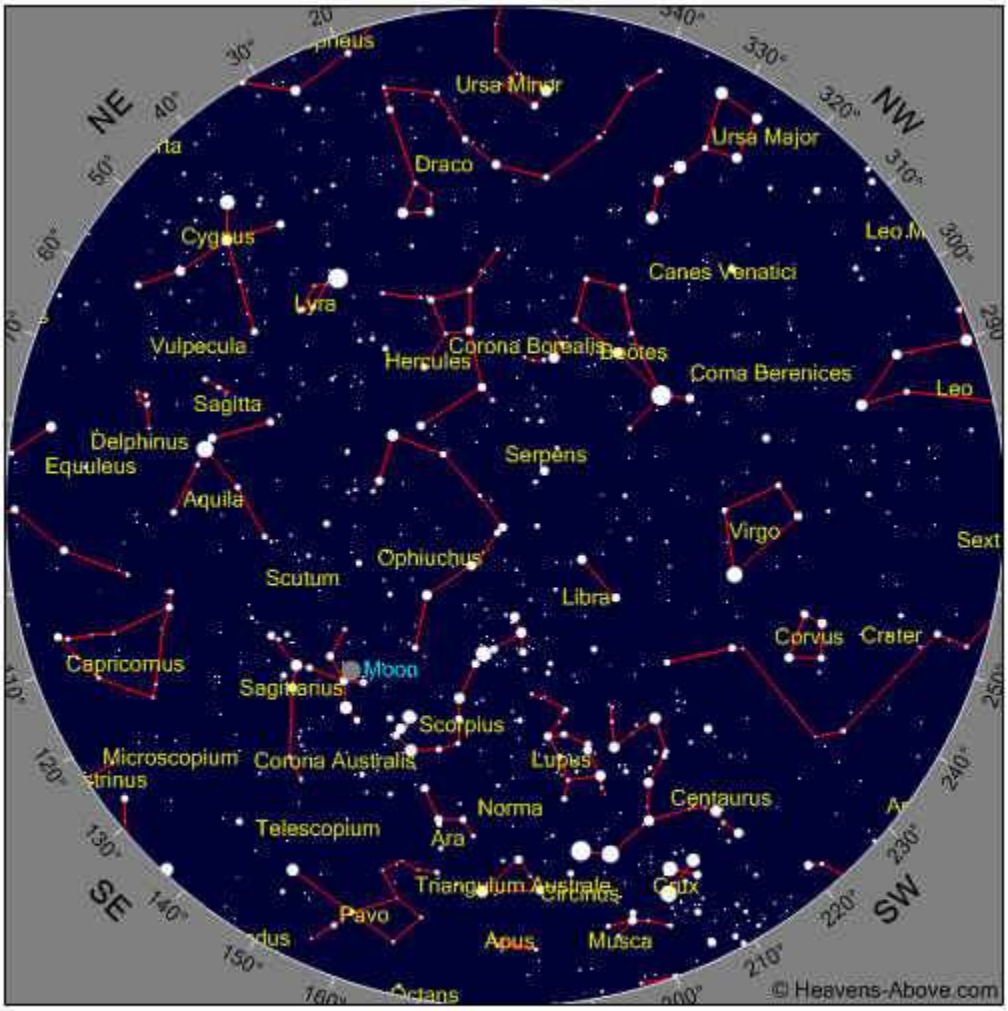
Full 3, New 17, Last Quarter 10, First Quarter 25 .

Moon Facts and folk lore

A full day on the Moon, one sunrise to the next, last about 29.5 days.
The Moon is moving away from Earth by 3.8cm (1.48 inches) per year.
If there are 2 full moons in the same month the second is called a Blue Moon.
The ring around the Moon is caused by refraction of Moonlight from ice crystals in the upper atmosphere.

July 2023 Sky

Some Objects of interest, M13, M57, M27, Moon



Time

Year 2023 Month 7 Day 2 Hour 21 Minute 30

Photo Courtesy of Vahan Yeterian

Messier 5 or M5 (also designated NGC 5904) is a globular cluster in the constellation of Serpens. M5 is, under extremely good conditions, just visible to the naked eye as a faint "star" 0.37 of a degree 22 arcmin north-west of star 5 Serpentis. Binoculars and small telescopes resolve the object as non stellar, larger telescopes will resolve the object and show some individual stars, some of which are as bright as apparent magnitude 10. William Herschel was the first to resolve individual stars in the cluster in 1791, counting roughly 200. Messier 5 is receding from the Solar System at a speed over 50 km/s.

One hundred and five stars in M5 are known to be variable in brightness, 97 of them belonging to the RR Lyra type. RR Lyrae stars, sometimes referred to as *"Cluster Variables"*, are somewhat similar to Cepheid type variables and as such can be used as a tool to measure distances in outer space since the relation between their luminosities and periods are well known. The brightest and most easily observed variable in M5 varies from magnitude 10.6 to 12.1 in a period of just under 26.5 days. The cluster contains two millisecond pulsars, one of which is a binary, allowing the proper motion of the cluster to be measured. The binary could help our understanding of neutron degenerate matter; the current median mass, if confirmed, would exclude any "soft" equation of state for such matter. The cluster has been used to test for magnetic dipole moments in neutrinos, which could shed light on some hypothetical particles such as the axion. A dwarf nova has also been observed in this cluster.

For What its Worth

Classification of Stars

Can we see what stars are made up of? Can we measure how hot they are? The answer is Yes, by using spectral classification of the stars. Surface temperature of the star is associated with specific spectral classification. The spectral classification main divisions includes main types: O, B, A, F, G, K, M, R, S. These are in order of decreasing temperature. Remembering the major classifications is as follows…Oh, Be, A, Fine, Girl, Kiss, Me, Right, Now, Smack. O = Ionized and neutral helium, ionized metals, weak hydrogen. B = Neutral helium, ionized metals, hydrogen stronger. A = Hydrogen dominant, plus singly ionized metals. F = Hydrogen weaker, neutral and singly ionized metals. G = CA ll prominent, hydrogen weaker neutral metals. K = Neutral metals, some molecular bands. M = Neutral metals, Tl O bands dominant. R&N = Neutral metals, C2, Cn and CH bands. S = Neutral metals, Zr O and Tl O bands. The 3 remaining classes are Q-Novae, P-Gaseous Nebula, and W-Wolf-Rayet stars. Wolf-Rayet stars spectra are characterized by bright emission bands of hydrogen and helium and their color temperature is approximately 13,000 degrees Kelvin (22,940 degrees F). The principal difference between the main classes is temperature hot stars are O, B, A and are referred to as early stars. The cooler ones K M N R S etc are referred to as late stars. A bright star will be larger and its outer regions will be more rarefied than a faint star. The more luminous a star the narrower will be its spectrum lines since pressure is one of the line broadening mechanisms. O = 30000 – 60,000 K (Blue Stars). B = 10,000 – 30,000 K (Blue / White Stars). A = 7,500 – 10,000 K (White Stars). F = 6,000 – 7,500 K (Yellow White Stars) G = 5,000 – 6,000 K (yellow Stars like the Sun). K = 3,500 – 5,000 K (tallow Orange Stars). M = < 3,500 K (Red stars). Notice that hottest stars are blue, while coldest stars are red. Naos (in the constellation Puppis) these have prominent ionized and neutral helium lines and only weak hydrogen lines. Class O stars emit most of their radiation in ultra-violet. Class B stars are again very luminous, Rigel (in the great constellation Orion) is a prominent B class blue supergiant. Their spectra have neutral helium and moderate hydrogen lines. Class A stars are amongst the more common naked eye stars. Deneb in Cygnus is another very powerful star. Sirius, that appears the brightest star as seen from Earth, is also an A class star. As with all class A stars, they are white. Many white dwarfs are also A. They have strong hydrogen lines and also ionized metals. Class F stars are still quite powerful like Fomalhaut in Pisces Australis. Their spectra are characterized by the weaker hydrogen lines and ionized metals their color is white with a slight tinge of yellow. Class G stars are probably the most well known for the reason that our Sun is of this class. They have even weaker hydrogen lines than F and have neutral helium lines but along with the ionized metals, they have neutral metals. Class K are orange stars which are slightly cooler than our Sun. Some K stars are giants and supergiants, such as Arcturus, while others like Alpha Centauri B are smaller. They have extremely weak hydrogen lines, if they are present at all, and mostly neutral metals. Class M is the most common class by the number of stars. All red dwarfs, such Proxima Centauri, the closest star to our Solar System. The spectrum of an M star shows lines belonging to molecules and neutral metals but hydrogen is usually absent.

Astronomy Club Officers

President & Treasurer
Jana Hunking

Vice President
Tom Gerald

Secretary
Katharine Black

ACL Support Personnel

ACL News letter Editor
Serf /Minion Vahan Yeterian

ACL Webmaster
Serf / Minion Aaron Anderson
(New Zealand)

Club Meeting

Reminder Club meeting July 14th 7:00 Pm
Manzanita School Teachers Lounge.
Star Parties (as always weather permitting)

Other Astronomy club meetings and links to sites.

http://www.centralcoastastronomy.org/

Astronomy Club of Lompoc (ACL) (universeii.com)

Sunrise and sunset times in Lompoc (timeanddate.com)

Moonrise, Moonset, and Moon Phase in Lompoc (timeanddate

http:// www.sbau.org/#AU_EVENTS_Calendar

http://www.heavens-above.com/

https://spaceweather.com

https://www.space.com

https://spacemaps.com

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

ACL Club Logo