

Astronomy Club of Lompoc Presents The Sidereal Times



Messier 13 (see page 5)

Meeting News At the December Zoom video club meeting we had an excellent presentation on space congestion by Ebbe Hansen.

Reminder: ACL club meeting Friday January 8th on Zoom Video 7:00 Pm.



Lunar Calendar:

New Moon 13th
Full Moon 28th



Presidents Message

Hello, Fellow Stargazers:

Well, I feel like Dr. Doolittle's pushmi-pullyu, that two-headed critter that looks forward and backward at the same time. Everyone does this at the juncture of two years, taking an account of this past year's accomplishments and shortfalls while looking to the year ahead, trying in vain to predict its course. While we can never accurately predict a year's course, we can act out of hope, making plans and working to bring those plans to fruition.

Looking back, I thank you for another year's term as your president and for bringing Jana along with me as vice-president and secretary/treasurer. Looking back took me to my very first President's Letter, January 2017; therein, I expressed the hope that we as a group could work to reduce light pollution in Lompoc. Well, let us renew our goals for that in 2021; there are many ways we can educate our community and we will be discussing this at an upcoming meeting.

Also, we will make a concerted effort to broaden ACL's online presence, supporting and connecting our excellent website [thank you, Dave McNally and Aaron Anderson] to interested community members through other social media. We need to bring "young blood" into our fold and this is one of the best routes to reach out to them.

Thank you, Ebbe Hansen, again, for your excellent presentation and directed discussion of our rapidly more crowded spaceways. The jazz musician Sun Ra may have "travelled the spaceways" effortlessly between his home turf of Jupiter and the Earth, but SpaceX and other commercial ventures are increasingly cluttering the routes. Your program made this larmingly clear. I hope that others of you will feel confident to make similar presentations to the club across the coming year. If something of particular interests you about astronomy and human's relationship to the heavens, you are encouraged to prepare a program for one of our meetings. Just let me know and we will block it in.

Okay! January is membership renewal month. This is also a great time to connect with a friend who enjoys your passion for astronomy. Ask them to join us and become a regular attendee. Membership Dues are still a paltry \$20.00, or \$25.00 with an official ACL ceramic mug! If each of you would bring in a friend, our membership would double. Think about it....

I look forward to seeing all of you at our January 8th meeting over Zoom. My most fervent wish is that before 2021 concludes we will be meeting in person and hosting Star Parties again!

Happy New Year,
Tom

Events

January 2 & 3 Quadrantids Meteor Shower is an above average Shower with up to 40 meteors per hour at its peak. It is thought to be produced by dust grains left behind by an extinct comet known as 2003EH1. The shower runs annually from January 1-5. It peaks this year on the night of the 2nd and morning of the 3rd. Meteors will radiate from the constellation of Bootes but can appear any where in the sky.

January 24th Mercury at greatest eastern elongation of 18.6° from the Sun. Best time to observe Mercury since it will be at its highest point above the horizon in the evening sky. Look for the planet in the Western sky just after sunset.

January 9th & 16th *Star Party at the Observatory cancelled due to Covid-19 virus.*



Star party's and Events

Dec 5th, 12th, 19th Star Party at the Observatory cancelled due To Covid-19 virus.



January 2021 Moon



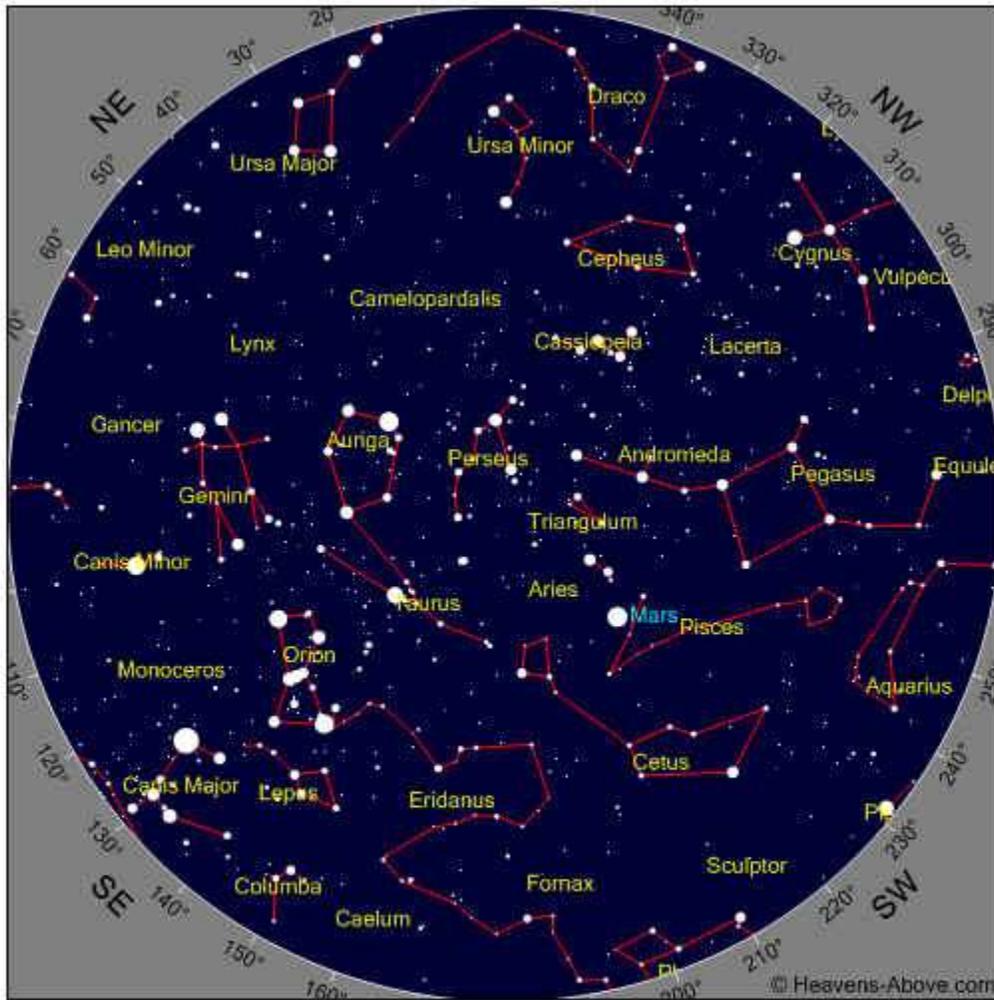
Full 28th, New 13th, Last Quarter 6th, First Quarter 20th

Moon Facts and Folklore

The footprints left by the Apollo astronauts will not erode as they would on earth since there is no wind or water on the Moon. The footprints should last at least 10 million years, probably far longer. When the Apollo 12 astronauts landed on the moon, the impact caused the Moon's surface to vibrate for 55 minutes. The diameter of the moon's largest crater is 144 miles.



January 2021 Sky
Some Objects of interest, M42, M31, M1



Time

Year	2021	Month	1	Day	7	Hour	20	Minute	4
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Photo Courtesy Gary Satterfield



Messier 13, NGC 6205 also known as the Great Globular Cluster in the constellation of Hercules. M13 is one of the brightest and best known Globular in the Northern sky. It has an apparent magnitude of 5.8 v and lies at a distance of 25,100 light years from Earth. It has an age estimated to be 11.65 billion years and contains about 300,000 stars. The estimated mass is half million solar masses. M13 stretches across 20 arc minutes of sky that corresponds to a linear diameter of 145 light years. The brightest star in M13 is V11, a red giant classified as a Cepheid variable and has a visual magnitude of 11.95. The cluster contains an unusually young B2 type star designated as Bernard 29. The star does not really belong to the globular cluster but was presumably picked up by M13 on its orbit around the Milky Way. Other stars in the cluster are very old and only have about 5% of the Sun's iron content as they were formed before stars in our galaxy created metals. M13 also contains about 15 blue stragglers, old stars that appear younger and bluer than their neighbors. M13 is a class V globular cluster, one with intermediate concentration of stars toward the center. In other words stars in the clusters core region are about 500 times more concentrated than those in our immediate stellar neighborhood. Globular clusters orbit the Milky Way outside the Galactic disk at tens of thousands of light years away. Image capture 8 inch RC scope, canon 500D camera, hypertuned CGEM mount and images plus camera control and guiding with Mini Borg and PHD guiding. Integration time 0.7 hrs



For What its Worth

Some Photo and Observing targets for 2021

The Whirlpool Galaxy Messier 51 NGC 5194 is located in the constellation of Canes Venatici (The Hunting Dogs) approximately 23 million light years distant. It is an interacting grand-design spiral galaxy with a Seyfert 2 active galactic nucleus. It exhibits a red shift (moving away) of 463 ± 3 km/sec. Its diameter is approx. 60,000 light years. It was the first galaxy to be classified as a spiral galaxy. The pronounced spiral structure appears to be due to interaction with its companion galaxy NGC 5195. Professional astronomers study M51's structure to better understand spiral structure. Among astrophysicists one of the Whirlpool's highlights is the abundance of supernovas. There has been a veritable cornucopia of supernovas in the Whirlpool in 1994, 2005 and 2011. Three supernovas in 17 years is considered a lot for a single galaxy.

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 molecular cloud, approximately 2500 young stars lie in this star forming complex.

The Flame nebula, NGC 2024 and Sh2-277 is an emission nebula in the constellation of Orion. It is about 1200 light years distant. The bright star Alnitak, the eastern most star in the belt of Orion, shines energetic ultraviolet light into the flame and this knocks electrons away from the great clouds of hydrogen gas that reside there. Much of the glow results when the electrons and ionized hydrogen recombine. Additional dark gas and dust lies in front of the bright part of the nebula and this is what causes the dark network that appears in the center of the glowing gas. The Flame nebula is part of the Orion molecular cloud complex, a star forming region that includes the famous Horsehead nebula. At the center of the Flame nebula is a cluster of newly formed stars 86% of which have circumstellar disks. X-ray observations show several hundred young stars out of an estimated population of 800 stars. X-ray and infrared images indicate that the youngest stars are concentrated near the center of the cluster.

The Double Cluster NGC 869 and NGC 884 (h & X Persei) are a few light years apart in the constellation of Perseus. The distance from us is approximately 7500 light years. NGC 869 has a solar mass of 3700 and 884 weights in at 2800 solar masses. The latest research shows that both clusters are surrounded with a very extensive halo of stars giving the total mass of the complex of at least 20,000 solar masses. It is a relatively young group, about 12.8 million years old. There are more than 300 blue-white super giants in each cluster. The clusters are Blue-shifted and are approaching Earth at 39 Kilometers per second (24 miles per sec). The hottest main sequence stars are of spectral class B0. The cluster lies within the Perseus arm of the Milky Way galaxy. Our solar system resides within the Orion arm. Therefore, when we look at the cluster we are looking through our local spiral arm and all the way to the next spiral arm outward from the galactic center.

Astronomy Club Officers



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ACL Webmaster
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Club Meeting

Reminder ACL Club meeting Friday January 8th
7:00 Pm On Zoom Video.

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](http://www.sbau.org/#AU_EVENTS_Calendar)

Link to "Heavens Above" web site

[http:// www.heavens-above.com/](http://www.heavens-above.com/)



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

ACL Club Logo

