Website: http://acl.universeii.com April 2, 2021

Astronomy Club of Lompoc
Presents
The Sidereal Times

M45 Cluster(see page 5)

Meeting *News:*

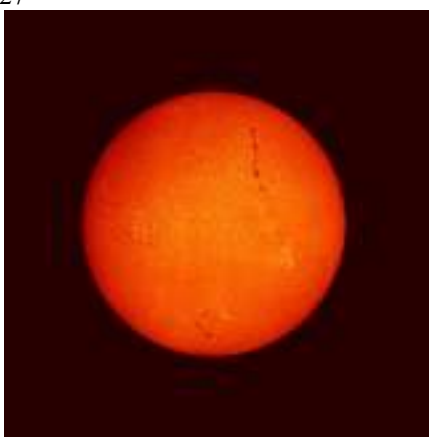
At the March ACL Zoom video meeting we had a fun meeting lots of group interaction on various subjects. Also discussed the possibility of having some limited star parties etc.

.

Reminder: ACL club meeting April 9th is will be held on Zoom video again due to Covid–19 virus

Lunar Calendar

New Moon 12th
Full Moon 27th



Presidents Message

Hello, My Fellow Socially Deprived Skygazers,

We are once again in that time of year: the cusp of a season. I was a bit saddened the other night when I stepped out, as I do every night before closing up the house for the night, to check on the condition of the sky. Orion, to my dismay, was already partially obscured by the hills to the southwest of town after months of reigning boldly above the southern horizon. Then, turning, there was Arcturus, the "Herald of Spring" ablaze high in the east. Yes, each season brings its own astronomical delights that we look forward to across the year. Five hours later, waking way earlier than I had hoped, I stepped out once again and there was Scorpius, that "perfect" constellation, boldly spread in its entirety across the sky; memories of many summer nights dominated by it and its companion Crab brought warmth to the chill air... seriously!

Warmth... we felt a real surge of it at our February Zoom meeting when the subject came up of starting possibly to be able maybe to think about considering plans for actually gathering again given recent projections by those who decide these things. Our discussion led to a very good idea: a members-only barbeque beginning on a mid-afternoon in, once available, one of our nice City Parks. In addition to plenty to eat, we will bring our telescopes for viewing sunspots in the day and whatever else is in the sky once the night falls. NO promises... but it surely felt refreshing to have some confidence to consider the prospects.

So, here's to looking forward as we look upward, friends.

Peace,
Tom

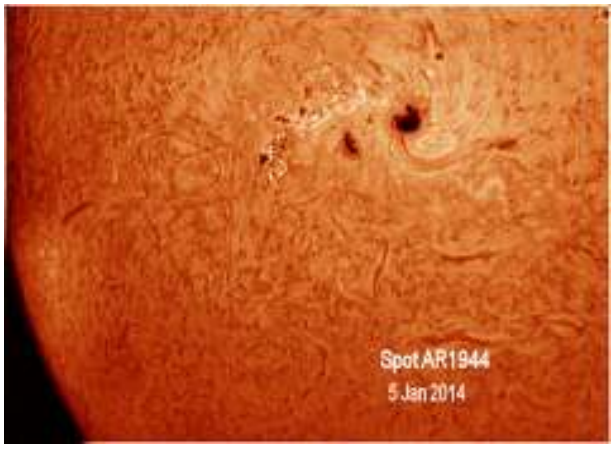
Events

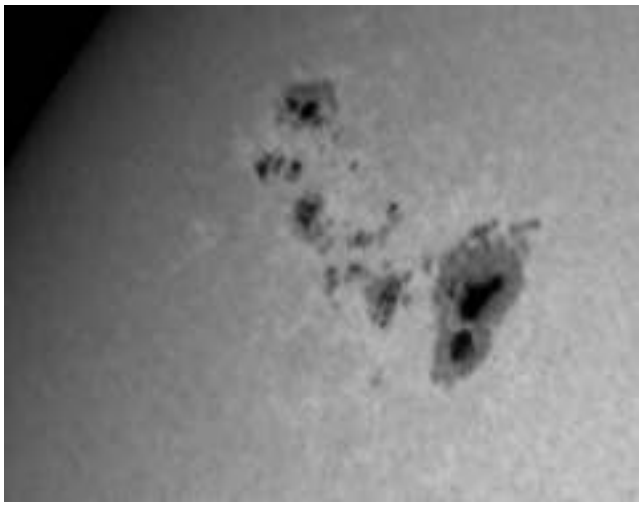
April 3, 10, 17 -***Star Party at the Observatory Cancelled / corona Virus***

Nuts!

April 22 & 23 Lyrids Meteor shower is an average shower usually producing about 20 meteors per hour at its peak. It is produced by dust particles left behind by C/1861 G1 Thatcher. It peaks this year on the night of the 22nd and the morning of the 23rd. These meteors can sometimes produce bright dust trails that last for several seconds. Meteors will radiate from the constellation of Lyra but can appear anywhere in the sky.

April 27 Full Moon Super Moon This phase occurs at 03.33 UTC The Moon will be near its closest approach to the Earth and may look slightly larger and may look slightly larger and brighter than usual.

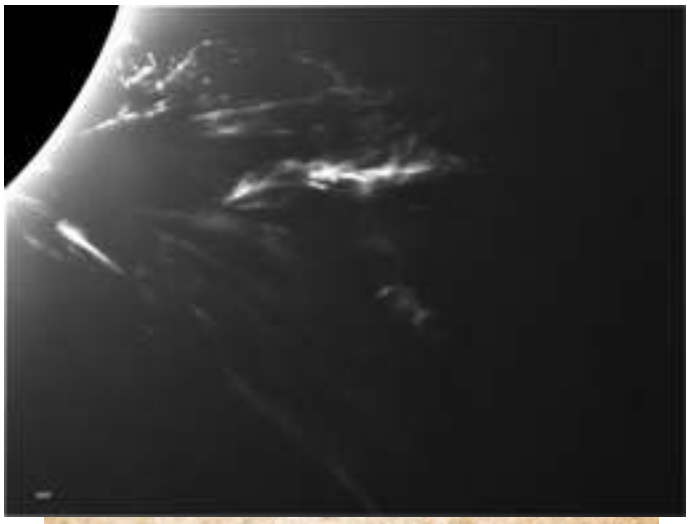


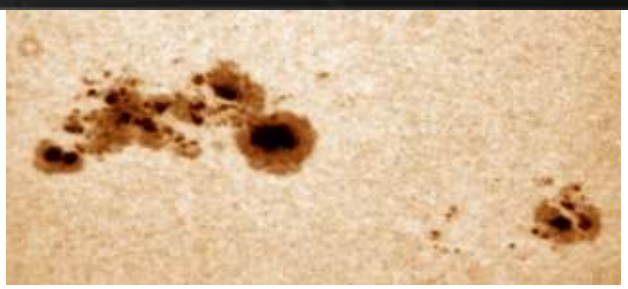


Star party's and Events

March 6, 13, & 20th Star Party at the Observatory cancelled due to Corona virus pandemic.

Nuts!





April 2021 Moon

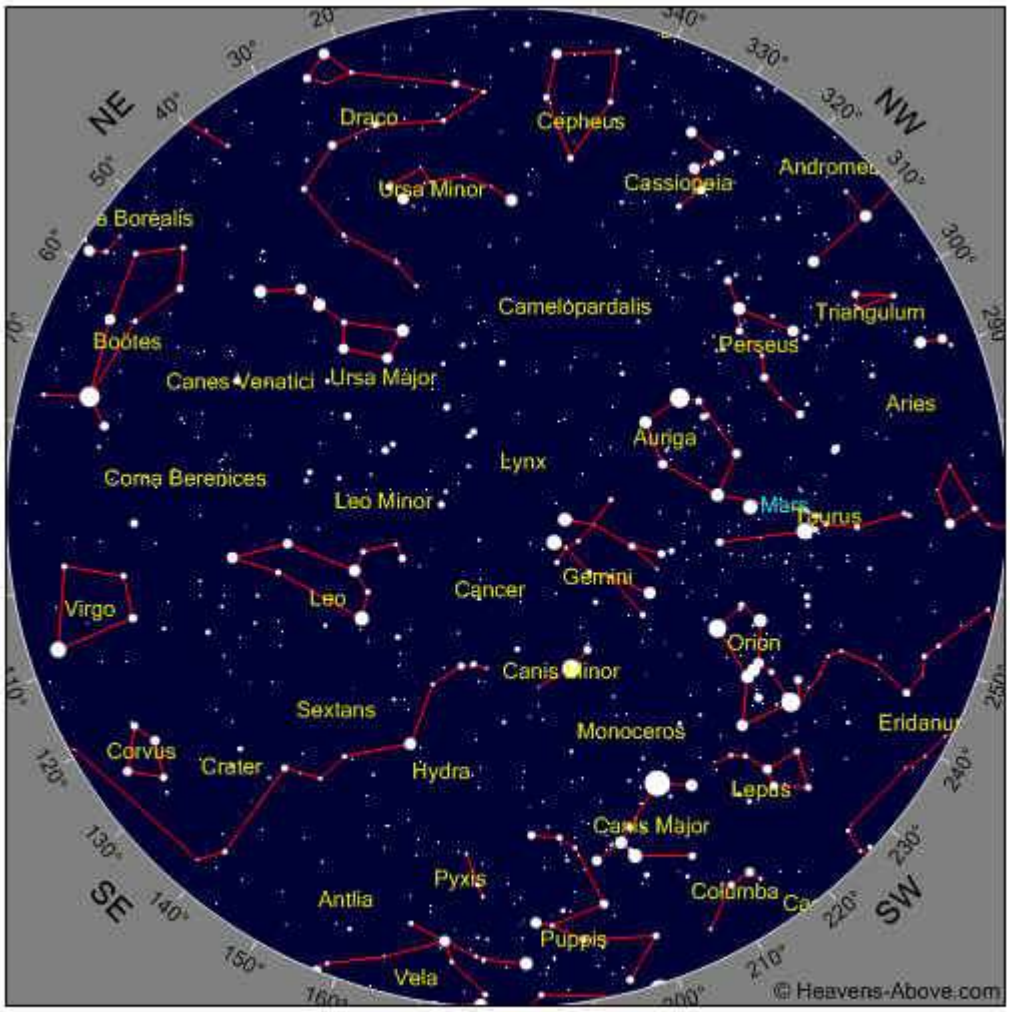
Full 27th , New 12th , Last Quarter 4th, First Quarter 20th .

Moon Facts and folk lore

The surface of the Moon features a huge number of impact craters from comets and asteroids that have collided with the surface over time. Because the Moon lacks an atmosphere or weather these craters remain well preserved. Although research is continuing, most scientists agree that the Moon features small amounts of water. • The Moon is very hot during the day but very cold at night. The average surface temperature of the Moon is 107 degrees Celsius during the day and -153 degrees Celsius at night.

April 2021 Sky

Some Objects of interest, M42, M 35, M36,



Time

Year	2021	Month	4	Day	2	Hour	20	Minute	39

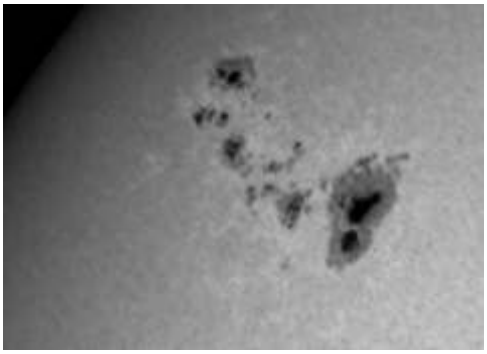


Photo Courtesy of Gary Satterfield

Messier 45 (M45), also known as the Pleiades or Seven Sisters, is a bright open star cluster located in the constellation Taurus the Bull. The Pleiades cluster has an apparent magnitude of 1.6 and lies at an average distance of 444 light years from Earth. The cluster is also known as Melotte 22. It does not have an NGC designation.

Messier 45 contains a number of hot, blue, extremely luminous B-type stars and is one of the nearest star clusters to Earth. It is the easiest object of its kind to see without binoculars. M45 has a core radius of 8 light years and its tidal radius extends to about 43 light years. The cluster is home to more than 1,000 confirmed members, but only a handful of these stars are visible to the naked eye. The total mass of M45 is estimated at about 800 solar masses. The Pleiades cluster occupies an area of 110 arc minutes, about four times the apparent diameter of the full Moon. Up to 14 stars are visible without binoculars in good conditions, with clear skies and no light pollution. The best time of year to observe M45 from northern latitudes is during the winter months, when Taurus constellation rises high in the sky. Because of the cluster's apparent size, the best way to see it is through binoculars and small or wide field telescopes. The names of the nine brightest stars in M45 are taken from Greek mythology and they represent the Pleiades, the Seven Sisters –Asterope, Electra, Merope, Maia, Celaeno, Taygeta and Alcyone– and their parents, Pleione and Atlas. Magnification is only recommended for studying individual stars. The stars in the Pleiades cluster have formed in the last 100 million years and they will stay gravitationally bound to each other for another 250 million years before the cluster disperses as a result of tidal interactions with other objects in the neighborhood. By that point, the cluster will have moved from Taurus to Orion. Messier 45 has a faint reflection nebula surrounding it, named Marie Nebula, after one of the cluster's brightest stars. The nebula is not related to the cluster's formation, but is merely a dust cloud through which the Pleiades stars are currently passing. Like other nebulae in the Pleiades cluster, the Maria Nebula has a different radial velocity than the cluster itself, indicating that the two are unrelated and only crossing paths by chance. Equipment AT8RC on a CGEM mount with a Canon 500D DSLR, 7 min x 36 frames at ISO 800. Darks, Flats and Bias frames. Images Plus for calibration, stacking and DDP, CS2 for final adjustments. 500D DSLR, 7 min x 36 frames at ISO 800. Darks, Flats and Bias frames. Images Plus for calibration, stacking and DDP, CS2 for final adjustments.

For What its Worth

The primary function of a telescope is to gather light and funnel it into the observer's eye. The larger the telescope, the greater the amount of light captured. Light gathering is a function of the area of the objective lens or primary mirror. Thus the aperture or diameter, determines the light grasp of a telescope. For a circular aperture, Area = π r2 , as the aperture is increased, the light grasp increases by the square of the aperture. This means an 8" aperture collects 4 times as much light as a 4" aperture. The 8" aperture has an area of 50 in2 , while the 4" aperture has only 12.5 in2 . How much more light a telescope gathers compared to the unaided eye is determined by the ratio between the light gathering area of the telescope and the light-gathering area of the eye. The aperture of the eye is determined by the size of the pupil. In general, the average pupil will open up to about 7mm in diameter. Note that this means if the beam of light coming out of the telescope eyepiece is larger than the maximum size of the eye, the eye is the limiting factor and effectively reduces the aperture of the telescope. The light gathering area of the 7mm pupil is then 0.06 in2 . For the 8" telescope, this gives a ratio of 50/0.06 = 833, meaning an 8" telescope gathers 833 times more light than the unaided eye. This implies an object seen with the unaided eye will appear more than 800 times brighter through an 8" telescope. It is more complicated than that.
While the previous statement is true for point sources (stars) it is not true for extended objects such as galaxies, nebulas and planets. This is because the light from an extended object is being spread out by the fact that the telescope is magnifying the image. So magnification factors into the equation; light is lost in proportion to the square of the magnification. There is a minimum magnification allowed by the limiting size of the pupil as described above.

This works out such that the image through a telescope can never be brighter than the image as seen with the unaided eye. This seems counterintuitive. However, with optimum magnification (described below) the image will not be significantly dimmer and will be considerably larger and more detailed. An additional advantage of aperture that comes into play when magnification is considered is image brightness at a given magnification. Through a given telescope, doubling the magnification reduces the brightness of an extended object four fold. Doubling the aperture of a telescope makes the image four times brighter at the same magnification, or allows twice the magnification to be used while retaining the same image brightness. The direct ratio between telescope brightness and unaided eye brightness still holds for point sources. For this reason, stars will appear brighter than they do with the eye, independent of magnification.

The magnitude scale used to describe the brightness of stars is a logarithmic scale. Each magnitude is a difference of 2.5 in brightness. A 1st magnitude star is 2.5 times brighter than a 2nd magnitude star. A 2nd magnitude star is 2.5 times brighter than a 3rd magnitude star. And the difference between a 1st magnitude star and 3rd magnitude star is 2.5 x 2.5 = 6.25 times. A telescope that can make stars appear 833 times brighter than the unaided eye will allow stars 7.3 magnitudes fainter to be seen. If you can see 6th magnitude stars with the unaided eye, you should be able to see 13th magnitude stars through an 8" telescope. In actuality, fainter stars can be seen. This is because of the decrease in brightness of the sky background seen through the telescope. Sky brightness is also a function of magnification, the sky growing darker as the power is increased. At a magnification of 100x, the sky background appears 2.7 magnitudes darker than without the telescope, which translates to an extra 2 magnitudes of reach, allowing 15th magnitude stars to be seen. A darker sky allows fainter stars to be seen with the unaided eye will of course allow even fainter stars to be seen through the telescope.

Astronomy Club Officers

President
Tom Gerald

Vice President &
Treasurer
Jana Hunking

ACL Support Personnel

ACL News letter Editor
Serf / Minion Vahan Yeterian

ACL Webmaster
Serf / Minion David McNally

Club Meeting

Reminder Club meeting Apr 9th 7:00 Pm via Zoom video conferencimg.

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

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

When I trace at my pleasure the windings to and fro of heavenly bodies, I no longer touch Earth with my feet, I stand in the presence of Zeus himself and take my fill of Ambrosia.
(Ptolemy 100 – 170 AD)

ACL Club Logo