

Astronomy Club of Lompoc Presents The Sidereal Times



Chamaeleon Cloud (see page 5)

Meeting News:

At the March ACL meeting we had general discussions on future presentations by club members. Jana gave a presentation on the Atacama desert observatorys in Chili.

Reminder: ACL club meeting April 14th will be held at Manzanita School Teachers Lounge 7:00 Pm.

Masks!



Lunar Calendar

New Moon 20th

Full Moon 6th

Photos in this issue are from the Hubble telescope



What did one Tectonic plate say when he bumped into The other?....."Sorry my Fault".

Presidents Message

For our March meeting, the day was very stormy, but by nightfall it had quit raining, much to the delight of the members that had decided to drive out to the meeting. The storm did keep several members from venturing out of which we can all understand.

Jana gave her presentation on the set-up of 66 **ALMA radio telescopes** on the high plateau of the Atacama Desert. What was so interesting and unique about this project is that it was undertaken by several countries, in several different languages over a span of 30 years of planning and 10 years of building the scopes, and transport machines - all constructed in several other countries and had to be driven then shipped to Chile. The extreme altitude of over 16,000 feet brought new challenges to the workers who needed Oxygen to enable them to survive at the atmosphere that was half of what we have at sea level. All the machines struggled in the lack of O2 and the extreme cold dry air where rain has not fallen for years!

Vahan and Peter D. helped explain more of the reasoning why the mirrors had to be kept so cold, (-450 degrees F) so the surface could receive the radio signals best, without interference that comes with warmer conditions.

A new Comet (ATLAS) that could be appearing best in Oct. of this year - could be very bright and exciting to observe. First seen at Palomar Observatory in Ca, and in China, and at the same time in South Africa by the Asteroid network. Something to look forward to in the months ahead.

The **April Presentation** will be done by Steve Ball and Jana on the **History of our club and the big Move of our observatory** from Ken Adam Park to the present location near Maple HS. It will be complete with photos albums and perhaps a short video also if we have time at that meeting. We hope to see a large turnout for this informative talk.

Hoping for Clear Skies! Jana

Events

April 15, 22, 29 -*Star Party at the Observatory*



Yes!

April 20 Hybrid Solar eclipse occurs when the moon is almost too close to the Earth to completely block the Sun. This type of eclipse will appear as a total eclipse in some parts of the world and will appear as annular to others. The eclipse path will begin in the southern Indian ocean and move across parts of western Australia and southern Indonesia. A partial eclipse will be visible throughout Indonesia and Australia.

April 22 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 comet C/1861 G1 Thatcher. The shower peaks this year on the night of the 22nd and 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 22 Mercury at Greatest Eastern Elongation of 19.5° from the Sun. This is the best time to observe Mercury since it will be at its highest point in the evening sky. Look for Mercury low in the Western sky just after sunset.



Star party's and Events

March 11, 18, 25 Star Party at the Observatory cancelled again due to weather.



April 2023 Moon



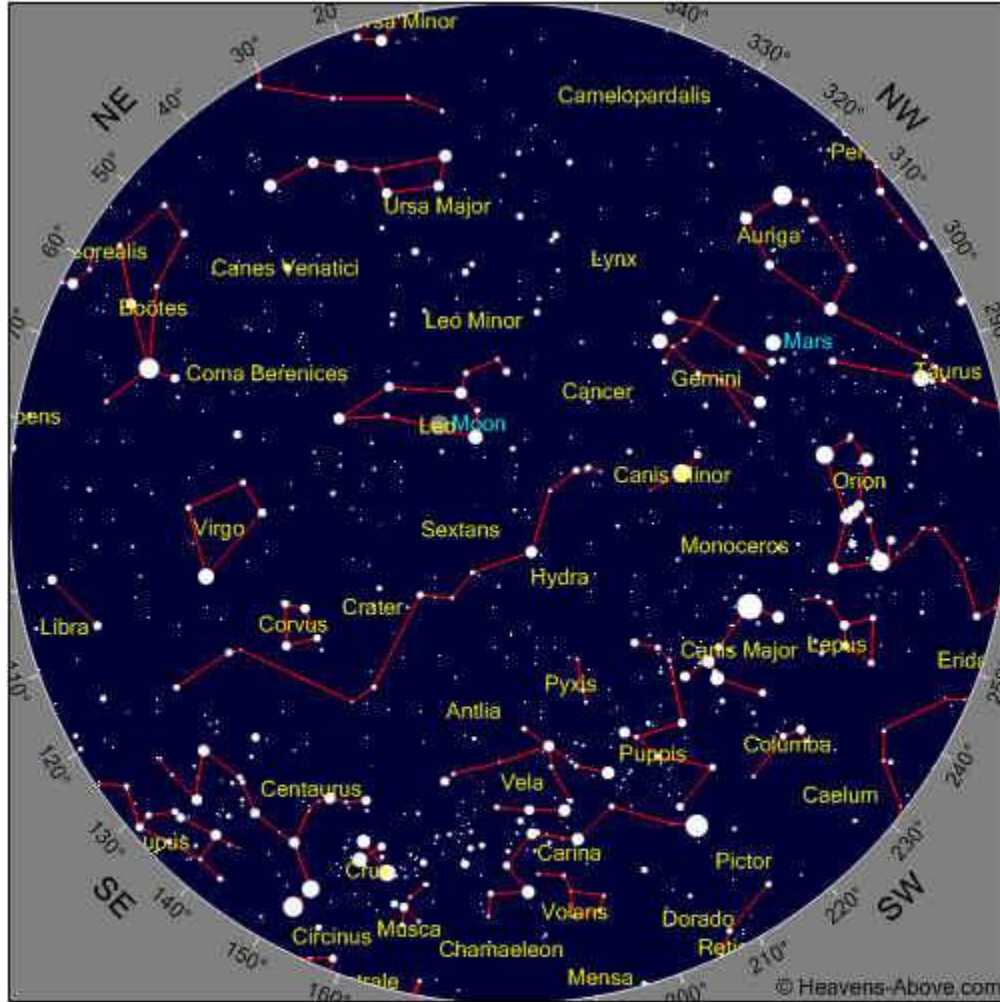
Full 6, New 20, Last Quarter 13, First Quarter 27

Moon Facts and folk lore

At full moon and new moon, the Sun, Earth and moon are lined up, producing the higher than normal tides (called spring tides, for the way they spring up). When the moon is at first or last quarter, smaller neap tides form. The Moon's 29.5-day orbit around Earth is not quite circular. When the moon is closest to Earth (called its perigee), spring tides are even higher, and they're called perigean spring tides.

April 2023 Sky

Some Objects of interest, Mars, Moon



Time

Year	2023	Month	4	Day	2	Hour	21	Minute	00
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Photo Courtesy of NASA



This NASA Hubble Space Telescope image captures one of three segments that comprise a 65-light-year wide star-forming region named the Chamaeleon Cloud Complex. The segment in this Hubble composite image, called Chamaeleon Cloud I (Cha I), reveals dusty-dark clouds where stars are forming, dazzling reflection nebulae glowing by the light of bright-blue young stars, and radiant knots called Herbig-Haro objects. Herbig-Haro objects are bright clumps and arcs of interstellar gas shocked and energized by jets expelled from infant "protostars" in the process of forming. The white-orange cloud at the bottom of the image hosts one of these protostars at its center. Its brilliant white jets of hot gas are ejected in narrow torrents from the protostar's poles, creating the Herbig-Haro object HH 909A. The cross-like spikes around bright stars in the image occur when light waves from a very bright point source (like a star) bend around Hubble's cross-shaped struts that support the telescope's secondary mirror. As the light waves pass these struts, they coalesce on the other side, creating the bright, spikey starburst effect we see. Hubble studied Cha I as part of a search for extremely dim, low-mass brown dwarfs. These "failed stars" lie somewhere in size between a large planet and a small star (10 to 90 times the mass of Jupiter), and do not have enough mass to ignite and sustain nuclear fusion in their cores. Hubble's search found six new low-mass brown dwarf candidates that are helping astronomers better understand these objects.



For What its Worth

Hubble Space Telescope (HST), the first sophisticated optical observatory placed into orbit around Earth. Earth's atmosphere obscures ground-based astronomers' view of celestial objects by absorbing or distorting light rays from them. A telescope stationed in outer space is entirely above the atmosphere and receives images of much greater brightness, clarity, and detail than do ground-based telescopes with comparable optics.

After the U.S. Congress had authorized its construction in 1977, the Hubble Space Telescope (HST) was built under the supervision of the National Aeronautics and Space Administration (NASA) of the United States and was named after Edwin Hubble, the foremost American astronomer of the 20th century. The HST was placed into orbit about 600 km (370 miles) above Earth by the crew of the Space Shuttle Discovery on April 25, 1990.

The HST is a large reflecting telescope whose mirror optics gather light from celestial objects and direct it into two Cameras and two spectrographs (which separate radiation into a spectrum and record the spectrum). The HST has a 2.4-metre (94-inch) primary mirror, a smaller secondary mirror, and various recording instruments that can detect visible, ultraviolet and infrared light. The most important of these instruments the wide-field planetary camera can take either wide-field or high-resolution images of the planets and of galactic and extragalactic objects. This camera is designed to achieve image resolutions 10 times greater than that of even the largest Earth-based telescope. A faint-object camera can detect an object 50 times fainter than anything observable by any ground-based telescope; a faint-object spectrograph gathers data on the object's chemical composition. A high-resolution spectrograph receives distant objects' ultraviolet light that cannot reach Earth because of atmospheric absorption.

About one month after launch, it became apparent that the HST's large primary mirror had been ground to the wrong shape owing to faulty testing procedures by the mirror's manufacturer. The resulting optical defect, spherical aberration, caused the mirror to produce fuzzy rather than sharp images. The HST also developed problems with its gyroscopes and with its solar-power-arrays. On December 2–13, 1993, a mission of the NASA space shuttle Endeavour sought to correct the telescope's optical system and other problems. In five space walks, the shuttle astronauts replaced the HST's wide-field planetary camera and installed a new device containing 10 tiny mirrors to correct the light paths from the primary mirror to the other three scientific instruments. The mission proved an unqualified success, and the HST soon began operating at its full potential, returning spectacular photographs of various cosmic phenomena.

Three subsequent space shuttle missions in 1997, 1999, and 2002 repaired the HST's gyroscopes and added new instruments including a near-infrared spectrometer and a wide-field camera. The final space shuttle mission to service the HST, intended to install a new camera and an ultraviolet spectrograph, was launched in 2009. The HST is scheduled to remain operational through at least 2021, after which it is expected to be replaced by the James Webb Space Telescope equipped with a mirror seven times larger than that of the HST.

The HST's discoveries have revolutionized astronomy. Observations of Cepheid variables in nearby galaxies allowed the first accurate determination of Hubble's constant, which is the rate of the universe's expansion. The HST photographed young stars with disks that will eventually become planetary systems. The Hubble Deep Field, a photograph of about 1,500 galaxies, revealed galactic evolution over nearly the entire history of the universe. Within the solar system, the HST was also used to discover Hydra and Nix, two moons of the dwarf planet Pluto.



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(New Zealand)



Club Meeting

Reminder Club meeting April 14th 7:00 Pm
Manzanita School Teachers lounge. Masks!
Star Parties (as always weather permitting)

Other Astronomy Club Meetings and links to other sites.

<http://www.centralcoastastronomy.org/>

[Astronomy Club of Lompoc \(ACL\) \(universeii.com\)](http://www.universeii.com)

[Sunrise and sunset times in Lompoc \(timeanddate.com\)](http://www.timeanddate.com)

[Moonrise, Moonset, and Moon Phase in Lompoc \(timeanddate.com\)](http://www.timeanddate.com)

[http:// www.sbau.org/#AU_EVENTS](http://www.sbau.org/#AU_EVENTS) Calendar

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

<https://spaceweather.com>

<https://www.space.com>

<https://skymaps.com>

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



ACL Club Logo

