

Astronomy Club of Lompoc Presents The Sidereal Times



M101 Galaxy (see page 5)

Meeting News the July meeting was held on Zoom Video. Discussed ways to conduct star party's. Dr. Bassi presentation was very informative.

Reminder: ACL club meeting Friday August 13th Is to be conducted on Zoom video. 7:00 Pm.



Lunar Calendar:

New Moon 19th
Full Moon 3rd

Outreach for School



Presidents Message

Hello, All You Celestial Princes and Princesses of the Rocket Region,

Whenever I go for a stroll in my neighborhood and turn north off Olive Ave onto H Street, I am greeted by a political-styled banner in the front window of the corner home: "GIANT METEOR 2020... Just End It Already." I am, of course struck by the astronomical humor and the play off the impending election campaigns. Of course, its Covid-era joke is rife with cynical reality: 2020 has truly been surreal, so just hit us with a dinosaur-killer rock and get it over!

Yes, so it goes for us in ACL during this wacko year: we get finally, not a great comet, but certainly a good one, a once-in-6000-years passing of earth by Comet Neowise, and what happens? Though readily visible through binoculars, we have to leave town [and the persistent marine layer] to see this lovely far traveler.

THEN, top off that frustration with an attack on our beloved Observatory by a vandal with, apparently no more purpose than to inflict damage to the door. They were successful in that, but quick response by Vahan and Edmund [and good work by his son, David], had VAFB Security on the scene and the wrecked knob replaced, and improved upon, the very next day.

Actually, we got a gift from this offense: a good citizen found and reported the damage, an act that reminds us of the goodness in humankind. If any of you know Heather Criscione, please extend to her your thanks and respect on behalf of the Astronomy Club of Lompoc. Upon seeing the damage, Heather immediately made the door as secure as possible; then, by way of our website [kudos to Dave McNally for its user friendliness], she alerted Jana who passed on the news to Vahan and Dave.

Our other bright spot in July: Dr. Joseph Bassi's excellent contribution to our Zoom meeting. His knowledge of the long evolution of the Space Force was enlightening and cleared up any questions about the logic of creating this separate military branch. We look forward to his return in the Fall for his program about the Parker Space Probe and what it is already revealing about our Sun.

Skyward,
Tom

Events

August 11, 12 Perseids Meteor shower is one of the best Meteor showers to observe producing up to 50 meteors per/Hr at its peak. It is produced by comet Swift-Tuttle. The Perseids are famous for producing a large number of bright meteors. It peaks this year on the night of the 11th and morning of the 12th. Meteors will radiate from the constellation of Perseus but can appear anywhere in the sky.

August 13th Venus at greatest Western elongation at 45.8 deg from the Sun. This is the best time to view Venus since it will be at its highest point above the horizon in the morning sky. Look for the bright planet in the Eastern sky before sunrise.

August 15th *Star Party at the Observatory.* Cancelled, Covid-19.



Uugh!

August 22nd *Star Party at the Observatory.* Cancelled, Covid-19.



Uugh!

August 29th *Star Party at the Observatory.* Cancelled Covid-19.



Uugh!

After party 2020



Star party's and Events

July 11th Star Party @ observatory, Cancelled Covid-19.



Nuts!

July 18th Star Party @ the Observatory Cancelled Covid-19.



Nuts!

July 25th Star Party @ the Observatory Cancelled Covid-19.



Nuts!

Outreach for YMCA



Display day Local Church



August 2020 Moon



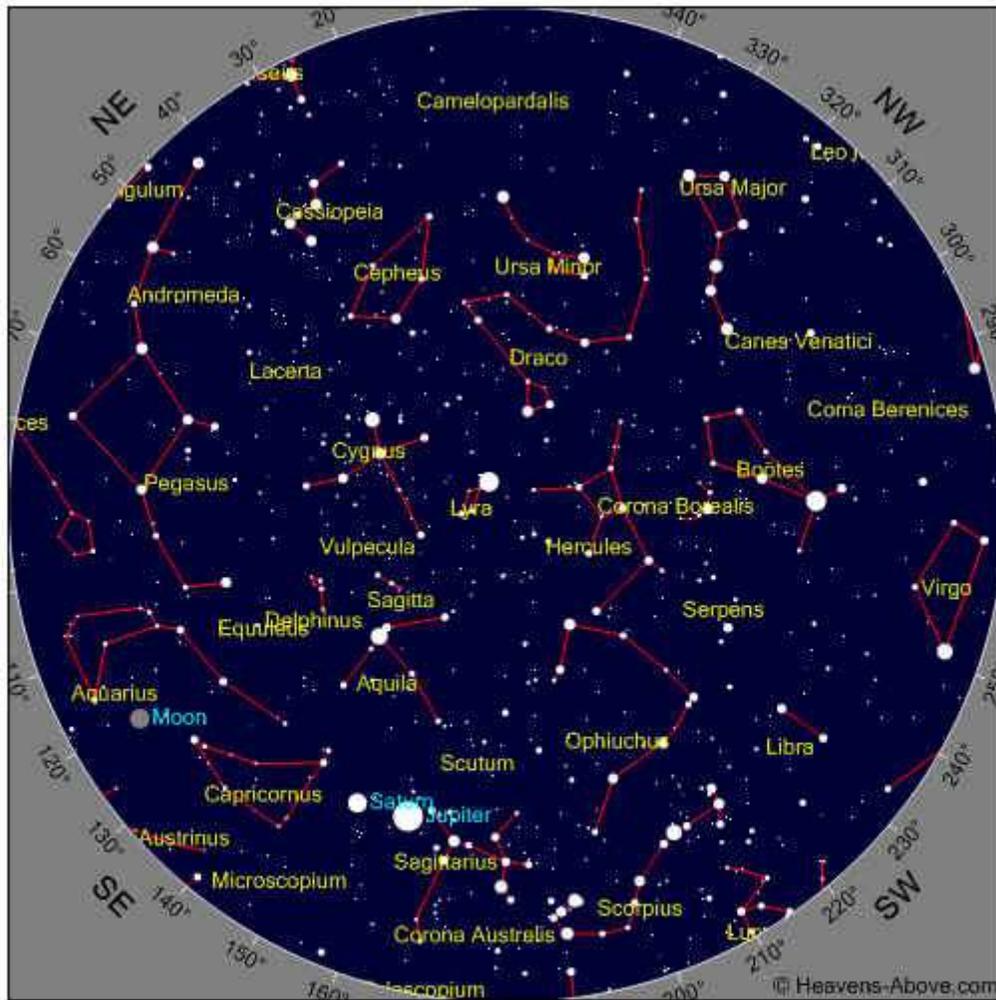
Full 3rd New 19th, Last Quarter 11th, First Quarter 25th

Moon Facts and Folklore

The moon's rate of rotation is uniform but its rate of revolution is not, so we're able to see just around the edge of each limb from time to time. Put another way, the two motions do not keep perfectly in step, even though they come out together at the end of the month. We call this effect libration of longitude.

August 2020 Sky

Some Objects of interest, M13, M27, M57



Time

Year	2020	Month	8	Day	4	Hour	22	Minute	25
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Meeting time



New year party



Photo Courtesy Vahan Yeterian



Mssier 101, NGC 5457 also known as Pinwheel Galaxy is a face on spiral galaxy distanced at 21 million light years in the constellation of Ursa Major (big Dipper). The pinwheel galaxy is approximately 170,000 light years in diameter which makes it 70 percent larger than our own galaxy, the Milky Way. It has a disk mass of 100 billion solar masses along with a bulge of 3 billion solar masses.. A remarkable property of this galaxy is the huge and extremely bright H II regions of which 3000 can be seen on photographs (not necessarily on my photo). H II regions usually accompany enormous high density molecular hydrogen gas contracting under their own gravitational force where stars form. H II regions are ionized by large numbers of extremely bright hot young stars. M101 is asymmetrical on one side. It is thought that in the past a near collision with another galaxy and the associated gravitational tidal forces caused the asymmetry. In addition, the encounter amplified the density waves in the spiral arms. There have been 4 recorded supernovae the last one in August 24 2011. Image capture was accomplished using a 12 inch SCT and DSI 2 CCD camera, exposure 20 frames combined at 15 seconds per frame (5 minutes).

For What its Worth

Kupier Belt a brief account

Dr. Mike Brown is a professor of planetary astronomy at Caltech. We asked him to help us explain this unusual region of our solar system. Soon after Pluto was discovered in 1930, astronomers began to theorize that Pluto was not alone in the outer Solar System. In time, they began to postulate the existence of other objects in the region, which they would discover by 1992. In short, the existence of the Kuiper Belt – a large debris field at the edge of the Solar System was theorized before it was ever discovered. The Kuiper Belt (also known as the Edgeworth–Kuiper belt) is a region of the Solar System that exists beyond the eight major planets, extending from the orbit of Neptune (at 30 AU) to approximately 50 AU from the Sun. It is similar to the asteroid belt, in that it contains many small bodies, all remnants from the Solar System's formation but unlike the Asteroid Belt, it is much larger – 20 times as wide and 20 to 200 times as massive: The Kuiper Belt is a collection of bodies outside the orbit of Neptune that, if nothing else had happened, if Neptune hadn't formed or if things had gone a little bit better, maybe they could have gotten together themselves and formed the next planet out beyond Neptune. But instead, in the history of the solar system, when Neptune formed it led to these objects not being able to get together, so it's just this belt of material out beyond Neptune. Shortly after discovery of Pluto, astronomers began to ponder the existence of a Trans-Neptunian population of objects in the outer Solar System. The first to suggest this was Fredrick C. Leonard, who began suggesting the existence of "ultra-Neptunian bodies" beyond Pluto that had simply not been discovered yet. That same year, astronomer Armin O. Leuschner suggested that Pluto "may be one of many long-period planetary objects yet to be discovered." In 1943, in the *Journal of the British Astronomical Association*, Kenneth Edgeworth further expounded on the subject. According to Edgeworth, the material within the primordial solar nebula beyond Neptune was too widely spaced to condense into planets, and so rather condensed into a myriad of smaller bodies. In 1951, in an article for the journal *Astrophysics*, that Dutch astronomer Gerard Kuiper speculated on a similar disc having formed early in the Solar System's evolution. Occasionally one of these objects would wander into the inner Solar System and become a comet. The idea of this "Kuiper Belt" made sense to astronomers. Not only did it help to explain why there were no large planets further out in the Solar System, it also conveniently wrapped up the mystery of where comets came from. A Canadian team of astronomers ran a number of computer simulations and determined that the Oort cloud could not account for all short-period comets. the simulations matched observations.

.In 1988 astronomers referred to the hypothetical region beyond Neptune as the "Kuiper Belt". While this has remained the official name, astronomers sometimes use the alternative name Edgeworth-Kuiper belt to credit Edgeworth for his earlier theoretical work. There have been more than a thousand objects discovered in the Kuiper Belt, and it's theorized that there are as many as 100,000 objects larger than 100 km in diameter. Given to their small size and extreme distance from Earth, the chemical makeup of KBOs is very difficult to determine.. However, spectrographic studies conducted of the region since its discovery have generally indicated that its members are primarily composed of ices: a mixture of light hydrocarbons (such as methane), ammonia, and water ice – a composition they share with comets. Initial studies also confirmed a broad range of colors among KBOs, ranging from neutral grey to deep red. This suggests that their surfaces are composed of a wide range of compounds, from dirty ices to hydrocarbons. In 1996, Robert H. Brown et al. obtained spectroscopic data on the KBO 1993 SC, revealing its surface composition to be markedly similar to that of Pluto, as well as Neptune's moon Triton, possessing large amounts of methane ice. Water ice has been detected in several KBOs, including 1996 TO66, 38628 Huya and 20000 Varuna. In 2004, Mike Brown et al. determined the existence of crystalline water ice and ammonia hydrate on one of the largest known KBOs, 50000 Quaoar. Both of these substances would have been destroyed over the age of the Solar System, suggesting that Quaoar had been recently resurfaced, either by internal tectonic activity or by meteorite impacts. The fact that surveys of other solar systems indicate that our Solar System isn't unique. Since 2006, there have been other "Kuiper Belts" (i.e. icy debris belts) discovered around nine other star systems. These appear to fall into two categories: wide belts, with radii of over 50 AU, and narrow belts (like our own Kuiper Belt) with radii of between 20 and 30 AU and relatively sharp boundaries. According to infrared surveys, an estimated 15-20% of solar-type stars are believed to have massive Kuiper-Belt-like structures. Most of these appear to be fairly young, but two star systems – HD 139664 and HD 53143, which were observed by the Hubble Space Telescope in 2006 – are estimated to be 300 million years old. Vast and unexplored, the Kuiper Belt is the source of many comets, and is believed to be the point of origin for all periodic or short-period comet (i.e. ones with an orbit lasting 200 years or less). The most famous of these is Halley's Comet, which has been active for the past 16,000–200,000 years. We call it a belt, but it's a very wide belt. It's something like 45 degrees in extent across the sky – this big swath of material that's just been churned and churned by Neptune. And these days, instead of making a bigger and bigger body, they're just colliding and slowly grinding down into dust. If we come back in another hundred million years, there'll be no Kuiper Belt.

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Club Meeting

Reminder ACL Club meeting August 13th 7:00 Pm
Zoom video meeting.

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/)

The web site link below will take you to some
Great Milky Way interactive images and how
It was developed. (Type it in the search box.)

<http://skysurvev.org/>

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

ACL Club Logo

