

# Astronomy Club of Lompoc Presents The Sidereal Times



Xmas tree cluster (see page 5)

### Meeting News:

At the January ACL meeting we talked about supporting Astronomy Night at Clarence Ruth School. Also members giving a presentation on an astronomy subject of their choice.

**Reminder: ACL club meeting Feb 10<sup>th</sup> will be held at Manzanita School Teachers Lounge 7:00 Pm. Masks!**



### Lunar Calendar

New Moon 20<sup>th</sup>

Full Moon 5<sup>th</sup>

*In this ACL issue photos depict various functions & activities of the Club. They are in no special order and vary in years since 2012.*



### Presidents Message

Well, our first ACL Meeting of 2023, got off to a great start with 12 persons attending the meeting. We welcomed back a new member, Steve Ball, that used to be very active in our club years ago . A potential new member, Julie Levy, came to the meeting and we hope she will be back in February.

Our first Outreach of the year was on Thursday Jan. 19<sup>th</sup> at Clarence Ruth Elementary School in Lompoc. We had some glitches with equipment but in general it turned out to be a good night of viewing Astronomy with mostly clear skies for the nearly 100 enthusiastic students and parents that came out on the chilly night. It seemed that all were impressed and enjoyed Vahan's Astronomy Photos from his laptop- projected on a screen in Wendy Culver's classroom. These amazing photos were either taken by him, or other ACL members.

The students were divided into 3 groups attending different sessions. In another classroom students worked on their own artwork based on what they had seen that night in astronomy.

Tom had Jupiter in his scope which, of course, wowed the students whom most had never seen this planet in a close view. He also impressed the groups with his knowledge about and pointing out the constellations planets and certain visible stars especially in Orion. I must admit, that I had trouble with my scope, and could never get it going to help with the program. So I am very thankful for Tom for taking over the outside presentations.

Vince's Planetarium brought over by him from Allen Hancock College in Santa Maria was a big hit even though the presentation did not go as planned due to technical difficulties in the software. Just the presence of a 15 foot blow-up dome with a pressure air lock entrance wowed the students who got to enter and experience that structure and learned how it worked. Louise Gray was a big help in regulating the students one at a time going through the entrance. Thanks again to these Members for helping make the night a Success !

Hoping for Clear Skies! Jana

## Events

### Feb 11, 18, 25 -Star Party at the Observatory



Yes!

**Feb 5** Full Moon, the Moon will be located on the opposite side of Earth as the Sun and its face will be fully illuminated. This phase occurs at 18:30 UTC. This Full Moon was known by early native American tribes as the Snow Moon because the heaviest snows usually fell during this time of year. Since hunting is difficult this Moon has also been known by some tribes as the Hunger Moon.

**Feb 20** The Moon will be located on the same side of the Earth as the Sun and will not be visible in the night sky. This phase occurs at 07:08 UTC. This is the best time of month to observe faint objects such as galaxies and star clusters because there is no Moonlight to interfere.



## Star party's and Events

**Jan 19, 21, 28** Star Party at the Observatory cancelled due to weather.





## February 2023 Moon



Full 5<sup>th</sup> , New 20<sup>th</sup> , Last Quarter 13<sup>th</sup> , First Quarter 27<sup>th</sup> .

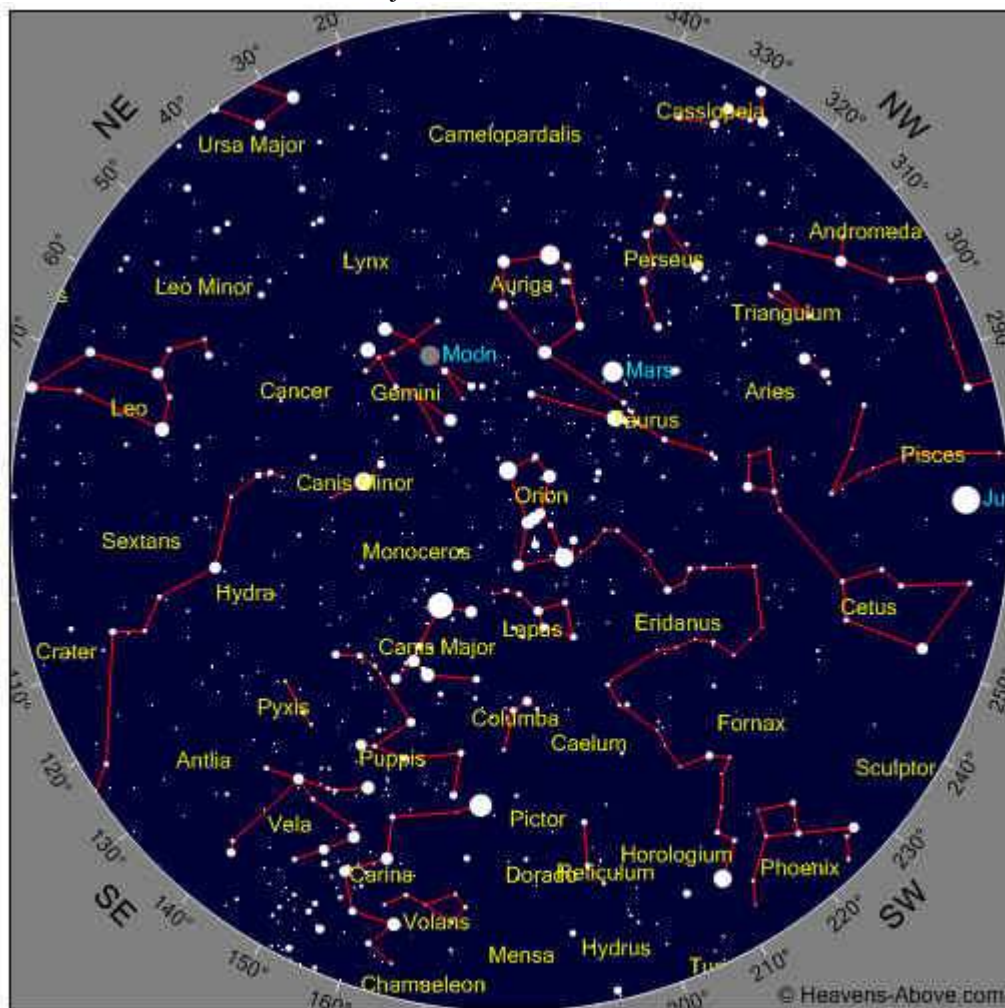
### Moon Facts and folk lore

The full Moon on February 5th has been known by some Native American tribes as the Full Hunger Moon since the harsh winter weather made hunting difficult.

Long ago, the Earth's gravitational effects slowed the moon's rotation about its axis. Once the moon's rotation slowed enough to match its orbital period (the time it takes the moon to go around Earth) the effect stabilized. Many of the moons around other planets behave similarly.

# February 2023 Sky

Some Objects of interest, M42, M1, Mars



## Time

Year	2023	Month	2	Day	2	Hour	21	Minute	2
------	------	-------	---	-----	---	------	----	--------	---



Photo Courtesy of my Friend Steve



The Christmas Tree Cluster is a young open cluster of stars embedded in a diffuse nebula the constellation Monoceros. It is part of the NGC 2264 region along with the Cone nebula and the Fox Fur Nebula, and belongs to the Monoceros OB1 association, a loose association of very young stars located in the Orion arm of the Milky Way. The cluster was named for its triangular shape formed by a cluster of very young stars that look like a tree in visible light. It is located in the northern part of NGC 2264 Just above the cone nebula. The 7<sup>th</sup> magnitude member HD 47887 sits just above the tip of the cone and the bright variable star S Monocerotis located slightly to the north and marks the trunk of the Christmas tree. The apex of the tree is located at the Cone nebula. S Monocerotis lie at the base of the cluster and is a bright irregular eruptive variable star that varies from 4.62 to 4.68. It is a multiple star system with a hot massive O-type main sequence dwarf as the primary component. The stars in the cluster were formed recently from the surrounding molecular cloud. The cluster contains more than 600 members that are from 1 to 4 million years old including several dozen OB stars and more than 400 lower mass members.

Right ascension: 06h 40m 58s

Declination: +09° 53' 42"

Apparent magnitude: 3.9

Distance 2600 light years





## *For What its Worth*

### *Kuiper 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 Freckrick 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 their 1988 paper, Tremaine and his colleagues referred to the hypothetical region beyond Neptune as the "Kuiper Belt", apparently due to the fact that Fernández used the words "Kuiper" and "comet belt" in the opening sentence of his paper. 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 left.



## *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 Feb 10<sup>th</sup> 7:00 Pm  
Manzanita School Teachers lounge. Masks!

## Star Parties (as always weather permitting)

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)

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



## *ACL Club Logo*

