

Astronomy Club of Lompoc Presents The Sidereal Times



Eagle Nebula(see page 5)

Meeting News At the October meeting guest speaker Dr. Bassi gave a presentation on the Solar probe.

Notice ACL club meeting Friday November 13th will be held via Zoom Video 7:00 Pm.



Lunar Calendar:

New Moon 15th
Full Moon 30th



Presidents Message

Hello, Skywatchers,

Following on my practice confessed last month, I look back to a year ago and see that work was begun by a hearty group on “Phase One” of installing our upgraded solar panels at the Observatory and that we had a deliciously good time at Thompson Park, delighting in Vahan’s tri-tip grilling skills and the contributions of sides and good conversation by the rest of us. A year later, the solar panels are working great at our Covid-closed Observatory and we long to gather together again over food and sharing stories! 2020... what a frustrating year!

There was this jewel in last November’s President’s Letter: “...looking forward to choosing our ACL logo from among all the ones...submitted.” My, what a year can bring: the ACL logo that evolved directly from your input now graces mugs that we all use. What an out-of-this-world way to start a day!

Speaking of off-planet experiences: Mars made its much-heralded closest approach since 2003 during October and-- low and behold-- the clouds cleared out for a few nights surrounding opposition. I was able to spend several hours gazing at indistinct, but obvious variations in its terrain and pick out evidence of polar ice. This despite a thin haze, “unstable,” cooling night air, and the pervasive glare of lights from town. I was afforded the best study of Mars I have had and felt a bit of kinship with Percival Lovell.

Another observing personal first for me came two nights later when the shadow of Jupiter’s moon Io was slated to transit the big planet. While I failed to detect the shadow, I was treated to Io’s emergence from the bright light of Jupiter, a tiny “star” that popped from the left side and moved quickly into the blackness beyond. The next night the haze became thicker, then the night after that we were back to solid overcast.

Our November meeting: Dr. Joe Bassi returns to bring us up to date on satellite studies being conducted around our Sun. Also, we will nominate officers. Per your request, I will continue as president and Jana will continue as secretary/treasurer. Per MY request: we need a nominee for Vice President [aka: person in training to become president]; let’s see some names put forth, and focus on our future.

See you on Zoom, on the 13th!

Skyward,
Tom

Events

Nov 7th 14th 21st *Star Party's at the Observatory cancelled due to Corona pandemic..*



Nuts!

Nov 10th Mercury at greatest Western Elongation at 19.1 degrees from the Sun. Best time to view since it will be at highest point in the morning sky just before sunrise.

Nov 11 & 12 Northern Taurids meteor Shower is a long running Meteor shower producing only about 5 to 10 meteors per hour. It is famous for producing higher than normal percentage of bright fireballs. It is produced by dust grains left behind by Asteroid 2004 IG-10. Meteors will radiate from the constellation of Taurus but can appear anywhere in the sky.

Nov 16 & 17 Leonids Meteor Shower is an average shower producing up to 15 meteors per hour at its peak. The shower is produced by dust grains left over by comet Temple-Tuttle. Meteors will radiate from constellation Leo but can appear anywhere in the sky.

Nov 30th Penumbral Lunar Eclipse occurs when the Moon passes through Earth's partial shadow, penumbra. During this type of eclipse the moon will darken slightly but not completely. The eclipse will be visible throughout most of North America, the Pacific Ocean and northeastern Asia including Japan.



Star party's and Events

Oct 10th 17th 24th *Star Party's @ the Observatory. Cancelled due to Corona pandemic..*



Nuts!

Observatory door repaired and paint.



November 2020 Moon



Full 30th , New 15th , Last Quarter 8th , First Quarter 22nd

Moon Facts and Folklore

.Perhaps the most important effect of the Moon is the way it stabilizes our rotation. When the Earth rotates it wobbles slightly back and forth on its axis. It's like a top which doesn't spin in a vertical position on the table or on the floor. But without the Moon we'd be wobbling much more. (precession 1° every 72 years)

Photo courtesy Craig Fair



Eagle Nebula Messier 16 is an amazing sight seen in a large telescope. It is the location of several famous structures such as the Pillars of Creation, an active star forming region of gas and dust depicted in the image. Other star forming regions exist as well. It contains many emission nebulae or clouds in space that shine with their own light and also there are some dark nebulae that don't shine but can be seen because they obscure light from other sources. The eagle nebula lies in the direction of the constellation Serpens, it is about 7000 light years distant. A spire of gas that can be seen coming off the nebula in the northeastern part is approximately 9.5 lightyear's or 90 trillion kilometers long. The cluster associated with the nebula contains approx 8100 stars. The brightest star is actually a binary star and has a mass of 90 solar masses and a luminosity of approximately 1,000,000 times than our Sun. M16 (Eagle nebula), C8 1280mm @ F/6.3, 600mm w/PHD2 guide. T3i(mod) ISO 1600 12x300s lights, 20 darks/40bias/40 flat.

For What its Worth

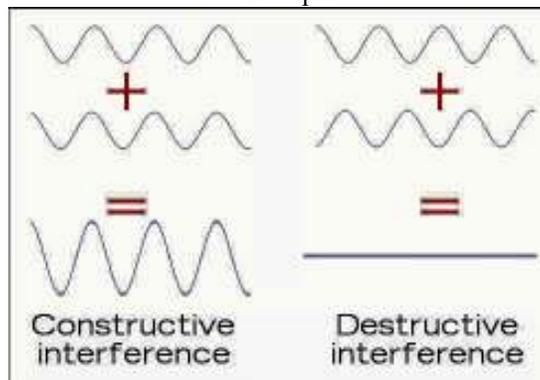
Interferometer a brief account

Interferometers are investigative tools used in many fields of science and engineering. They are called interferometers because they work by merging two or more sources of light to create an interference pattern, which can be measured and analyzed; hence, to the structure of enormous expanses of gas and dust in the distant universe, and now, to detect gravitational waves. Interferometer', or interferometer. The interference patterns generated by interferometers contain information about the object or phenomenon being studied. They are often used to make very small measurements that are not achievable any other way. This is why they are so powerful for detecting gravitational waves--LIGO's interferometers are designed to measure a distance 1/10,000th the width of a proton!

Widely used today, interferometers were actually invented in the late 19th century by Albert Michelson. In 1887, he set out to prove or disprove the existence of "Luminiferous Aether"--a substance at the time thought to permeate the Universe. All modern interferometers have evolved from this first one since it demonstrated how the properties of light can be used to make the tiniest of measurements. The invention of lasers has enabled interferometers to make the smallest conceivable measurements. Because of their wide application, interferometers come in a variety of shapes and sizes. They are used to measure everything from the smallest variations on the surface of a microscopic organism to the structure of enormous expanses of gas and dust in the distant universe and now to detect gravitational waves. All interferometers have one thing in common: they superimpose beams of light to generate an interference pattern. The basic configuration of a Michelson laser interferometer consists of a laser, a beam splitter, a series of mirrors, and a photodetector that records the interference pattern. What is an Interference Pattern?. Anyone who has thrown stones into a flat, glassy pond or pool and watched what happened knows about interference. When the stones hit the water, they generate concentric waves that move away from the source. Where two or more of those concentric waves intersect, they interfere with each other. This interference can result in a larger wave, a smaller wave, or no wave at all. The visible pattern occurring where the waves intersect is simply an "interference" pattern.

The principles of interference are simple to understand. Two or more waves interact. You add the heights of the separate waves together as they interact, and the resulting wave is the 'interference pattern. There are two specific kinds of interference: total constructive interference and total destructive interference. Total constructive interference happens when the peaks and troughs of two (or more) waves perfectly meet up. When added together, you 'construct' a larger wave, the size of which is equal to the sum of the heights (and depths!) of the two waves at each point where they are physically interacting. Total destructive interference occurs when the peaks of one or more waves meet and match the troughs of an identical wave. Adding these together results in them canceling each other out (i.e., they 'destroy' each other), The heights of the merging waves along each point they are physically interacting so when waves meet a little out of sync, partial constructive or destructive interference can occur by adding up the heights/depths of each wave at each point as they move through each other. It just so happens that light waves behave just like water waves. When two beams of laser-light merge, they too generate an interference pattern that depends on how well aligned the light waves are when they combine. Just like water, when the peaks of the waves of one beam perfectly meet the troughs of another, total destructive interference occurs. In water, the result is no wave. In light, the result is no light! Conversely, when the peaks of one beam perfectly meet the peaks of another, total constructive interference occurs (see example). Again, in water, the height of the resulting wave is equal to the sum of the heights of the two waves; in light, the result is a light equal to the sum of the intensities of the two separate light beams. Carrying this analogy to the end, in water, as waves pass through each other they can experience a full range of interference from partial to total constructive and destructive (bigger wave, smaller wave, no wave). In light, the result is a full range of brightness, from darkness to the sum of intensities of the interacting beams.

Example



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

Notice ACL Club meeting November 13th Zoom video Meeting 7:00 Pm.

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://skysurvey.org/>

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

ACL Club Logo

