

# Vandenberg Amateur Astronomical Society presents The Sidereal Times



Messier 31 Andromeda Galaxy (see page 5)

### Meeting News:

At the October meeting we discussed time and place for the annual picnic, Observatory maintenance and voted in the club officers for 2019.

**Reminder: VAAS club meeting November 9<sup>th</sup> at Manzanita School Teachers Lounge 7:00 pm.**



### Lunar Calendar

New Moon 7th  
Full Moon 22nd

Space X Falcon 9, Oct 9th 2018 VAFB (Jana Pic)



### Presidents Message

Hello, Moon Starers!

Well, our Annual Members' Picnic was hit with all! Among the sixteen of us attending, obviously "sharing" was the operative word for the afternoon. Wonderful food, amazing views of solar flares, and a multitude of conversations made for a delightfully memorable experience. There have been many requests to return to Thompson Park next year. Hopefully we can badger Vahan into barbequing the tri-tip for us again. He has that magic touch!

I had a bit of a surprise at our October meeting when all voted in favor of accepting the slate of officers, rather than waiting until December. Thank you for railroading...I MEAN...electing me to another year as your president, and electing Jana to continue as our vice president and treasurer. Onward into the next year of exploring and learning together we go!

Thank you, each of you fourteen members who were at our last meeting, for the unanimous vote of support for actions we had taken a few weeks before. We did the right thing when the action was taken, but it was reassuring to see the membership of VAAS united around this issue.

A pleasant break in the meeting was spurred by Selmer as we all went outside to watch the ISS slip silently overhead through an absolutely cloudless night. Congrats again to Candy for "first acquisition" and a big thanks to Selmer for encouraging us to honor with our presence the brave crew currently working on the space station two hundred plus miles from the good earth.

The latest from Nancy Wear is that the Miguelito Elementary School Astronomy Night will be from 5:30 until 7:00 PM, Wednesday, November 14<sup>th</sup>. We should plan to arrive no later than 5:00 to set up. Any of you are welcome to bring photos or other items to share with the students.

Remember: on Monday, November 26<sup>th</sup>, at the Lompoc Public Library JPL will be offering live coverage of the landing of Mars InSight on the plains of Elysium Planitia. The lander is scheduled to touch down at 11:54 AM, PST, and coverage should last approximately 90 minutes. Precise start time of their coverage will be reported as soon as determined. There may be mission specialists on hand but such plans have not been finalized.

Looking forward to seeing you at our next meeting, November 9<sup>th</sup>. Programming to be announced. Bring a friend!

Skyward,  
Tom

PS: Rearrange "Moon Starers", keeping the "Hello," and see how I really greeted you! ;)

## Events

### November 3rd Star Party at the Observatory.

😊 Yea!

**November 5<sup>th</sup>** Taurids Meteor shower is a long running shower producing only 5 to 10 meteors per hour. It is unusual in that it consists of two separate streams. The first is produced by dust grains left behind by asteroid 2004 TG10. The second stream is produced by debris left behind by comet 2P Encke. The shower runs annually from September 7<sup>th</sup> to December 10<sup>th</sup>. It peaks this year on the night of November 5th. Best viewing will be just after midnight. Meteors will radiate from the constellation of Taurus but can appear anywhere in the sky.

**November 6th** Mercury at greatest Eastern elongation. It reaches greatest Eastern elongation of 23.3 degrees from the Sun. Look for the planet low in the Western sky just after sunset.

### November 10th Star party at the Observatory.

😊 Yea!

### November 17th Star party at the Observatory.

😊 Yea!

**November 17<sup>th</sup> and 18<sup>th</sup>** Leonids Meteor Shower is an average Shower producing up to 15 meteors per hour at its peak. The shower is unique in that it has a cyclonic peak about every 33 years where hundreds of Meteors per hour can be seen. The last of these occurred in 2001. The Leonids is produced by dust grains left behind by comet Temple -Tuttle. It peaks this year on the night of the 17<sup>th</sup> and morning of the 18<sup>th</sup>. Meteors will radiate from the constellation of Leo but can appear anywhere in the sky.



## Star party's and Events

**Oct 6<sup>th</sup>** Star Party at the Observatory, Star party scrubbed due to weather, high winds and clouds.



Nuts!

**Oct 13<sup>th</sup>** Star Party at the Observatory. Dave and Vahan on site about 6:00 Pm. Weather was closing in but we did image the Moon for about 5 minutes. Things got worse so we closed up and departed at 7:00 Pm. The Halloween haunted house at Maple high was jam packed with cars and people even on our side of the fence, hard to access the observatory. Oh well!



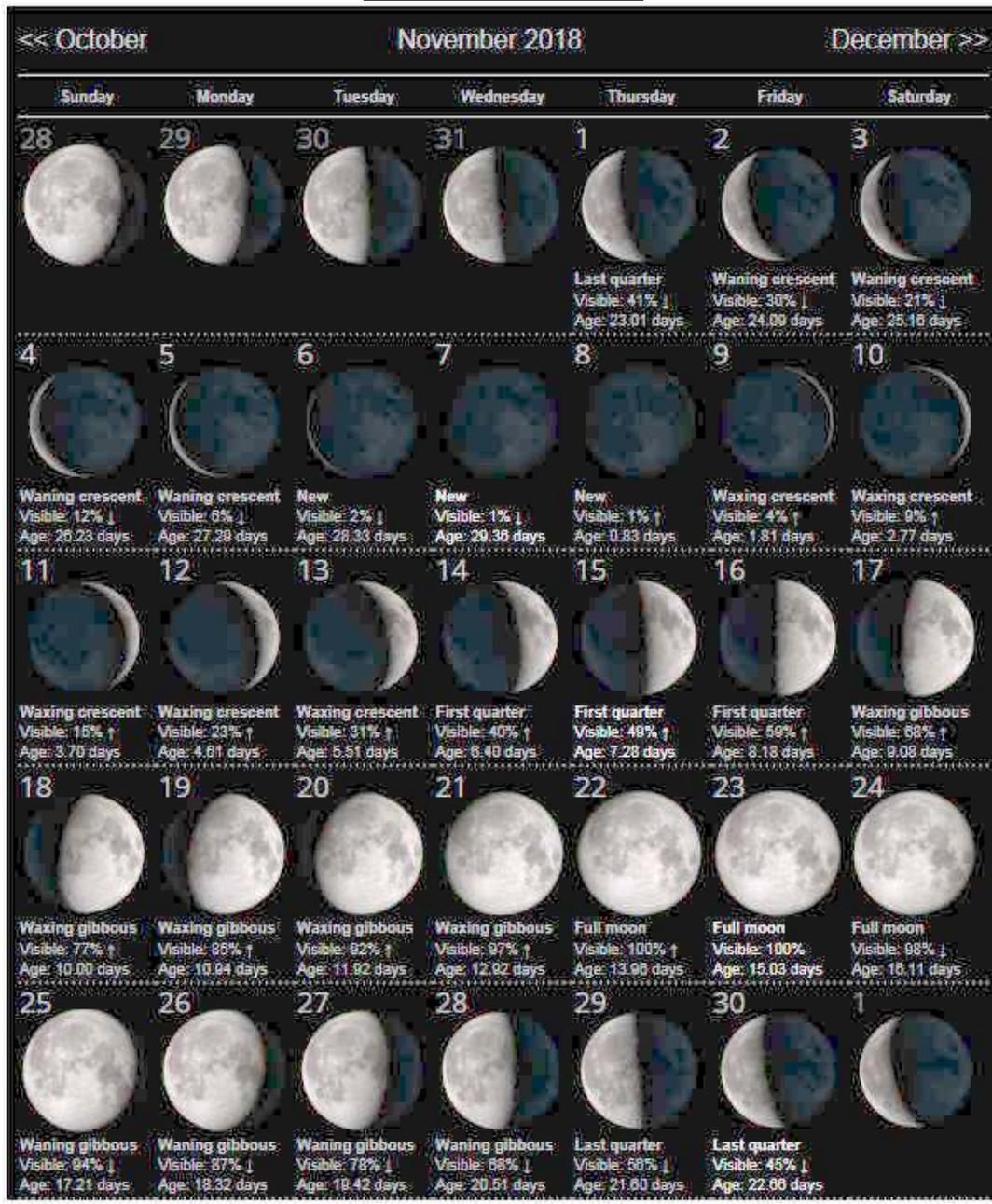
Uugh!

**Oct 20th** Star Party at the Observatory. Only members there were Joel and Candy Krueger with their LX-200 and 10" system. Looked at the moon and several other objects. Had some GOTO problems but enjoyed the night seeing was good. Blocked the light from the haunted house with the truck, also heard some screams Secured at about 11:00 Pm.

😊 Yea!



## November 2018 Moon



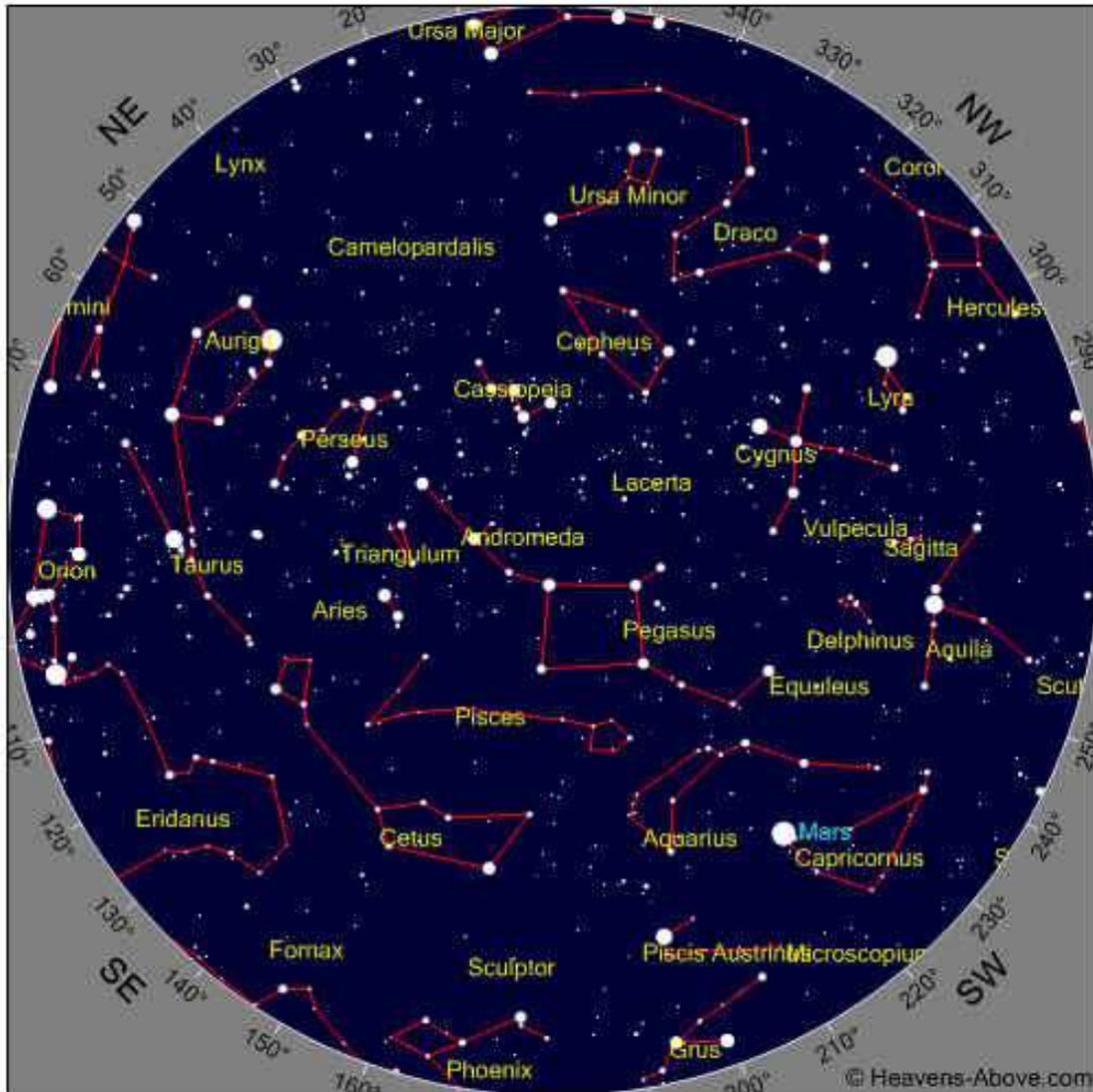
Full 22nd, New 7th, Last Quarter 29th, First Quarter 15th.

### Moon Folklore & Facts

The Harvest Moon gets its name from the extra light it gives farmers – which mean in times before electricity that they had even longer to harvest their crops. The Harvest Moon, however, has other names. It's known often as the Wine Moon as it is through this is when grapes are plump and ready for collecting. It's called the Singing Moon as the festivals held to mark it would involve signing – it is the last full moon before Halloween. The moon has been called the Elk Call Moon too. The native American tribes may call a Harvest Moon that rises in September the Full Corn Moon and some European people may refer to it as the Gypsy Moon. The Chinese call the moon the Chrysanthemum Moon because of the illusion of the color change.

### November 2018 Sky

Some Objects of interest, M31, Double cluster, M57



#### Time

Year	2018	Month	11	Day	4	Hour	21	Minute	9
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Photo courtesy David McNally



The Andromeda galaxy also known as Messier 31, M31, or NGC224 is a spiral galaxy approximately 780 kiloparsecs (2.5 million light years) distant. It is the nearest major galaxy to the Milky Way and is often referred to as the Great Andromeda Nebula in older texts. It received its name from the area of the sky in which it appears, the constellation of Andromeda that was named after the mythological princess Andromeda. Andromeda is approximately 220,000 light years across. It is the largest galaxy of the local group also containing the Milky Way, the Triangulum galaxy, and other small galaxies. Despite earlier findings that suggested that the Milky Way contains more dark matter and could be the largest in the grouping, the 2006 observations by the Spitzer Space Telescope revealed that Andromeda contains one trillion stars at least twice the number of stars in the Milky Way that is estimated to be 200-400 billion. The mass of the Andromeda galaxy is estimated to be  $1.5 \times 10^{12}$  solar masses while the Milky Way is estimated to be  $8.5 \times 10^{11}$  solar masses. The Milky Way and the Andromeda galaxies are expected to collide in 4.5 billion years eventually merging to form a giant elliptical galaxy or perhaps a large disc galaxy. The apparent magnitude of the Andromeda galaxy at 3.4 is among the brightest of the Messier objects making it visible to the naked eye on moonless nights or when viewed from areas with moderate light pollution. Image capture sigma 170-500 f/5.6 telephoto lens. Canon T3i modified Baader filter, Celestron CGEM mount hypertuned. DSS 3.3.4 processing software. Frames 20 x 120" 0.7 hrs integration time.

## **For What its Worth**

### **White Holes**

A white hole is a hypothetical feature of the universe. It is considered the opposite of a black hole. As black holes don't let anything escape from their surface, white holes are eruptions of matter and energy and nothing can get inside of them. White holes are a possible solution to the laws of General Relativity. This law implies that if eternal black holes exist in the universe then a white hole should also exist. It is a time-reversal of a black hole. They are expected to have gravity, so they attract objects, but anything on a collision course with a white hole would never reach it. Theoretically, if you were to approach a white hole in a spacecraft you would be inundated by a colossal amount of energy that would most likely destroy your ship. Even if your ship could withstand gamma rays, light itself would start slowing you down like air resistance slowing down a moving vehicle on Earth.

Even if the spaceship is built to be unaffected by the energy emission, space and time would be weirdly warped around a white hole; approaching a white hole would be like going uphill. The acceleration required would get higher and higher while you move less and less. There isn't enough energy in the universe to get you inside. Of course this is counterintuitive. How could energy in a white hole seemingly come from nowhere other than space time itself. This is one reason why their existence is very unlikely. However, there are some theories in which white holes are possible but perhaps not quite as described in general relativity. As they are alleged counterparts of black holes, white holes too would be formed by a gravitational singularity. A singularity is a point like feature in space-time where the gravitational field becomes infinite. Infinite values in physics are usually an indication of missing pieces in a theory, so it is not surprising that quantum mechanics and relativity struggle to explain the finer details of singularities.

### **Potential candidates**

A lot of phenomena have been put forward as white holes. They are usually chosen because they are mysterious objects that we have not been able to explain in detail. Gamma ray bursts, fast-spinning pulsars and black holes reaching the end of their lives have all been considered. Even the big bang has been described as a white hole, but so far no white holes have ever been directly observed, and even their theoretical existence raises some red flags. It seems like white holes are used as a place mark until more observations or better theory come along. The big bang as a white hole is a clear example of this trend. Until we were uncertain about the size of the universe, there was speculation that the cosmos was produced by a white hole larger than we could see. We now know that the universe is most likely infinite which makes the whole explanation almost certainly wrong.

### **Theoretical Constraints**

A white hole is a particular kind of singularity; a naked singularity. Singularities like black holes cannot be directly observed because the escape velocity (the speed you need to break free of its gravity) is greater than the speed of light, so nothing can escape from it. The singularity is protected by an event horizon, the surface that separates us from the black hole. Mathematically when we have a singularity space-time is broken. To avoid this issue, event horizons were introduced. A naked singularity has no event horizon. Accordingly to the fundamental principals of general relativity the universe doesn't allow singularities. The idea is aptly called the cosmic censorship hypothesis. Numerical simulations and the current theories of quantum gravity hint at the possibility of naked singularities. A curious phenomenon happens in describing a black holes properties with a quantum mechanical approach which doesn't include gravity. If you look at a black hole backward or forward in time, it behaves exactly the same way and remains a black hole. This not the most important clash between quantum theories and relativity, but is significant nevertheless. The most important constraint is entropy, the measure of the order of the system. According to the laws of thermodynamics the net entropy of the universe is always increasing. Entropy could decrease locally; for example a freezer decreases the entropy of water by turning it into ice, but the freezer engines emit a lot of heat so the total entropy is still increasing. White holes decrease entropy which is a fundamental piece of evidence against them in this universe. We obey the laws of thermodynamics and so far no confirmed violations have been observed, although we often hear claims of perpetual motion machines and unusual events.

### **Future of White holes**

White holes fascinate a lot of people and they give us a sense of balance. People will and should continue to study them. Several features of general relativity, black holes for example, were first considered a theoretical curiosity. There is no hard evidence proving that white holes exist. But maybe in our vast complicated universe, there is space for even them. Just a thought; could it be that when Black holes die they could become white holes?

VAAS Annual Picnic Thompson Park 2018



## Club Officers



President  
Tom Gerald



Vice President  
Jana Hunking



Treasurer  
Andy Wallace



News Letter Editor  
Vahan Yeterian

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



## Club Meeting

**Reminder** Club meeting November 9<sup>th</sup> at 7:00Pm Manzanita School teachers Lounge.

**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)

## Night Time Bright Objects (no scope required)

Link to “Heavens Above” web site

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

(Iridium Satellite)

(ISS Visible Pass)

Be sure to set the nearest location from their pull-down menu.

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/>

VAAS.

Dave McNally is the VAAS Web Site Serf/Minion

Dave

