Vandenberg Amateur Astronomical Society presents The Sidereal Times

Messier 3 Globular Cluster(see page 5)

Meeting *News:*
At the February meeting we discussed past events and what events we might be supporting in the coming months.

Reminder: VAAS club meeting March 8th 7:00 pm Manzanita School Teachers Lounge.

Lunar Calendar
New Moon 6th
Full Moon 21st

The Core Group

Presidents Message

Hello, Fans of All Things Celestial,

Thank you for the excellent February meeting! With thirteen attending, we took care of good business and shared excellent discussion. We welcomed our newest member, Ebby Hansen, who learned of our group through the Lompoc Vision.

The highlight of the night was Edmund Burke's announcing the updated Solar Panel he has secured for the Observatory, working with Tom Stevens, STEM Coordinator at VAFB. This new panel will provide twice the power of our current unit. Further, Edmund indicated that we should be thinking of other upgrades needed for the Observatory as there may well be similar funding available next year through the Air Force.

Very excited to welcome back Dr. Joseph Bassi, NASA Solar Systems Ambassador, to our March 8th meeting. Having enlightened us previously about space weather and the history of modern rocketry, Dr. Bassi will review and update us on the Mars InSight Mission. InSight launched from VAFB last May, landed smoothly on Mars in November and is moving into its mission of studying the interior of the planet. This is a meeting you will not want to miss!
Skyward,
Tom

Events

March 2nd *Star Party at the Observatory.*
Yea!

March 9th *Star Party at the Observatory* and also a New Moon. This is the best time of the month to observe faint objects such as galaxies, clusters and nebulae.
Yea!

March 20th March equinox occurs at 21:58 UTC. The Sun will shine directly on the Equator and there will be nearly equal amounts of day and night throughout the world. It is the first day of Spring in the Northern hemisphere and the first day of fall in the Southern hemisphere.

March 21st Full Moon Super Moon. This phase occurs at 01:43 UTC. This Moon was known by early native American tribes as the Full Worm Moon because this was the time of year that the ground would begin to soften and the earthworms would reappear. The Moon will be at its closest approach and it will appear slightly larger and brighter than usual.

March 30th *Star party at the Observatory.*
Yea!

Dave and Ken

Star **party's and Events**

Feb 2nd Star Party at the Observatory, cancelled due to weather, lots of high wind and rain.

Nuts!

Feb 9th Star Party at the Observatory, Cancelled due to weather, rain & clouds.

Nuts!

Feb 23rd Star Party at the Observatory,Vahan, Vince and Danny on site. Quite cloudy. Had a general meeting on a varied amount of subjects. About 7:20 Pm the sky opened up a little. Was getting too cold for Vahan's old bones so he departed. Vince and Danny started setting up the 14" for some observing. Looked at Mars, M42 and looked for the Comet. Weather closed in again, secured and departed at 9:00 Pm.
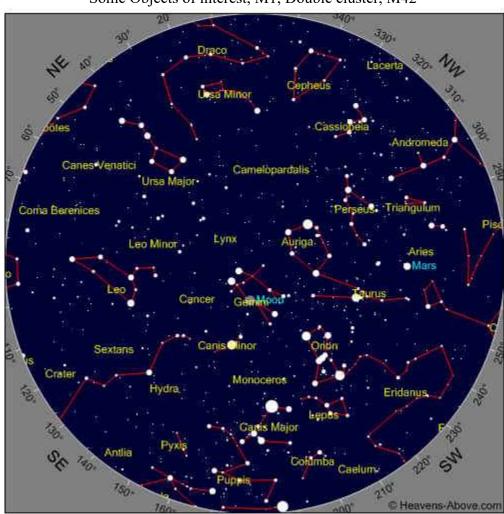Yea!

Outreach @ winery

Star Party Observatory

March 2019 Moon

Full 21st, New 6th , Last Quarter 28th , First Quarter 14th .

Moon Facts

Both sides of the Moon see the same amount of Sunlight. The Moon has only been walked on by 12 people, all American males.

March 2019 Sky
Some Objects of interest, M1, Double cluster, M42

Time

Year 2019	Month 3	Day 15	Hour 20	Minute 35

Ruth School Outreach

Messier 3 Globular Cluster NGC 5272 is a globular cluster of stars in the Northern constellation of Canes Venatici. It is one of 250 known globular clusters in the Milky Way galaxy. M3's overall spectral class is F2.

The cluster has a bright core with a diameter of about 6 arcminutes and spans a total of 12 arcminutes. The cluster is one of the largest and brightest and is made up of around 500,000 stars. It is estimated to be about 8 billion years old and is located at a distance of about 33,000 light years from Earth. Messier 3 is located 31,600 light years above the galactic plane and roughly 38,800 light years from the center of the Milky Way galaxy. It contains 274 known variable stars, by far the highest number found in any other globular cluster. These include 133 RR Lyrae variables of which about a third display the Blazhko effect of long period modulation. Messier 3 also contains a relatively high number of blue stragglers, blue main sequence stars that appear to be young and are bluer and more luminous than other stars in the cluster. These stars are now believed to form as a result of stellar interactions. The overall abundance of elements other than hydrogen and helium, what astronomers term the metallicity, is in the range of –1.34 to –1.50 dex. This value gives the logarithm of the abundance relative to the Sun, the actual proportion is 3.2 - 4.6% of solar abundance. Messier 3 is the prototype for the Oosterhoff type l cluster which is considered "metal rich" for a globular cluster. Messier 3 also has a relatively high abundance of heavier elements.

Image capture with Celestron AVX mount, 9.25 inch SCT, Cannon T3 DSLR modified. 5 x 3 min lights, Darks, bias and flats. Processed with DSS 3.3 software.

For What its Worth

Classification of Stars

Can we see what stars are made up of? Can we measure how hot they are? The answer is Yes, by using spectral classification of the stars.

Surface temperature of the star is associated with specific spectral classification. The spectral classification main divisions includes main types: O, B, A, F, G, K, M, R, S. These are in order of decreasing temperature. Remembering the major classifications is as follows…Oh, Be, A, Fine, Girl, Kiss, Me, Right, Now, Smack.

O = Ionized and neutral helium, ionized metals, weak hydrogen.
B = Neutral helium, ionized metals, hydrogen stronger.
A = Hydrogen dominant, plus singly ionized metals.
F = Hydrogen weaker, neutral and singly ionized metals.
G = CA ll prominent, hydrogen weaker neutral metals.
K = Neutral metals, some molecular bands.
M = Neutral metals, Tl O bands dominant.
R&N = Neutral metals, C2, Cn and CH bands.
S = Neutral metals, Zr O and Tl O bands.

The 3 remaining classes are Q-Novae, P-Gaseous Nebula, and W-Wolf-Rayet stars.
Wolf-Rayet stars spectra are characterized by bright emission bands of hydrogen and helium and their color temperature is approximately 13,000 degrees Kelvin (22,940 degrees F).
The principal difference between the main classes is temperature hot stars are O, B, A and are referred to as early stars. The cooler ones K M N R S etc are referred to as late stars.
A bright star will be larger and its outer regions will be more rarefied than a faint star. The more luminous a star the narrower will be its spectrum lines since pressure is one of the line broadening mechanisms.
O = 30000 – 60,000 K (Blue Stars). B = 10,000 – 30,000 K (Blue / White Stars).
A = 7,500 – 10,000 K (White Stars). F = 6,000 – 7,500 K (Yellow White Stars)
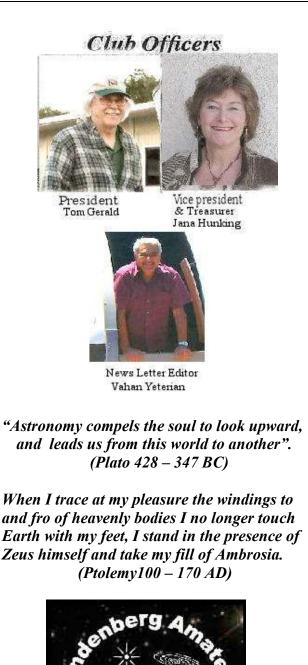G = 5,000 – 6,000 K (yellow Stars like the Sun). K = 3,500 – 5,000 K (tallow Orange Stars).
M = < 3,500 K (Red stars). Notice that hottest stars are blue, while coldest stars are red.

Naos (in the constellation Puppis) these have prominent ionized and neutral helium lines and only weak hydrogen lines. Class O stars emit most of their radiation in ultra-violet. Class B stars are again very luminous, Rigel (in the great constellation Orion) is a prominent B class blue supergiant. Their spectra have neutral helium and moderate hydrogen lines. Class A stars are amongst the more common naked eye stars. Deneb in Cygnus is another very powerful star. Sirius, that appears the brightest star as seen from Earth, is also an A class star. As with all class A stars, they are white. Many white dwarfs are also A. They have strong hydrogen lines and also ionized metals. Class F stars are still quite powerful like Fomalhaut in Pisces Australis. Their spectra are characterized by the weaker hydrogen lines and ionized metals their color is white with a slight tinge of yellow.

Class G stars are probably the most well known for the reason that our Sun is of this class. They have even weaker hydrogen lines than F and have neutral helium lines but along with the ionized metals, they have neutral metals. Class K are orange stars which are slightly cooler than our Sun. Some K stars are giants and supergiants, such as Arcturus, while others like Alpha Centauri B are smaller. They have extremely weak hydrogen lines, if they are present at all, and mostly neutral metals. Class M is the most common class by the number of stars. All red dwarfs, such Proxima Centauri, the closest star to our Solar System. The spectrum of an M star shows lines belonging to molecules and neutral metals but hydrogen is usually absent.

Temp Scale Conversion

Celsius to Fahrenheit	°F = 9/5 (°C) + 32
Kelvin to Fahrenheit	°F = 9/5 (°K - 273) +32
Fahrenheit to Celsius	°C = 5/9 (°F – 32)
Celsius to Kelvin	°K = °C + 273
Kelvin to Celsius	°C = °K - 273

Club Officers

President
Tom Gerald

Vice president
& Treasurer
Jana Hunking

News Letter Editor
Vahan Yeterian

*"Astronomy compels the soul to look upward,
and leads us from this world to another".
(Plato 428 – 347 BC)*

*When I trace at my pleasure the windings to
and fro of heavenly bodies I no longer touch
Earth with my feet, I stand in the presence of
Zeus himself and take my fill of Ambrosia.
(Ptolemy100 – 170 AD)*

<u>Club Meeting</u>

Reminder **Club meeting March 8th at
7:00Pm Manzanita School teachers Lounge.**

<u>Star Parties (as always weather permitting)</u>

<u>Other Astronomy Club Meetings</u>

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

<u>Night Time Bright Objects</u> (no scope required)

Link to "Heavens Above" web site
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/
<u>VAAS</u>.

<u>Dave McNally is the VAAS Web Site Serf/Minion</u>

<u>Dave</u>