VILLAGES STAR
Newsletter of The Villages Astronomy Club

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Club Website:
http://vlgastroclub.org/
Facebook:
https://www.facebook.com/groups/vlgastroclub/

Club Officers & Directors

President	Mark Graybill
Vice President	Ken Katta
Secretary/Historian	Burt Salk
Treasurer	Linda Meng
Education Coord.	Randy Gilbert

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UPCOMING EVENTS

November 11: Starry Starry Day and Night
(fallback date Nov 12 for weather.)
Our twce yearly public event where we provide Solar Walk tours during the day and astronomical observation at night will come on November 11th this year. We need volunteers to assist us, whether you have a telescope or not, and no matter your level of technical ability.

Docents for the Solar Walk will guide guests through our scale model of the Solar System, a set of signs that we set up at the relative distances of the planets from the Sun. We share some facts at each stop along the way. We have a script you can use, and you can personalize the tour with your own knowledge and interests.

We will also have astronomers with solar scopes during the day.

Our observational astronomers will be setting up telescopes at night, but during that time we can use people to help guide our guests to the Astronomy Park from the parking area, as well as do “crowd control” near the telescopes, helping guests find items of interest being shown, or to someone who can answer their questions about space and astronomy.

Nov. 15th: General Meeting
6:20pm Laurel Manor Recreation Center
“Black Holes” by Toni Graybill. What black holes are, how we detect them, new information about them, and their role in the universe.Toni will eliminate some of the mysticism that surrounds these objects, discussing the practical aspects of the black hole’s mass, its Schwarzchild radius, and relation to the surrounding material.

Dec 2nd, 11am: Directors’ Meeting
Held at Fishhawk Recreation Center, 2318 Buttonwood Run. All members are welcome to come to help plan our future activities and assist in the operations of our club.

Dec. 6th, 5pm: Telescope Workshop
Held at Truman Recreation Center, 2705 Canal St., near the Pavilions (behind the pool from the parking lot.) Bring your telescopes that you want assistance with, or just want to get out of the garage or closet for some light observing! Bring your questions about telescopes to purchase or techniques for naked eye or binocular astronomy.

Dec. 20th, 6:20pm: General Meeting
Our December General Meeting will be held at Laurel Manor Recreation Center, 1985 Laurel Manor Drive. Ted Mitrou will speak to us on astrophotography. He is an accomplished

astrophotographer, and will talk about the ins and outs of techniques, equipment, and the process of producing amazing images of the sky. This meeting will include an ice cream social after the presentation.

Feb 24th, 2023: Starry Starry Day and Night
Our next Starry Starry Day and Night will come on Feb 24th, with Feb 25th as a fallback date in the case of inclement weather.

Calendar: https://vlgastroclub.org/calendar/

NEWS

Astronomy 101 Classes

The Astronomy 101 classes held by Vice President Ken Katta at the Colony Recreation Center on October 17th and 24th were a huge success. Turnouts of roughly 40 people per session showed that the word on these sessions got out well.

The first session focused on space near Earth and the movement of the sky above us as well as the objects within the solar system. The second session reached further out into space, covering stars and galaxies.

Thanks to Ken Katta and to all the attendees that made these sessions a big success, we look forward to future sessions on additional subjects.

Artemis I Launch

Artemis I's SLS launch vehicle has rolled back out to pad 39B after a stay in the Vehicle Assembly Building where it received fresh batteries and other touch ups to sustain launch attempts through early December at least.

Current plans are for a launch attempt on December 14th. Tropical storm Nicole may affect those plans, though current predicted winds are low enough that the Artemis I can remain on the pad and will not have to be rolled back. Expectations are that the late-season storm will grow into a Category 1 hurricane before landfall, but NASA says they are not planning a rollback with current predictions.

Further information on launch dates: https://www.nasa.gov/feature/artemis-i-mission-availability

Artemis I at Launch Complex 39B
NASA Image

SpaceX Falcon Heavy and Starship

Spacex has launched its Falcon Heavy rocket on its 4th launch, carrying a set of Space Force test satellites into direct geosynchronous orbit insertion. Currently the most powerful operational rocket (at least until the launch of the SLS), the Falcon Heavy has a first stage consisting of 3 Falcon 9 first stages. It is about half the power of a Saturn V, and twice the power of a Saturn IB launch vehicle from the Apollo days.

SpaceX is also continuing development of their new Starship launch vehicle, with ongoing tests of the booster and Starship vehicle in Boca Chica, TX. Current plans call for an orbital flight test of Booster 7 carrying Starship 24 in December, if tests of the vehicle and the ground support equipment go well. A high energy conflagration occurred on the launch pad in July causing delays to the progress until now. The cause and fix for the fire have since been identified, and testing has proceeded past the point that it was at the time of the fire.

A launch facility for the Starship has been constructed at Cape Kennedy in Florida, at Launch Complex 39A next to the current SpaceX Falcon 9/Falcon Heavy launch pad. Work at SpaceX's Roberts Road facility at the Cape is

now assembling a second launch tower and there may be preparations for a third launch tower as well!

The Starship has twice the thrust of a Saturn V, and is capable of carrying over twice as much. Its initial destination in deep space will be the Moon, followed by missions to Mars. Deep space missions, beyond Earth orbit, will require multiple launches of the system to carry fuel into orbit, where it will be transferred from the fuel tanker craft to the deep space exploration craft. That will allow that craft to fly to the Moon or Mars, and return.

The test flight of a crew-carrying lander version of the SpaceX Starship using this capability is expected to occur in less than two years.

Likewise, while Starship is designed to eventually be reusable, the first test flights of the Starship are expected to expend the vehicles rather than reuse them. The first flight will feature simulated recoveries.. The booster will attempt to perform a soft landing in the Gulf of Mexico, and the Starship will re-enter from orbit and attempt to make a soft landing in the Pacific Ocean, north of Hawaii, where it can be observed by Space Force resources during its approach and landing.
https://www.spacex.com/vehicles/starship/

Starship stack image by SpaceX

IN THE SKY THIS MONTH

The Moon:

Full Moon, November 8th, **Eclipse!**
Last Quarter, November 16th
New Moon, November 23rd
1st Quarter, November 30th
Full Moon, December 8th

Lunar Eclipse, Nov 8th

A total lunar eclipse will be visible from The Villages early on the morning of November 8th.
3:02am Penumbral Eclipse begins.
4:09am Partial Eclipse begins.
5:16 am Total Eclipse begins.
5:59am Peak Totality
6:41am Totality ends.
6:50am Moon sets in Partial Eclipse.

A lunar eclipse can be observed by eye, binoculars, or low to medium powers with a telescope. Penumbral eclipse is usually very faint, and often not easily visible. The Moon may be very difficult to see late in the time during which we can see it, because of the effects from being low in the sky.

The Planets:.

Jupiter is still a bright showpiece in our evening sky, in the west at sunset. At 46 arcseconds diameter it is still very large, and a good test for your small scope to see what detail you can make out. Even small scopes should be able to make out the bands on its surface. With some scopes, it may improve contrast if you partially block the incoming light with your hand or a hat. Adjusting how much you block can adjust the contrast and make fine details stand out. Jupiter is about 17 light minutes from Earth right now.

Saturn is not as bright as Jupiter, but is still a beautiful evening object. At magnitude 0.7 is is still a bright star in the sky. The rings are at a good angle for viewing at present, and throw a nice shadow onto Saturn's disk. See if your telescope can see the wide Cassini Division in the rings, and any variations in the color of Saturn's

disk. Saturn's moon Titan is easy to see in a telescope or binoculars at magnitude 8.5 as a star near Saturn. Tethys, Dione, and Rhea are next in brightness at magnitude 10, visible in small telescopes and larger binocular (50mm or larger.) Iapetus is next in brightness at magnitude 11, visible in mid-sized telescopes (good 6" or average 8" telescopes under good conditions.)

Neptune remains bright a month after its opposition in September, at magnitude 7.7. This is too dim to see by eye, but visible with binoculars though it will not show a disk. Its color will distinguish it from the other stars. It will show a disk at about 50 powers of magnification or more. It is near the Circlet in Pisces this month.

Uranus is magnitude 5.7 and will require binoculars to observe in our sky. Like Neptune, its color will distinguish it from the nearby stars, appearing green or blue. It will show a disk at 50x or greater.

Mars rises at about 8pm and gives a great show this month that will get even better as it heads toward opposition next month. A steady mount with good tracking will allow you to use mid to high power magnification on it, bringing out surface details like Syrtis Major in telescopes with good contrast to their optics.

Amateur Astronomy Science Organizations, and Research Assistance Opportunities

There are many organizations dedicated to doing real science as amateur astronomers, each with a specific area of interest.In recent conversations with representatives of Embry Riddle Aeronautical University, they expressed interest in members of our club who have experience with these groups, as that experience would prepare them for assisting their astronomy department's researchers.

While Embry Riddle has their own instruments, there are many objects that these instruments are not suitable for observing. As an example, Dr Terry Oswalt said that with a 1 meter telescope, anything of magnitude 10 or brighter is too bright for them to observe it, unless they add an extra element of uncertainty to the observations through the use of a neutral density filter to cut back the light. A smaller telescope, such as we use, doesn't have that limitation.

So when researchers need to observe bright objects, it would be useful to them to be able to call on a cadre of amateur observers with the experience necessary to obtain data for them.

The American Association of Variable Star Observers is one group that regularly performs observations of brightness of the many variable stars in our sky. With modern digital imaging equipment, it is very easy to obtain scientifically useful data, and to collect data on many different stars in a single night.

https://www.aavso.org/

The Association of Lunar and Planetary Observers is another group of amateurs who assist researchers with their observation of objects within the solar system. Planets, moons, comets, asteroids, etc.

https://www.alpo-astronomy.org/

The American Meteor Society coordinates efforts of amateurs to observe meteor showers, the fall of bright meteors, and simlar events.

https://www.amsmeteors.org/

The Astronomical League is a general astronomical group that includes training programs, formal and informal observing programs for amateurs, and regular opportunities to participate in specific observations during astronomical events to collect a mass of data from different locations.

https://www.astroleague.org/

If you are already a member of one of these organizations or have experience performing scientific observations, and have an interest in being available for research opportunities with Embry Riddle, please contact Club President Mark Graybill so that we can start to build a list for Embry Riddle's future needs!