

VILLAGES STAR

Newsletter of The Villages Astronomy Club

Volume 3, Number 10

October 2022

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

October 17th: Astronomy 101 Class

Please join club Vice President Ken Katta for the first session of our Astronomy 101 course at Colony Cottage Recreation Center at 510 Colony Blvd from 7 to 9 pm.

The class will cover the basics of astronomy from object types, distances and distance scales, the lives of stars and the formation of larger structures in the universe.

Bring your questions as well!

All are welcome, both members and non-members.

October 18th: General Meeting

6:20pm Laurel Manor Rec Center

"How NOT to Ruin the Holidays" by Mark Graybill.

How to purchase optics for youth with an interest

in science, including binoculars, microscopes, and telescopes. How to avoid the trash that is marketed to grandparents and other gift-givers. Looking out for faulty designs, and how to foster an interest in science in youth with appropriate learning materials so that they can later knowledgeably tell you what they want.

October 24th: Astronomy 101 Class Session 2

Join us for the second session of Ken Katta's beginner's class on the basics of astronomy. You need not have attended the first session to enjoy this class. The class will be held from 7 to 9 pm at Colony Cottage Recreation Center, 510 Colony Blvd in The Villages.

Learn about and discuss the basics of astronomy, astrophysics, and current physical theories of our universe. Bring your questions and look forward to a lively and interesting discussion!

October 29th: Wildwood Fall Festival

Our club will be joining the City of Wildwood at the Wildwood Community Center for their Fall Festival celebration. We will be showing the sky to attendees from dusk into the night.

Our astronomers will be setting up in the parking lot behind the Community Center building, on the opposite side from Powell Road. There will be many other activities for all ages at this event. Please plan to attend, either as an attendee or as an astronomer!

November 1st: Telescope Workshop

6pm at Truman Recreation Center Pavilion Area. Please note the earlier time this month to accommodate the earlier sunset. 2705 Canal St.

November 4th: Directors' Meeting

11am Fishhawk Recreation Center, 2318 Buttonwood Run, The Villages. Open to all members, we discuss upcoming events of the Astronomy Club, future initiatives, and review the outcome of recent events. If you are interested in giving a presentation to the club or inviting a presenter, assisting us with adding new events to our schedule or improving current events, or just helping guide our group to being the best it can be in service of our membership, please join us!

November 11: Starry Starry Day and Night

(fallback date Nov 12 for weather.)

Our twice 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.

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

Artemis I Launch

After the rollback to the Vehicle Assembly Building for Hurricane Ian, the Artemis I vehicle has received work to prepare it for the next launch campaign in November.

Replacement of the Flight Termination System batteries had been an issue before rollback, those have now been replaced and launch is expected before any waivers need be issued on the new batteries. Likewise, a number of tests and inspections have been performed prior to the next launch attempt.

Current plans look toward a rollout to pad 39B in early November, perhaps the 7th or 8th, with a launch attempt on November 14th. The November 12-27th time frame holds 12 launch opportunities, with the 14th being the second.

See more on future Artemis launch opportunities here:

<https://www.nasa.gov/feature/artemis-i-mission-availability>



**Artemis I at Launch Complex 39B
NASA Image**

DART: Double Asteroid Redirect Test

The DART mission impactor successfully struck the asteroid Dimorphos, a moonlet of asteroid Didymos, on 26 September 2022. Its impact has been seen to have changed the orbit of the moonlet around Didymos, marking a successful test. Observations of the asteroid pair and the ejecta cloud from Dimorphos will provide precise information that will inform future tests of asteroid defense. In about 4 years, the ESA mission Hera will visit the asteroids providing further data on the effect of DART on the asteroids.

SpaceX Launches

SpaceX has launched 45 operational launches so far in 2022, of the 52 initially announced in January, later expanded to 60, then 67 planned launches for the year.

On October 5th, SpaceX sent astronauts to orbit for the 6th time aboard the NASA Crew-5 mission to the International Space Station.

On October 8th, they sent the Intelsat SES-34 and SES-35 communication satellites into geosynchronous transfer orbits.

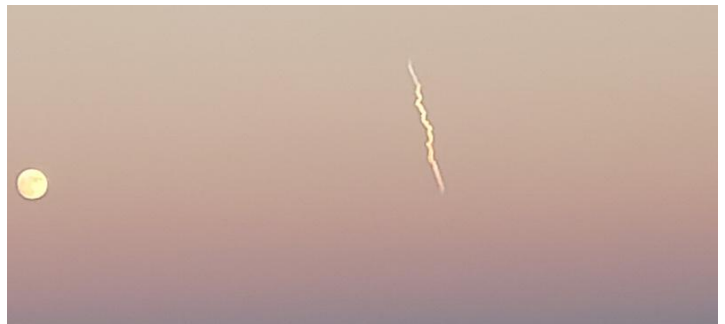
Currently SpaceX has 22 remaining missions planned for this year, including two Falcon Heavy launches. Their prior record for launches in a year was 31, in 2021. They beat that record in 29 weeks of 2022. If they complete all launches planned for the year, they will set a new record of 62 launches in 2022, possibly more if the new Starship launch vehicle launches to orbit.

Elon Musk has announced that up to 100 launches are planned for 2023.

Images of SpaceX's 180th Launch of Falcon 9

Members Ken Katta and Bob Averitt met on Anna Maria Ave in The Villages, east of Duckworth, to image the SpaceX launch over the retaining pond there.

Here are some of their images of the launch from The Villages:



Above images by Ken Katta feature the Moon at left, and SpaceX's Intelsat SES-34/35 in center.



Above image by Bob Averitt, of the Falcon 9 climbout under 1st stage power over homes in The Villages.

Images continued, next page.



Falcon 9 first stage shutdown, by Bob Averitt



The Full Moon reflecting in the pond, with Jupiter shining above. Faint contrails from the launch can be seen in this image by Bob Averitt.



The Falcon 9 rises above the Mythos restaurant at Universal Orlando's Islands of Adventure. The Full Moon can be seen near the Pharos lighthouse. Image by Mark Graybill.



First stage flight as the rocket heads out just south of east to reach the equator for a course correction to make geosynchronous orbit. Image by Mark Graybill



Second stage burn appears as a wispy cloud above the contrail from the first stage, above the looping roller coaster tracks of Velocicoaster and The Hulk. Image by Mark Graybill.

IN THE SKY THIS MONTH

The Moon:

Full Moon, October 10th

Last Quarter, October 17th

New Moon, October 25th

1st Quarter, November 1st

Full Moon, November 8th

The Planets:.

Jupiter remains the brightest object in the night sky aside from the Moon this month. On the night of October 11/12, it will come close to occulting the planet **Uranus**. If you have not seen planet Uranus in your telescope yet, this will be your chance to see it without a finder chart!. Observers in the northwestern U.S. will see an

occultation (Jupiter blocking out Uranus from view), but here in Florida we will see Uranus just south of Jupiter. With the bright Moon in the sky, it will take medium magnification to create the contrast to see Uranus.

At these magnifications, Uranus should appear as a small colored disk near Jupiter.

Throughout the month Jupiter will be big and bright, though its size will diminish from September, it will remain a showpiece object to see through December.

Saturn is also a great object in the evening sky this month. To the west of Jupiter along the ecliptic, a small telescope can pick up its moon Titan, often seen far from the planet itself. Larger telescopes, and even small ones with good contrast and good optics, can pick up an additional 2-4 moons closer to Saturn.

Neptune remains bright a month after its opposition last month, 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 be evident under good viewing conditions, so get out while this high pressure system keeps our skies relatively clear and dark! Telescopes will show it as a disk at about 50-100x magnification.

Venus is hiding behind the Sun this month, and will emerge into the evening sky later this year.

Mercury is in the morning sky, rising before the Sun, reaching magnitude -1 on the 16th before rapidly dimming as it dives back toward the Sun. It will be occulted by the Moon at 10am on Oct 24th, but will be challenging to see in the daylight.

Mars rises at about 10pm and gives a great show this month that will get even better as the year progresses. Use color filters on it and Jupiter this month to bring out faint details at high and medium powers.

Pluto is a dim magnitude 15.2 starlike object in our sky this month. A finder chart is the best way to find it with a decent quality telescope, as the finder chart will show you the pattern of

stars it is among so that you can pick out the dim star that isn't a star and add Pluto to your list of observed planets. The In-the-Sky.org website maintains a printable finder chart at:

<https://in-the-sky.org/findercharts.php?id=A134340>

The Starship Program



SpaceX is deep into development of its Starship launch vehicle, a craft that is larger and more powerful than Apollo's Saturn V. It promises to lift over double the mass of a Saturn V's payload, and be fully reusable.

Currently, testing and preparations for the first orbital launch of the Starship aboard its booster rocket are under way in Boca Chica, TX. Prior flights have only been suborbital launches of the second stage, called Starship by itself, with the large rocket that will take it to orbit known as the Booster.

The Booster uses 33 Raptor rocket engines, burning methane and oxygen, to bring Starship to high altitude and velocity before detaching and returning to Earth. The first few launches are expected to expend the Booster, with later launches attempting to land the behemoth for reuse.

The Starship's earliest launches will carry the new Starlink 2 satellites to orbit, and are also expected to be expended with landing and recovery tests coming soon after, possibly as early as the second or third launch.

<https://www.spacex.com/vehicles/starship/>