VILLAGES STAR
Newsletter of The Villages Astronomy Club

Volume 5, Number 7
July 2024

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

Club Officers & Directors

President	Mark Graybill
Vice President	Ken Katta
Secretary	Randy Gilbert
Treasurer	Linda Meng

Newsletter Contact
saundby@gmail.com
(please include TVAstro in subject line)

UPCOMING EVENTS

Space Academy, July 1st, 6:30pm

This month's Space Academy will be a presentation on X-Ray Astronomy by Toni Graybill.

Meeting begins at 6:30pm at Truman Rec Center, 2705 Canal Street.

Telescope Workshop, July 1st, 8pm

Join us to learn how to use or select a telescope, share your knowledge, or get a look at the sky, weather allowing. In the event of thunderstorms, this event will be moved inside to the Studebaker room, to commence after the completion of Space Academy.

July Exec Directors' Meeting Cancelled

This month's executive directors' meeting has been cancelled due to the meeting falling on the holiday weekend. In August we will return to our usual schedule, with a meeting on August 2nd at Fishhawk Recreation Center, 2318 Buttonwood Way, at 11am.

Comet 2023/A3 (Tsuchinshan-ATLAS)
10 minute exposure by member John Keller of The Village of Winifred on June 23rd.

EAA Meeting, July 10th, Homestead Astronomy Park, 8pm

Join us at Homestead Astronomy Park for an evening of observing with smart telescopes! Owners of smart scopes or scopes with smart controllers are welcome as are those who are interested in learning more about the options to get started in Electronically Assisted Astronomy (EAA).

We will open the park before sunset for setup. We will keep the park open late if weather permits.

General Meeting, July 16th, 6:30pm: Your Astronomy Activities--Round Table

Join us at Laurel Manor Recreation Center, 1985 Laurel Manor Drive, to tell us about your astronomy activities. There are many ways to be

active in astronomy beyond observing (especially during Florida summers!) Whether it's reading, following podcasts or livestreams, volunteering with the club or at educational activities, or doing "darkroom" work on astrophotos, tell us what you do, what you'd like to do more of, and how the club can support you in your interests in space and astronomy.

June 15th, 5pm:
Fruitland Park Astronomy Group

The Fruitland Park Astronomy Group meets for an evening of observing and talk on the third Saturday of the month every month, conditions allowing. The meeting is at the Cales Soccer Field in Fruitland Park at 300 Shiloh Road (at the corner of Shiloh Road and Dixie Avenue, north of the Fruitland Park water tower.) The Villages Astronomy Club members and the public are welcome. Gate opens at 5pm, solar observers can catch the sun while it's up, and astro observers can set up in daylight.

Scopes can be set up directly off of tailgates onto pavement, or taken further into the park to avoid lights. Bring power if needed.

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

Camp Villages, 2024

The Villages Astronomy Club will be taking part in Camp Villages again this year, bringing astronomy related education and activities to grandparents and grandchildren.

Our activities will be held at Homestead Recreation Center as in the last two years, with our dates being July 18th and 31st at 9am. If you are interested in volunteering, we strongly suggest that you attend the June and July Executive Directors' meetings, and you need to contact either Randy Gilbert, Jeff Kahler, or Toni Graybill to volunteer and get information on when and where the volunteer preparation sessions will be held.

Volunteers who have previously signed up and submitted volunteer forms for Camp Villages will be expected to arrive before 9am on the days of the events. Volunteers will be contacted when we schedule a preparatory meeting to review our materials and processes for the events. Stay tuned!

NEWS

SpaceX Launches Starship 4th Time

SpaceX's Starship has completed its fourth flight test successfully, achieving all flight objectives and going beyond its capabilities in prior flights. This brings Starship another big step closer to reusability, the main focus for this flight test.

In this flight, Starship launched with one of the 33 engines on the booster stage being shut down, but with no obvious effect on its thrust. In fact, this flight cleared the tower and reached staging faster than any other flight so the remaining engines were more than up to the task.

As the booster stage throttled back to only 3 engines running, the engines on the second stage fired, launching it off the top of the booster in what is known as "hot staging" because it starts without the first stage every turning off its engines.

At that point, the booster flipped end for end, pointing itself back toward its launch site in Texas, and fired 10 additional engines to give itself the thrust to boost itself back. For this flight, the plan was for the booster stage to ditch into the

Gulf short of the launch site and perform a precision landing at sea.

The booster successfully did this, gently landing in the Gulf before toppling over.

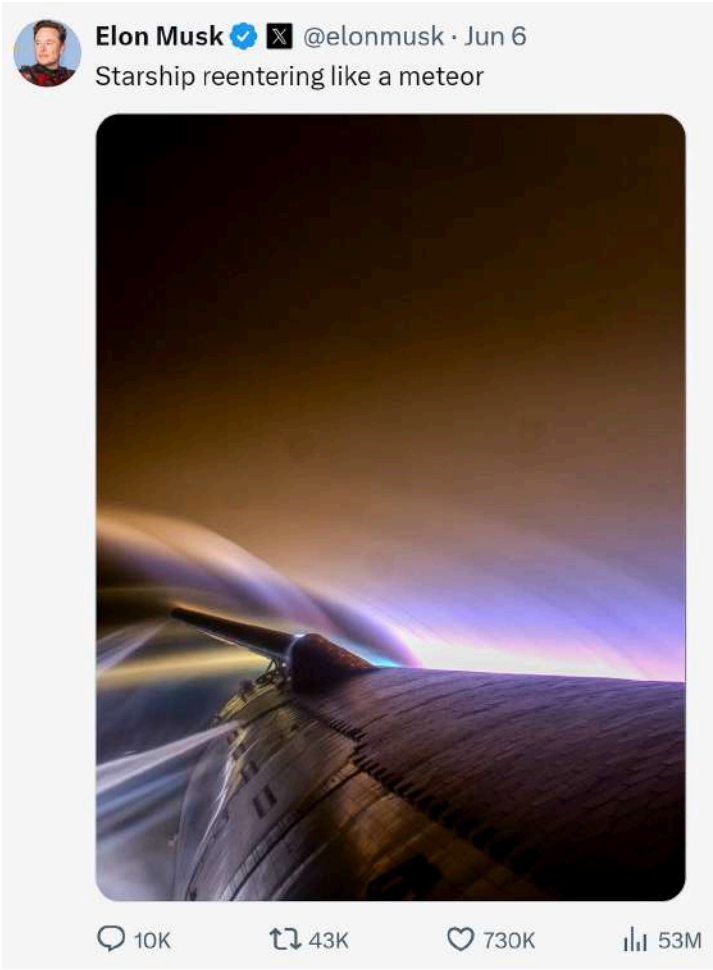
Starship Separates from the Booster
SpaceX image.

Meanwhile, the second stage boosted itself to orbit. The orbit was planned to have a low perigee so that Starship would automatically re-enter the atmosphere over the Indian Ocean. This meant there was no chance of Starship being left in an uncontrolled orbit in the event of mishap.

After successfully cruising in space, the Starship re-entered the atmosphere at orbital velocity. This was the first good test of Starship's heatshield, as the Starship was unable to maintain a proper orientation during re-entry on flight test 3. On flight test 4, the ship was still in control and entered with its heat shield in the proper orientation.

The flight back to the ground was exciting, as hot plasma from the atmosphere found a path through the heat shield where a forward fin connects to the body of the craft. On the way down, we saw the rear actuator and hinge of the fin burn away with molten steel thrown toward the camera. The fin stayed attached and functional all the way down, however!

After several minutes of wondering whether Starship would survive re-entry, we saw it enter the lower atmosphere and conduct its "belly flop" maneuver to slow itself like a skydiver, then rotate nose up just before reaching the ground to land on its tail. It landed softly in the ocean, then fell forward into the water. THEN the flap fell off!



Flight Five

The next flight will test an improved version of the heat shield on Starship SN30, which is being installed as this is being written. The new heatshield includes an ablative blanket between the heat shield tiles and the body of the ship in its hottest areas so that the ship can survive the loss of some tiles.

Also, the tiles themselves are both thinner and stronger than the tiles used on flight 4. They are reported to be twice as strong, and to be fit more precisely than the earlier tiles.

Flight 5 will test these tiles, and will also test the ability of Starship to fire its rockets in space. If successful, then Starship will be able to go into full orbit with certainty that it will not be stuck in orbit and re-enter in an uncontrolled fashion.

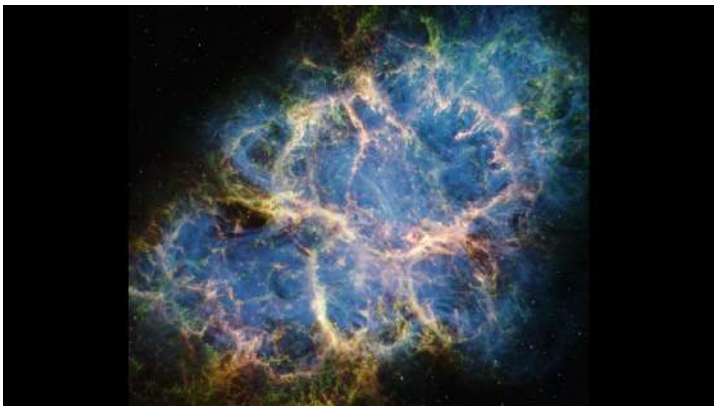
Further, SpaceX has stated that they will test the ability to catch the booster on flight 5. The launch tower used for Starship has a pair of giant

arms. Normally used as a crane to stack the pieces of Starship and the booster before flight, they can also be used to catch returning boosters so that they can be reused. This will be tested in flight 5.

Full story:
https://www.spacex.com/launches/mission/?missionId=starship-flight-4

JWST Garners Details of a Supernova

JWST images of the Crab Nebula in Taurus have revealed details of the supernova that created the nebula.



Crab Nebula Reveals Details of the Supernova STSci image.

The supernova was a core-collapse supernova, but it had an unusually low energy as determined by the outflow of the star's former atmosphere. Now it appears to have been an electron-capture supernova, created from a star that did not have an iron core, but rather had a core that still had high quantities of oxygen, neon, and magnesium, elements that astrophysicists would normally expect to fuse into heavier elements before core collapse and a supernova.

The core of the Crab nebula now contains a pulsar.

Full story:
Investigating the Origins of the Crab Nebula With NASA's Webb

Boeing Starliner Gets Prolonged Flight

Boeing's Starliner Capsule Successfully Docked to the ISS. NASA Image.

After multiple delays, Boeing's Starliner Capsule, part of NASA's Commercial Crew Vehicle program launched on June 5th toward a successful docking with the ISS. Some minor problems developed after launch, which were mostly dealth with during the approach to the ISS. There was no danger to the crew.

Currently the crew is enjoying an extended stay aboard the ISS. The extra time allows for more testing of the new capsule, and time to fully characterize the service module's intermittant thruster issues while in space. The service module will be destroyed upon re-entry, so now is the only time to perform this work.

Additionally, the crew is getting a chance to evaluate its environmental systems while in space, and with 4 people on board by recruiting members of the ISS crew to assist in the testing.

Return is currently slated for July 25th. Unscrupulous media are attributing this to problems that they are imagining--there are no

problems with returning the Starliner. In fact, if there actually were problems, they would have returned it early, not extended its stay. Be careful where you get your information!

https://starlinerupdates.com/

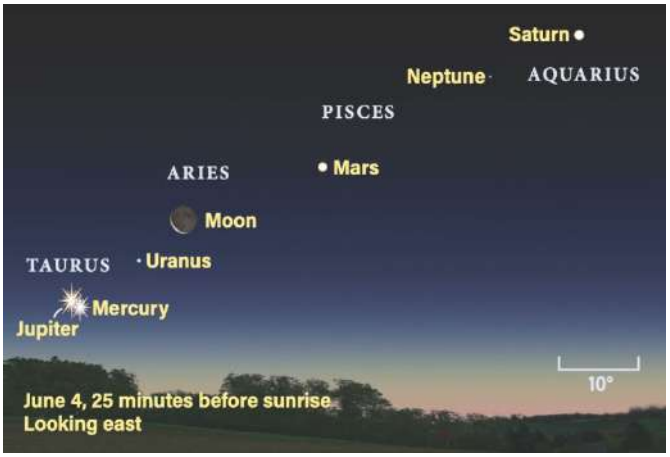
IN THE SKY THIS MONTH

The Moon:

New Moon, July 5th
1st Quarter, July 13th
Full Moon, July 21st
Last Quarter, July 27th
New Moon, Aug 4th

A Wave of Deceptive Reporting about last June's six planets strung in a line caused unfulfilled excitement among many stargazers. Promised a view of six planets in a row, using internet images of a glowing fantasy of worlds in a line, I received many contacts from people wondering why they couldn't see it for themselves.

Garbage from the Internet, Polluting Minds.
A line in the sky does not mean a line in space.



More nonsense, presented in a more believable fashion. Still wrong.

@astronomydave on Twitter gave this image, with a more reasonable assessment.

What was actually visible was two planets, spread widely across each other from the sky: Mars, looking like a medium bright star, and Saturn, the only planet in view worth noticing.

The moral of the story is to disbelieve those pretty pictures on the internet, or from major media outlets (they get their information from the internet, too!) The more they play something up, the less likely it is to be true, or to be significant as an observational event.

Rarely they will stumble on something real, like 2020's conjunction of Jupiter and Saturn. But 1 out of 100 is not a reliable average.

My advice is to not believe anything you haven't read about on either the Sky and Telescope or Astronomy Magazine websites!
https://skyandtelescope.org/
https://www.astronomy.com/

Saturn rises at about 11pm at month's start, about 8:30pm at the end of the month. At magnitude 0.8 it appears as a bright star to the eye. Its disk spans 18.3 arcsec, making a nice low to mid-power telescopic target, with the rings being about 30 arcsec across. The rings are at a very low angle, as we approach the ring plane crossing next year.

Saturn finder chart:
https://in-the-sky.org//data/object.php?id=P6

Mars remains an early morning object this month, rising at about 1:20am at the start of the month, getting slightly earlier each night until it rises just before 12:30am at month's end. At magnitude 0.9 it is a bright red star, but at 5.6 arcsec across it remains a medium to high power object to resolve. Only the largest surface features, such as Syrtis Major, will be visible.

Online observing information for Mars:
https://in-the-sky.org//data/object.php?id=P4

Jupiter is also an early morning object this month, rising a little before 2:30am at the start of the month, to about 12:45am at month's end. It is brilliantly bright at magnitude -2.1, though, and the disk is visible at low powers in a telescope, being 34.3 arcsec across. If you're willing to be up at the hours it's visible, it will be a good subject for your telescope.

Jupiter observing information:
https://in-the-sky.org//data/object.php?id=P5

Mercury reaches greatest elongation on the 7th, when it is as far from the Sun as it will get this year. It will set almost 2 hours after the Sun, so it will be visible in a dark sky. At magnitude 0.2 it will be a bright yellow/orange star, with some reddening from being low in the sky. Look in the west after sunset to see it.

It's a small planet, so at an angular size of 6.9 arcsec it will take medium to high powers to bring out its disk. Don't expect to see any surface detail, though, as it is notoriously faint on Mercury (which is why we didn't even know the length of Mercury's day until late in the 20th century!)

Mercury online viewing chart:
https://in-the-sky.org//data/object.php?id=P1

Venus stays close to the Sun as an evening star this month. At magnitude -3.9 it is bright enough to see in the setting Sun's glare and for about 45 minutes after sunset. It will remain as an evening star for the rest of 2024, gradually making its way further from the Sun in our sky.

Venus online finder chart:
https://in-the-sky.org//data/object.php?id=P2

Uranus rises at about 2:15am at the start of the month, and a bit before midnight at month's end. At magnitude 5.8 it will take binoculars or a telescope to see it in our humid skies. Medium to high powers in a telescope (100x or more) will bring out its disk at 3.5 arcsec.

Uranus finder chart:
https://in-the-sky.org//data/object.php?id=P7

Neptune follows Saturn across the sky, about 20 minutes behind it. At magnitude 7.7, it will take at least binoculars to see it. It will look like a blue or green non-stellar object even in binoculars, though it will take high powers in a telescope to show its 2.3 arcsec disk.

Online finder chart for Neptune:
https://in-the-sky.org//data/object.php?id=P8

Spica Occultation

The Moon will pass in front of the bright star Spica, in Virgo, from our perspective on July 13th. We will be able to see the Moon hide Spica from Florida, but we won't be able to see it re-emerge.
https://in-the-sky.org/news.php?id=20240714_16_100
Astronomical League Handout (PDF):
https://www.astroleague.org/wp-content/uploads/2024/06/2024-July-Moon-and-Spica.pdf

More information on sky events this month: https://in-the-sky.org/

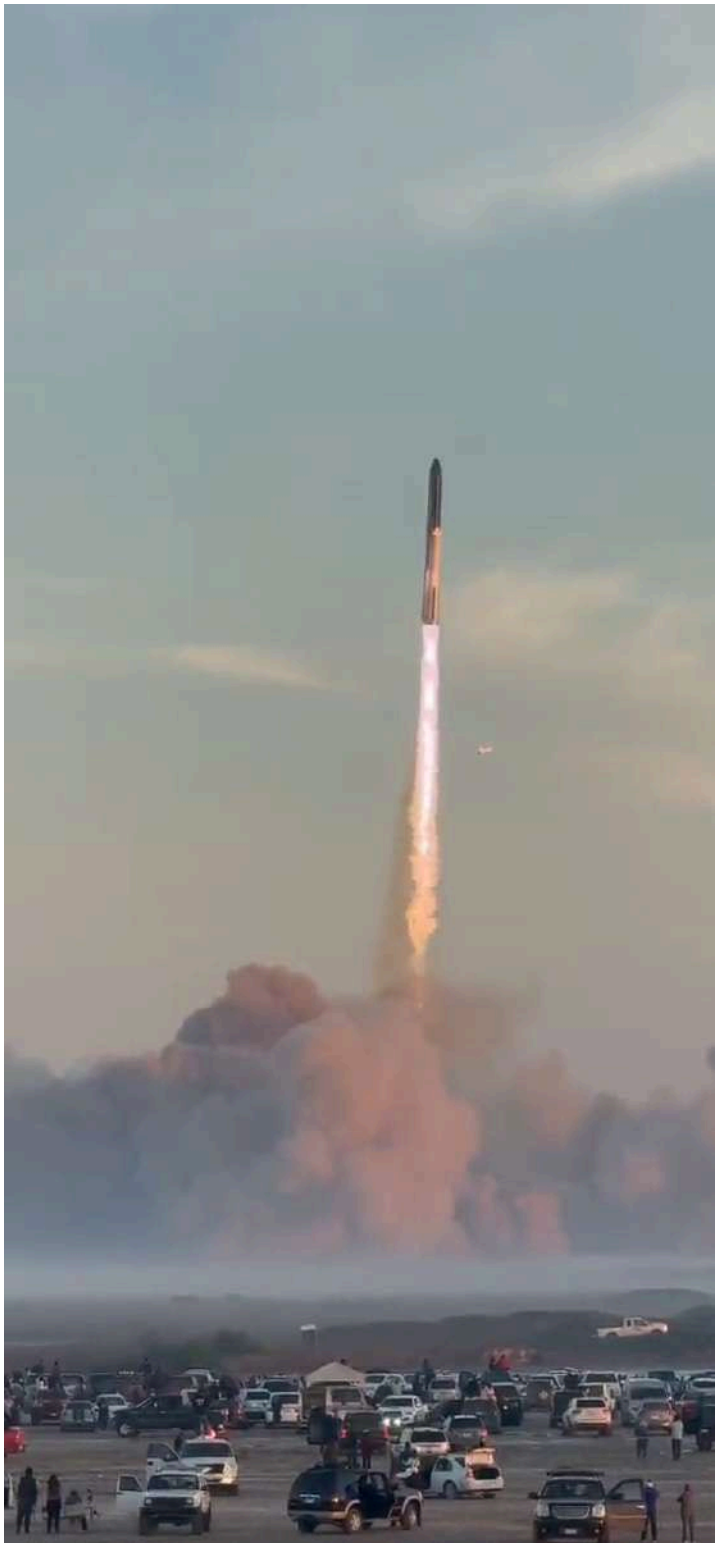
Club Calendar

Yellow marks special events hosted by The Villages Astronomy Club
Blue marks events that are not hosted by The Villages Astronomy Club
Green Marks Volunteer Events for other groups.

July 2024
1 Telescope Workshop 8:30pm/Space Academy: Toni Graybill presentation, 6:30pm
5 Exec Meeting Cancelled for holiday
10 EAA Meeting 8pm Homestead Astro Park
16 General Meeting: Round Table: Your Astronomy Activities. Members share what they do related to astronomy, from watching videos and reading books to observing or doing crowdsourced science.
17 Camp Villages, Homestead Rec Ctr, 9am
20 Fruitland Park Observing Cales Field Fruitland Park
31 Camp Villages, Homestead Rec Ctr, 9am

August 2024
2 Exec Meeting
5 Telescope Workshop 8pm/Space Academy 6:30pm (possible alternative date for astrophotography wkshop.)
7 EAA Meeting 8pm Homestead Astro Park
17 Fruitland Park Observing Cales Field Fruitland Park
20 General Meeting: Round Table: Your Astronomy Resources. Members share their astronomy resources--favorite video/news channels/vloggers, magazines, books, websites, software/apps, etc.
27 Camp Geneva Volunteer Star Party

Club Calendar on the web: https://vlgastroclub.org/calendar/



Starship Launch as Seen from Mexico image by Jona C.