New Braunfels Astronomy Club

Larry's Celestial Calendar & Newsletter by Eric Erickson

291st Edition October 21st to November18th,2021

Venus Dominates Summer Evenings

Jupiter and Saturn are Beautiful

Blue Neptune

Gray-Green Uranus at Opposition

Leonid Meteor Shower Peaks

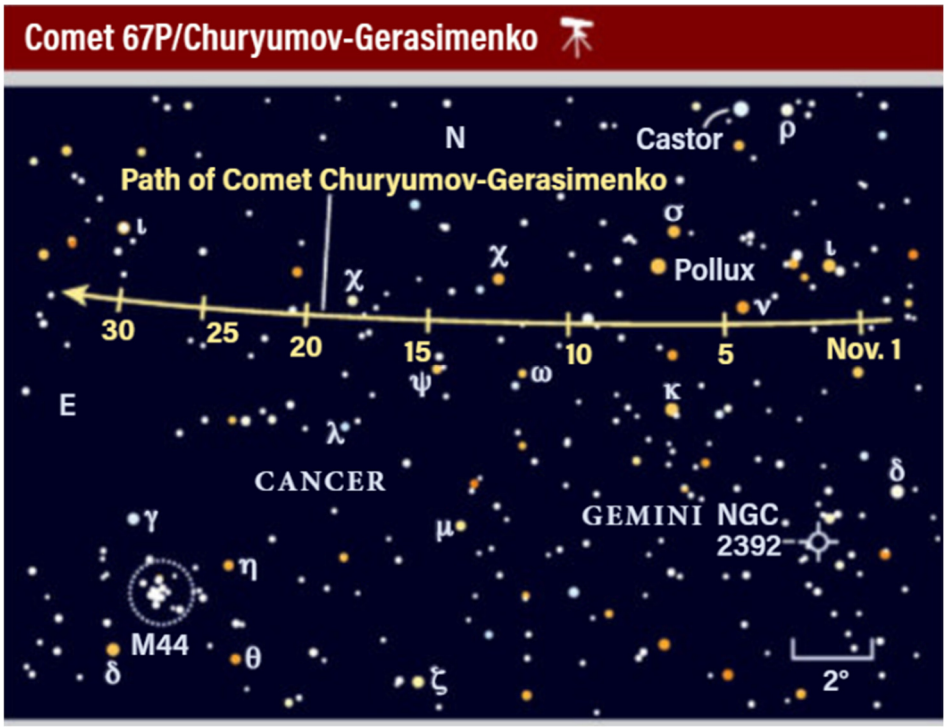
Highlight Calendar for Clear Skies

Well, it's back to simpler times – gotta do some of this with words vs pictures. Can't get into Sky & Telescope's digital editions.

- October 25 – Mercury returns as a morning planet but get up well before sunrise to see it in the east.
- November 3 – Check out Mercury and a very thin crescent Moon above in the east-southeastern sky before sunrise.
- November 4 – Uranus is at opposition
- November 7 – Brilliant Venus and a waxing crescent Moon share the southwestern sky after sunset.
- November 10 – Mars returns as a morning planet and pairs up with Mercury in the low east-southeastern sky before sunrise.
- November 17 – The Leonid meteor shower peaks in the eastern sky pre-dawn hours. A waxing gibbous Moon interferes.

Solar System Observing

- Mercury returns, low in the pre-dawn eastern sky starting on October 25th.
- Venus dominates the western evening sky after sunset.
- Earth still spins, and we are still here to marvel at it all.
- The Moon pairs up with stars and planets as usual and looks great.
- Mars appears dimly on November 10th paired up with Mercury in the pre-dawn, low east-southeastern sky
- Jupiter is past opposition, in retrograde (westerly) motion, and looking great.
- Saturn is past opposition, rising about an hour earlier than Jupiter.
- Uranus reaches opposition on November 4th and is visible most of the night in southern Aries. At magnitude 5.7 it should be catchable in binoculars. Look for a fairly bright greenish gray "star".
- Neptune is past opposition but at its distance opposition lasts a long time. It's magnitude 7.7, visible in binoculars, so catch this bright blue "star". It's up most of the night and a nice target in eastern Aquarius
- Comet(s)
    - Identified in 1969, Comet 67P/Churyumov-Gerasimenko was examined by the Rosetta spacecraft and Philae probe in 2014. At magnitude 8-9 it can be seen with 4" and larger telescopes. Look for it late at night and after November 10th, after midnight.



-From Astronomy Magazine

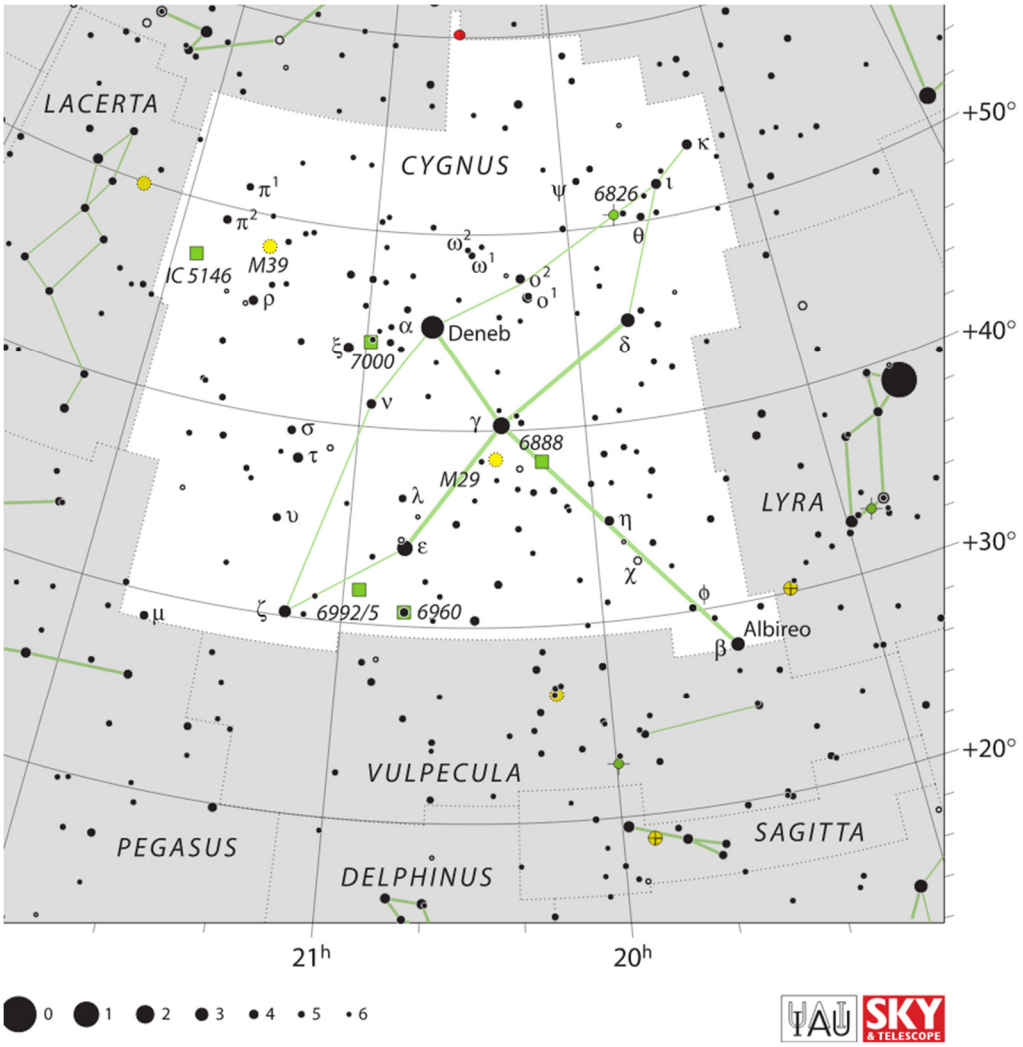
Best ISS viewing for New Braunfels (works for Canyon Lake too).

-From Heavens Above

Date	Start Time	Start Loc	Max Alt °	End Loc	Note
10/21	06:55	WSW	41	NE	
11/08	06:22	NW	44	SE	Passes west of rising Mercury and Mars
11/09	05:37	N	25	ESE	Passes west of Arcturus
11/10	06:25	WNW	40	SSE	Passes close to Betelgeuse and east of Sirius
11/16	18:21	SSW	29	E	Passes close to a waxing gibbous Moon
11/18	18:23	SW	61	NE	Passes by Venus

My Observing Pick: Cygnus, the Swan

Residing in the Milky Way, Cygnus has lots to offer. Its name is the Latinized Greek word for Swan and of course Greek mythology gives Cygnus a soap-opera quality too. Zeus disguised himself as a swan to lure Leda, the wife of a rival king. Next thing you know, Leda has twins, called Gemini, and the story goes on… Cygnus has star clusters, double stars, and nebulae so see the map below and observe. Cygnus also has and asterism, called the Northern Cross.



Imagining Imaging: Platform for club imagers…images and imagers needed!

When will Webb Fly?

OK, it won't actually fly, it will float in a pool of gravity. More on that later.

Hubble has needed a sibling, a bigger, badder, swashbuckling, and more sensitive sibling. The James Webb Space Telescope (Webb) has been designed to supplement, not replace Hubble. Webb is bigger, way bigger than Hubble. Webb is 6.5 meters and Hubble is 2.4 meters. Webb will be badder due to its much higher sensitivity in the infrared end of the electromagnetic spectrum. Webb will be a swashbuckling sort of space telescope because, like Hubble currently, Webb will not have a repair or upgrade team available. When the Space Shuttle program existed, there was at least a chance to fix and/or upgrade Hubble. Not so now and not so for Webb. Even if Shuttles were still operating, Webb will be way beyond a Space Shuttle's reach.

Webb will be on its own! If something critical breaks, an identical backup will take over. Redundancy will keep Webb going for decades…that's the plan.

The riskiest events will be getting Webb into its gravity pool, setting up communications with its command center in Baltimore, unfolding its protective shade, and mirror. Webb's mirror is made of 18 individual hexagonal mirrors (elements) that work together when in place. The mirror elements are arranged in three sections, a center section with 12 elements and two "wings" of 3 elements each, that are folded behind the center during launch. The wings will unfold and join with the center during its trip to final orbit. They must be positioned as designed for Webb to function as designed. The sunshade must be unfurled and positioned as designed to protect Webb from interfering infrared radiation. It must go as designed or be correctable from Baltimore, just under a million miles away!

Webb's orbital destination is called L2, or Lagrange 2. It is one of five places in space where the Earth's and Sun's gravity cancel each other. I call it a gravity pool. A spacecraft in these places can pretty much just float there while orbiting the Sun. Webb is different than Hubble. While Hubble is primarily an optical instrument with some infrared capability, Webb is primarily an infrared instrument, and that is why it needs to be so far from Earth. Our planet and the Moon both radiate a lot of infrared (heat). At its L2 position and with the sunshade in place, there is little infrared interference.

With its large size and deep infrared sensitivity, Webb will see through interstellar and intergalactic dust, significantly beyond what Hubble can see. That gets us farther back in time, to even earlier in our universe's history.

Webb's infrared eyes will also be able to detect planets out there, maybe even signs of life. There will be amazing discoveries, all helping us better understand how it all happened.

When is launch? Latest schedule is December 18, 2021. Fingers crossed.

-Eric Erickson