

New Braunfels Astronomy Club

BECAUSE IT'S OUT THERE

September 15th, 2022

Meeting 276

NOTE: Meeting at TJ's

Agenda

- Open meeting and introduce new members (get names, email)
- Club Business
- Interesting observations, experiences
- Show and tell
- Current news and what's in our sky this month: *Member input + Newsletter*
- Events, outreach
 - Field trip to McDonald Observatory (09/23)
 - TPML Astronomy Night (10/01) IOMN - and planets too
 - Trunk or Treat at Mountain Valley Elementary (10/27) 5-7pm
- Main feature(s)
 - How to photograph DSOs in the rain?

Coming up: **OUR 277th ASTRONOMY CLUB MEETING**

October 20th, 2022, from 6 - 8 pm

TJ's on Loop 337

astronomynbt.org Email: info@astronomynbt.org

 [Astronomy Friends New Braunfels.....](https://www.facebook.com/groups/354953995432792/) [facebook.com/groups/354953995432792/](https://www.facebook.com/groups/354953995432792/)

 [Comal County Friends of the Night Sky.....](https://www.facebook.com/groups/166098014710276/) [facebook.com/groups/166098014710276/](https://www.facebook.com/groups/166098014710276/)
comaldarksky.org Email: info@comaldarksky.org

Larry's Celestial Calendar & Newsletter

by Eric Erickson

New

Braunfels

Astronomy

Club

BECAUSE IT'S OUT THERE

302nd Edition

Volume 25, Number 9

September 15th to October 20th, 2022

* NBAC's 25th Year! *

Inside this Issue

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Solar System Happenings

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Interview: *Steven Finkelstein on JWST*

Lagniappe

Cover Story> Sgr A*: The Main Arena or Sideshow?

Event Horizon Telescope

SEPTEMBER/OCTOBER 2022

SUN MON TUE WED THU FRI SAT

On the cover: The Event Horizon Telescope (EHT) collaboration imaged Sagittarius A* in 2017. It took 5 years of careful data processing to arrive at this best fit image.

15

NBAC Meeting 6:00
TJ's - Loop 337

16

Sept 15-17
Midnight

17



Sky & Telescope



Looking East-Northeast

18

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OCT 01

Astronomy Night at
TPML
International
Observe the Moon
Night

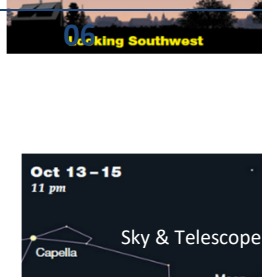
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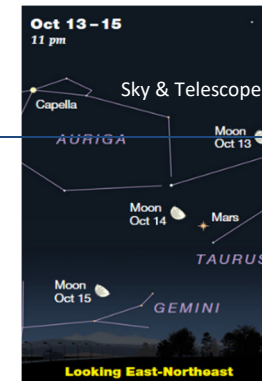
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NBAC Meeting 6:00
TJ's - Loop 337

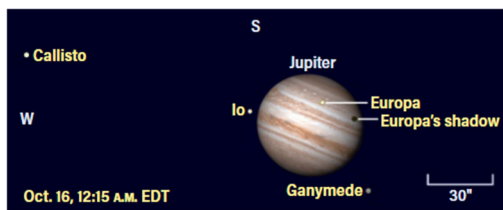
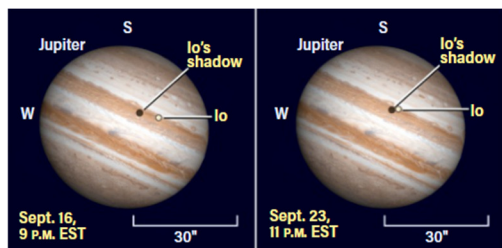
Solar System Happenings

- Mercury is low on the horizon after sunset and by mid-September is a southern hemisphere object. It returns in October as a nice pre-dawn planet.
- Venus is bright in the eastern morning sky but heading for superior conjunction with the Sun so getting lower and lower.
- Earth still spins, and we are still here to marvel at it all.

Best ISS viewing for New Braunfels (works for Canyon Lake too) -From [Heavens Above](#)

Date	Start Time	Start Loc	Max Alt °	End Loc	Note
09/15	21:18	W	14	N	Enters Earth's shadow
09/16	20:28	WSW	23	NNE	
10/05	19:38	NNW	22	E	Enters Earth's shadow near Jupiter
10/06	20:26	NW	50	SSE	Enters Earth's shadow in Microscopium
10/07	19:37	NW	72	SE	
10/08	20:26	WNW	14	S	Close to Antares
10/09	19:36	NW	27	SSE	
10/17	06:31	S	15	ENE	Hugs the horizon
10/19	06:30	SSW	53	NE	Exits Earth's shadow at 06:29:58

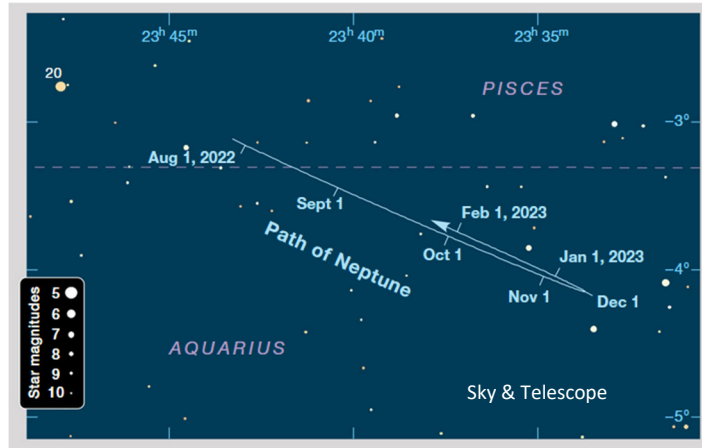
- The Moon dances with planets and stars.
- Mars is paired with Aldebaran in Taurus and a nice site to see. It rises after 10pm and brightens over the coming weeks. Look in the early morning for a triangle formed by Aldebaran, Mars, and Betelgeuse.
- Jupiter is at opposition on September 26th. Nice transits by Io and Europa occur. Look for Io transits on September 16th and 23rd and Europa on October 16th. Start viewing before the transits occur to witness them crossing in front of the planet's disk!



Astronomy (2)

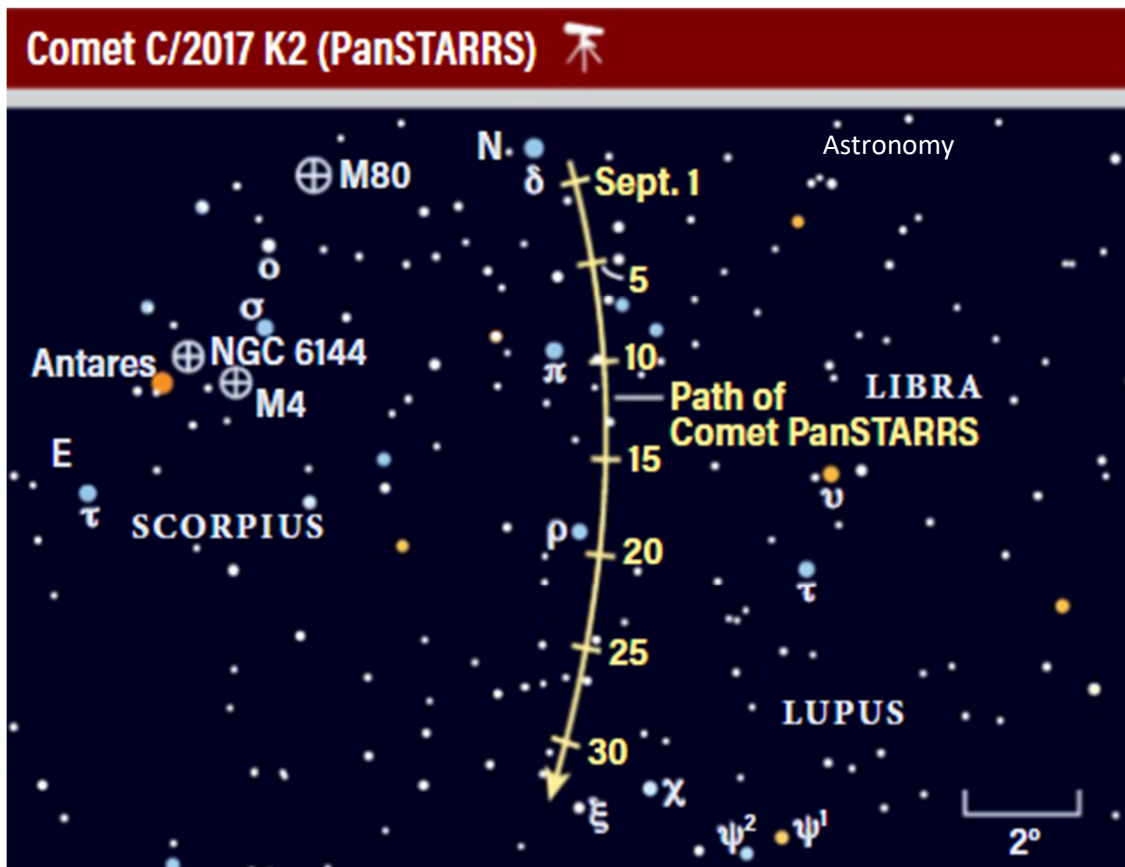
- Saturn rises after sunset and dominates the evening sky.
- Uranus is in Aries, rising late night (east) and a morning planet in the southeast – use binoculars or telescope. On October 11 the Moon nearly occults Uranus. Watch them get close after 10:45 pm.

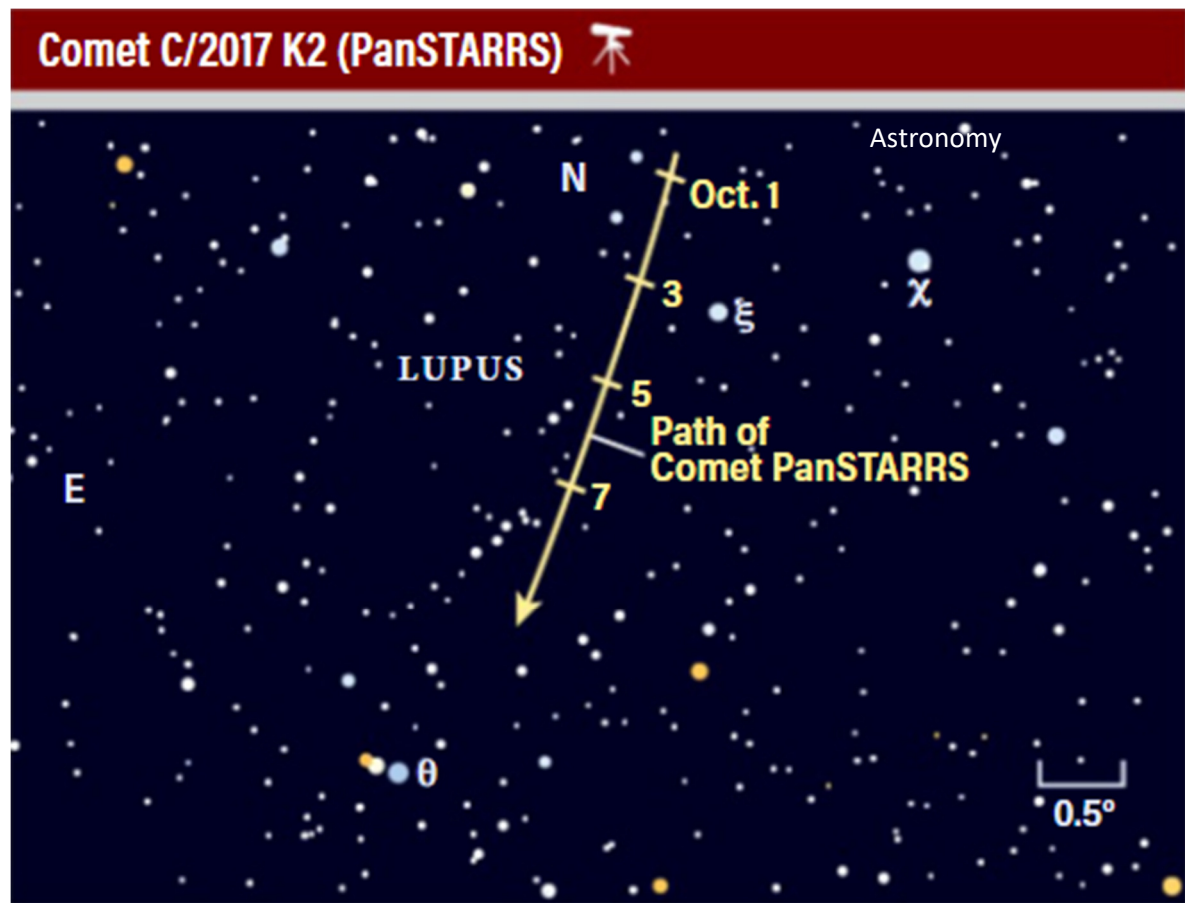
- ✚ **Neptune** is at opposition on September 16th and an all-night planet in northern Aquarius – use binoculars or telescope.



✚ Comet(s)

- PanSTARRS (C/2017 K2) is from the Oort Cloud and still lurking. Mag 8+. It continues its southern trajectory and becomes a southern hemisphere comet by mid October.



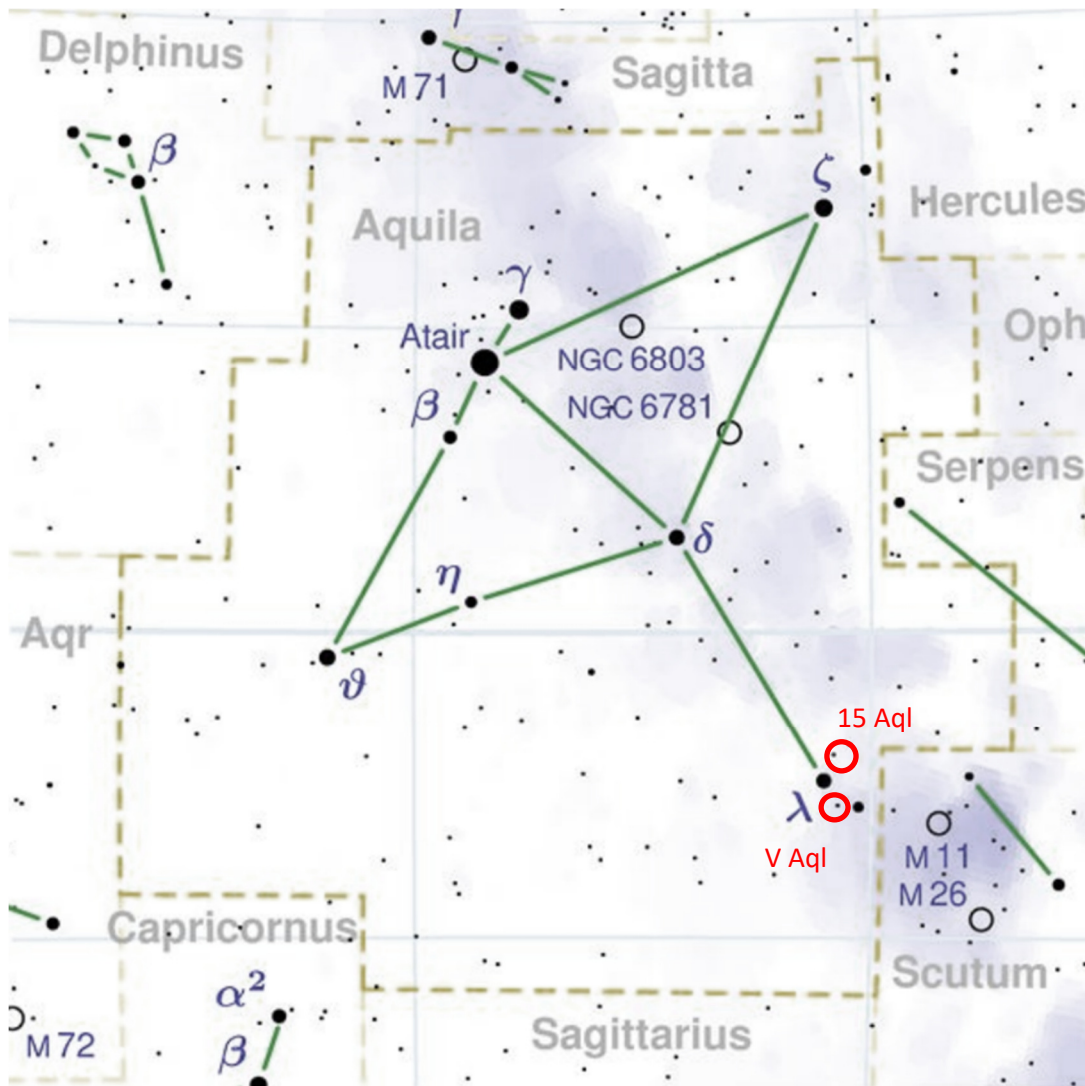


My Celestial Pick: Aquila – The Eagle

Carrier of thunderbolts, Aquila was a king's bird. Roman mythical king Jupiter and the Greek's Zeus, Aquila was a formidable weapon.

Also one of Ptolemy's original 48 constellations, Aquila is visible to the naked eye, and has a bright star (Altair) to help spot it. Altair just happens to be one of the Summer Triangle stars (Vega, Deneb, Altair). It can be found by looking above Sagittarius, then above Scutum and see bright star Altair at its neck.

Aquila has deep sky objects, but they are not easy targets. Two are listed here. NGC 6803 and 6781 are planetary nebulae. 6781 has been described as resembling M97, the Owl nebula. 6803 has a compact ring. Aquila has some interesting stars, notably a red carbon star, V Aquilae and a nice optical double, 15Aquilae, whose members are orange...and purple?



Imaging Imaging: Platform for club imagers...images and imagers needed!

Cover Story: Sagittarius A* (Sgr A*)

Are those supermassive black holes at the center of galaxies main events in the big tent, or they side shows, just vying for attention?

The big tent, our universe, might not even be the main arena, so all this fuss over galactic central black holes might be pretentious. The current state of technology informs us more about what we do not know or cannot see, giving us just a glimpse at what is.

Sgr A* represents a glimpse. Using every conceivable tool available in the electromagnetic spectrum, including the Earth diameter equivalent Event Horizon Telescope, we have concluded that Sgr A* is a black hole. OK, a supermassive black hole.

From the time Karl Jansky (father of radio astronomy) reported a radio source coming from Sagittarius we had speculated, examined, observed, tested, and measured it. But it wasn't until teams from Germany and the US were able to discern the orbits of several stars around what appeared to unoccupied space that there was enough evidence for a black hole. Then the Event Horizon Telescope image...

We are certain most galaxies have a super massive black hole at their centers, maybe even powering those enigmatic QUASARS from the early universe.

Glimpses. That's all we have. We're still in the dark ages and working on it. Supermassive black holes might represent portals to the rest of the story.

-Eric Erickson

FROM THE PODCAST



Steven Finkelstein

Associate professor of astronomy, The University of Texas at Austin

BY OLIVIA ALDRIDGE

In July, President Joe Biden released some of the first images from the James Webb Space Telescope, a new tool for NASA that is 100 times more powerful than the Hubble telescope. Since that first deep space field image was released, more images and data have become available from Webb, including shots of Jupiter, the Southern Ring Nebula and more. These images may have captured the world's attention, but they also have a local connection: several faculty members from The University of Texas at Austin's Astronomy Department will be among the first to lead projects using the telescope, including Steven Finkelstein, an associate professor of astronomy at UT.

This is an excerpt from the interview, lightly edited for length and clarity. Listen to the full interview at communityimpact.com/podcast for more of Finkelstein's insights on studies connected to the James Webb Space Telescope and leading space research from The University of Texas at Austin.

THE INITIAL IMAGES FROM THE JAMES WEBB SPACE TELESCOPE WERE YEARS IN THE MAKING. WHAT WAS YOUR INITIAL REACTION WHEN YOU FIRST GOT TO VIEW IMAGES CAPTURED BY THE TELESCOPE?

The initial reaction was astonishment. We knew that it was going to be the most powerful telescope we've ever launched into space, and we'd made simulated images of what we think Webb should see. But seeing the actual images, especially in full color, I think the most astonishing thing for me is the level of detail. You can see not just nearby galaxies, but really distant galaxies.

WEBB IS EXPECTED TO REMAIN IN SERVICE FOR THE NEXT DECADE-PLUS. WHAT CAN WE EXPECT TO COME FROM ITS MISSION IN THAT TIME?

This is where things get really exciting, because everything we're doing now is based on what we thought we would see or what we could predict. ... With these first images, we're going to discover lots of questions we didn't even know how to ask, and that will really inform how we use the telescope into the future.

Even just in this first year of operations, there will be over 500 hours, if not 1,000 hours, going to programs studying the very distant universe. And that's what I'm really excited about: to try and find some of the earliest galaxies forming after the Big Bang, trying to understand what they're like. Just in our first few days with the data, we've already seen some exciting objects that we're still working our way through. It will be some time, I think, before we're ready to talk about it in public, because we want to make sure we get it right, but that's really going to inform how we use the telescope in the future. ... I think it'd be great eventually to get that to 1,000 hours and to see

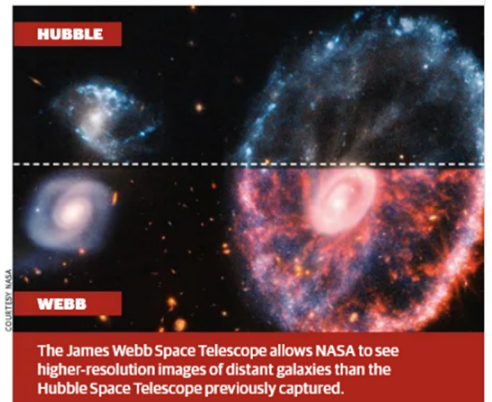
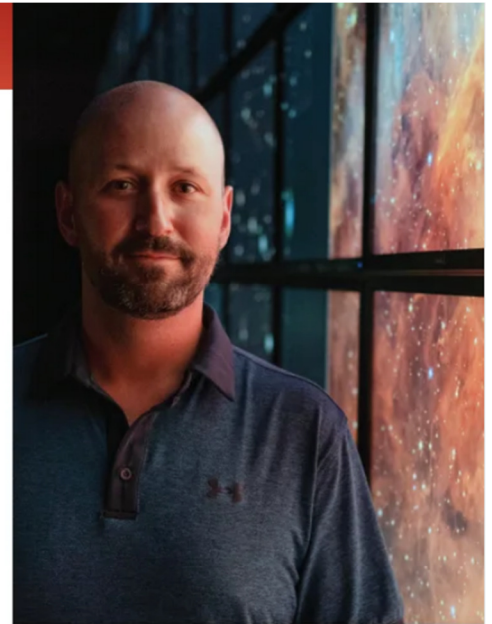
the deepest view that we'll ever be able to get of the universe.

TELL ME SPECIFICALLY ABOUT THE WORK YOU AND YOUR COLLEAGUES ARE DOING WITH THE TELESCOPE AT UT. CAN YOU GIVE US AN IDEA OF THE SCOPE OF THE SURVEYS THAT YOU'RE CONDUCTING?

There's three big ... surveys being led at UT. There's the early release science survey called CEERS, which stands for the Cosmic Evolution Early Release Science survey. That's what we're working on today ... [NASA] did a program to select early release science programs covering all of astronomy. We're sort of the "distant universe" early release science program, but there's a solar system one and there's a nearby galaxy one [as well] with all of them are getting data very, very early this year.

Then there's [the Next Generation Deep Extragalactic Exploratory Public] survey. That's Webb's first attempt at a deeper-than-Hubble Deep Field, or really deep field. And then the biggest program in Cycle 1 is led by my colleague, Professor Caitlin Casey. That's called the COSMOS-Webb program, and that's trying to make the widest view of the distant universe.

So if you're taking a sort of fixed amount of telescope time, you can decide, "Do I want to just point at one spot in the sky and kind of drill deeply, or do I want to go not quite as long, but build up a map, what we would call a mosaic, in an area of the sky?" The combination of NGDEEP and COSMOS-Webb allows us to do both in the first year. NGDEEP is our deep-drilling field. We're going to try and go very deep, but over a pretty narrow spot in the sky. ... The COSMOS-Webb area is going to be bigger than the size of the full moon in the sky—so not all that deep, but going very, very, very wide, trying to find the most massive galaxies, the beasts in the early universe.



The James Webb Space Telescope allows NASA to see higher-resolution images of distant galaxies than the Hubble Space Telescope previously captured.

WHAT DO YOU THINK THE VALUE IS TO LEARNING MORE ABOUT THOSE EARLY PARTS OF THE UNIVERSE AND THOSE EARLY GALAXIES?

There are a lot of ways to answer this question, and I think you'd get a different answer from every scientist you talk to. I think of it as the ultimate origin story. Humans throughout time have been driven to understand where we come from, and we're sort of taking that to the extreme trying to figure out where our Milky Way galaxy comes from. We know that galaxies grow with time, but we don't know how they get started. So by trying to look at the very, very early universe, we're really getting the first glimpse into how our own Milky Way galaxy came to be.



**The Austin
BREAKDOWN**

This is an excerpt from an interview for "The Austin Breakdown," *Community Impact Newspaper's* weekly local podcast, lightly edited for length and clarity. "The Austin Breakdown" is hosted by Olivia Aldridge and released every Friday morning wherever podcasts are available.

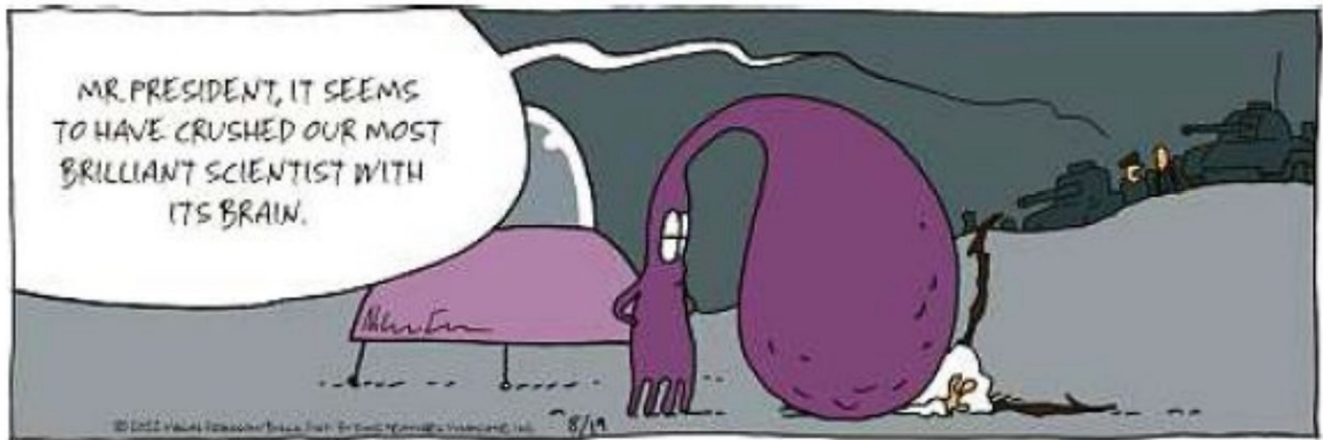
Listen to the full interview for more of Steven Finkelstein's insights on NASA's James Webb Space Telescope and developments in astronomy research at The University of Texas at Austin.



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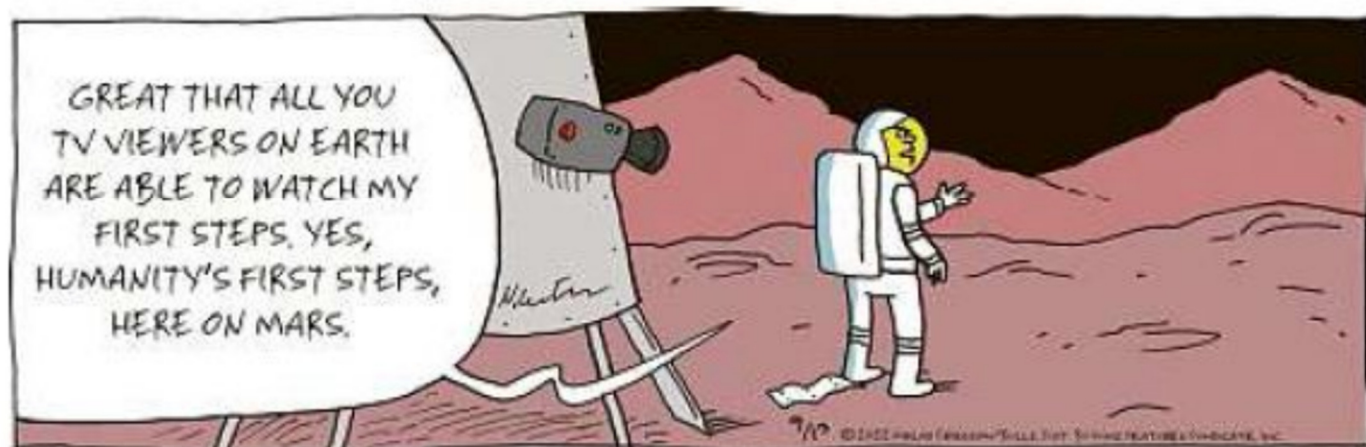
CARPE DIEM



CARPE DIEM



CARPE DIEM



THE OTHER COAST



CARPE DIEM

