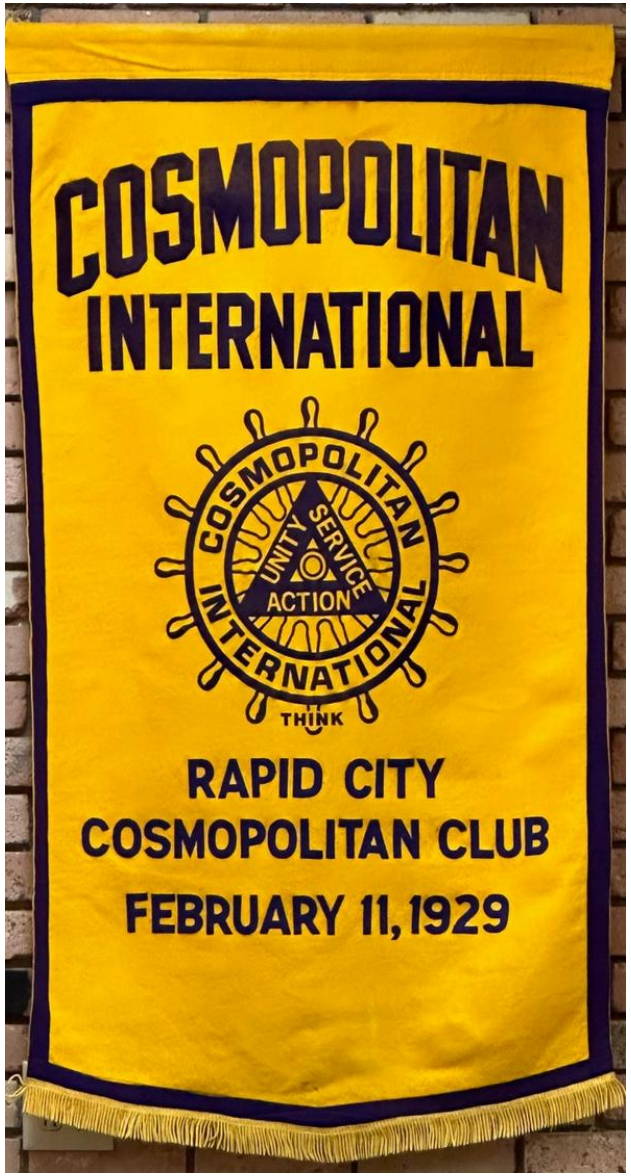
Cosmopolitan Ray's June 22, 2026


COSMOPOLITAN
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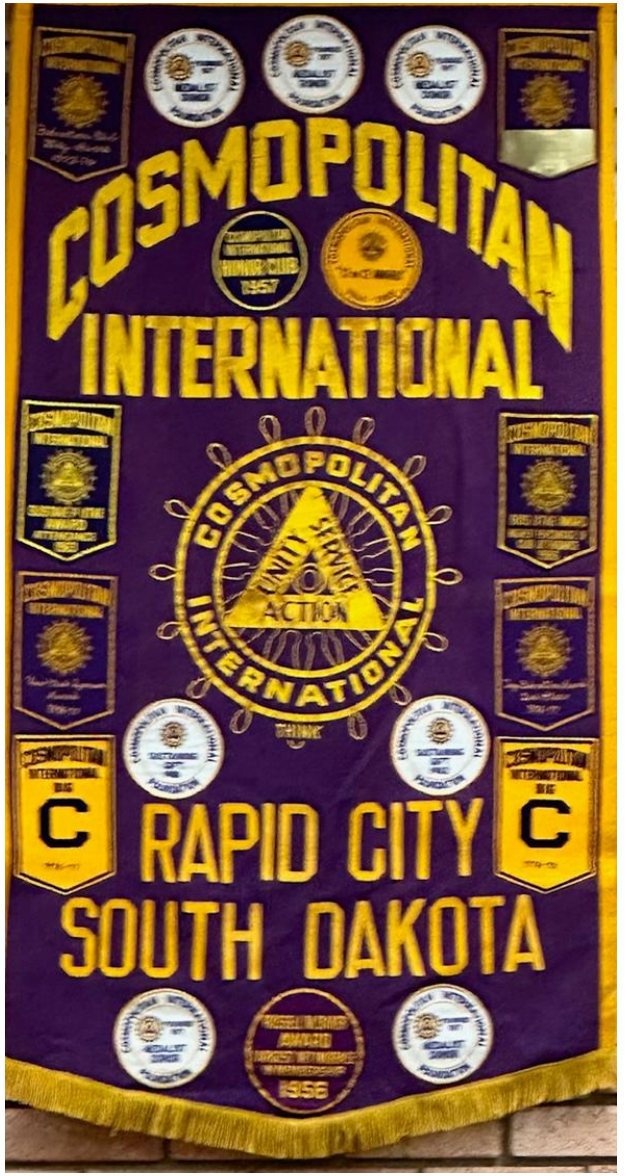
RAPID CITY
COSMOPOLITAN CLUB
FEBRUARY 11, 1929


COSMOPOLITAN
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RAPID CITY
SOUTH DAKOTA

President Becky Kerr Called the Meeting to order at 12:00 PM.

Nancy Trautman- Club President Brought the meeting to Order at 12:00 PM.

Jim Schuh, Led the Members in Prayer.

Nancy Trautman- Club President Brought the meeting to Order at 12:00 PM.


GO BIG GO BLUE
GO JACKS
SOUTH DAKOTA STATE


GONE
SQUATCHIN'


SASQUATCH ST
BUD LIGHT
RUSH

President Becky Kerr, led the Members in the Pledge Of Allegiance.

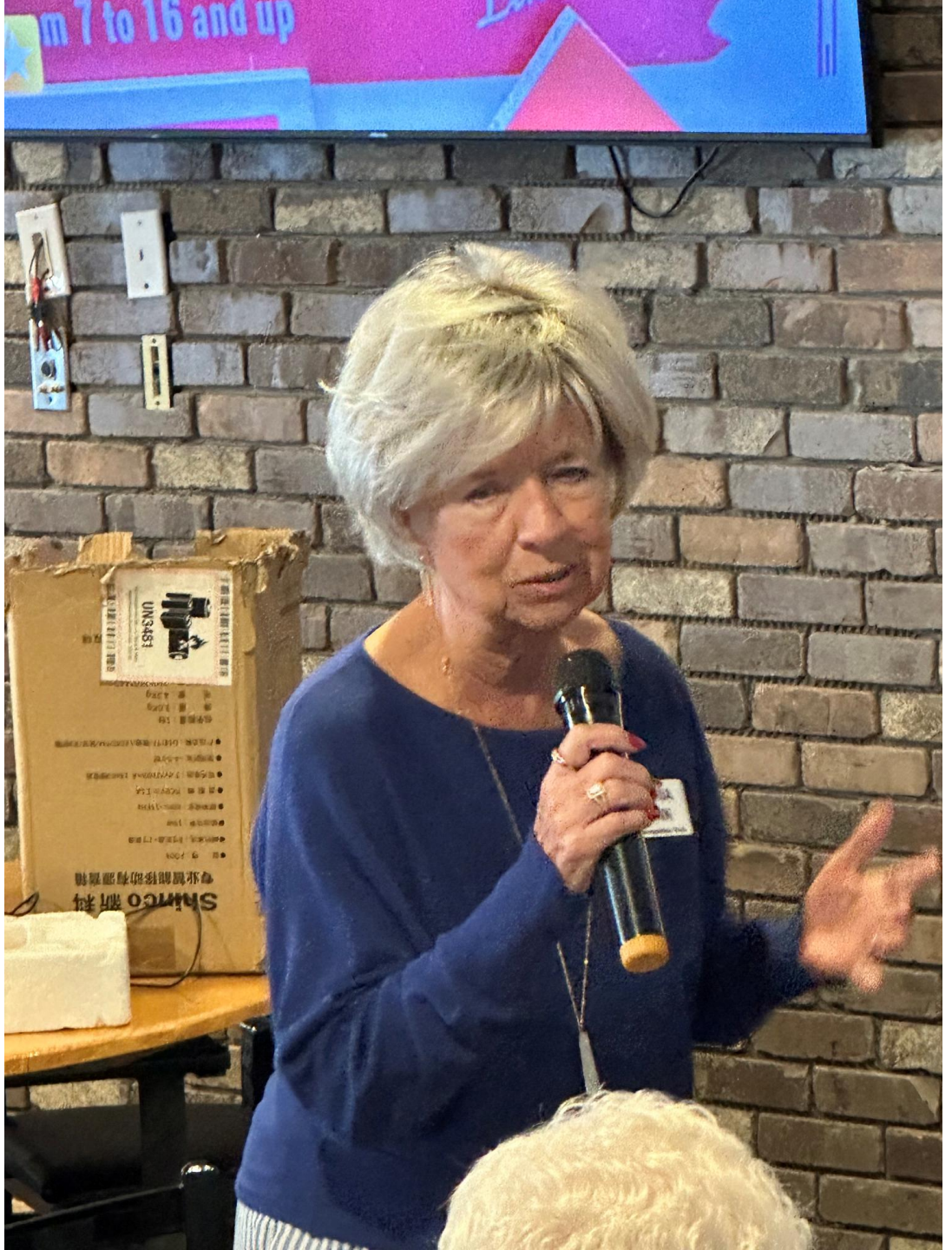
Nancy Trautman- Club President Brought the meeting to Order at 12:00 PM.


Thirsty's
BURGERS & BEER

President Becky Kerr talked to the Members about the Float the Cosmos will have for the 250th Year Celebration Parade

Nancy Trautman- Club President Brought the meeting to Order at 12:00 PM.

Club Member Gloria Gunn talked to the Members about the upcoming Summer Nights on July 2, 2026.

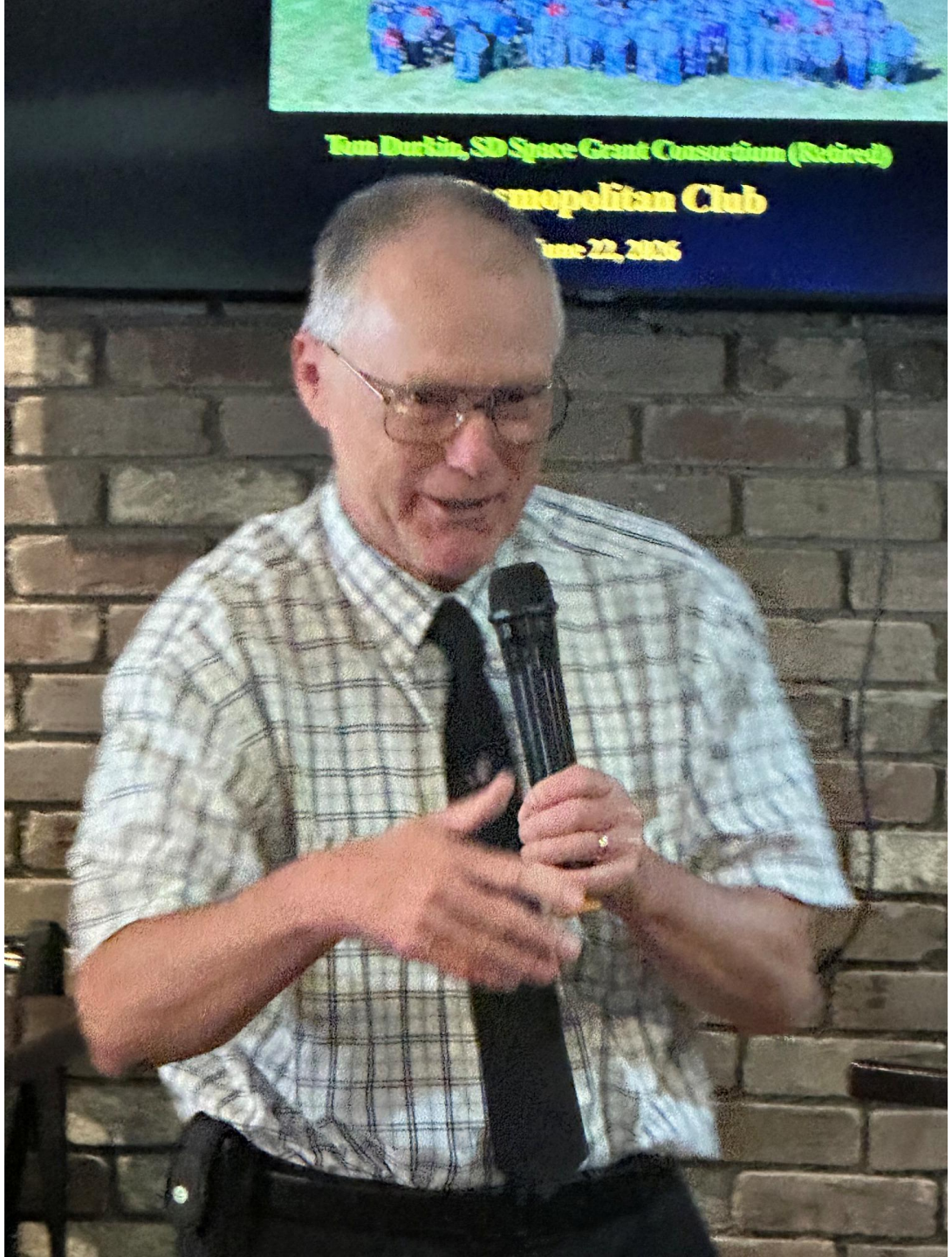


Nancy Trautman- Club President Brought the meeting to Order at 12:00 P.M.

Club Member Rick Edelen introduced Thomas V. Durkin, CPG (Retired) Deputy Director South DakotaSpace Grant Consortium SD School of Mines & Technology.

Nancy Trautman- Club President Brought the meeting to Order at 12:00 P.M.

Thomas V. Durkin talked to the Members anout current Space Technology.



Nancy Trautman- Club President Brought the meeting to Order at 12:00 P.M.

The James Webb Space Telescope is NASA's premier observatory of this decade, serving thousands of astronomers worldwide.

It studies every phase in the history of our universe from the first luminous glows after the Big Bang, to the formation of stars and planetary systems like our own that are capable of supporting life, to the evolution of early galaxies from their formation until now.

James Webb Space Telescope

Overcoming 344 Ways to Fail

Tom Durkin, SD Space Grant Consortium (Retired)

Cosmopolitan Club

June 22, 2026

The James Webb Space Telescope (JWST or "Webb") is the premier observatory of this decade, serving thousands of astronomers worldwide.

It studies every phase in the history of our Universe from the first luminous glows after the Big Bang, to the formation of stars and planetary systems (solar systems) like our own that are capable of supporting life, to the evolution of early galaxies from their formation until now.

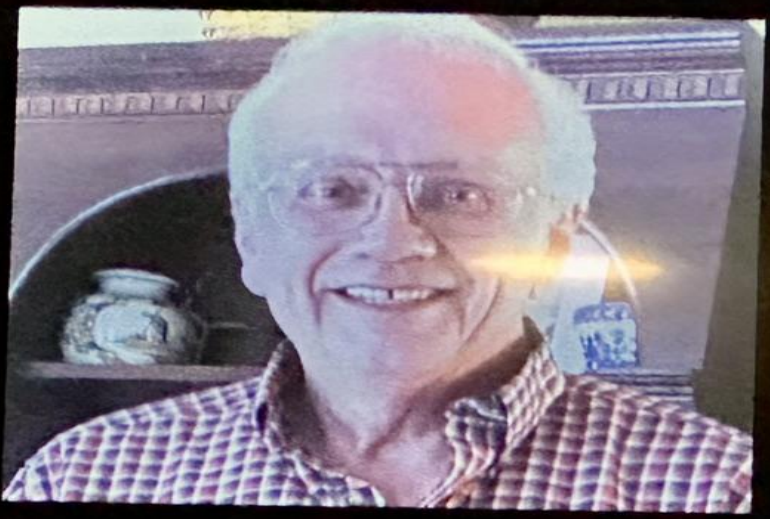
344 Single Points of Failure

and how to overcome them ...

About 20,000 people worked on the JWST project for over two decades, including engineer Bill Ochs, who has served as project manager since 2011. When he took over that position, the Webb's launch date was in 2013. There were obviously many delays in the launch, mainly due to making sure they got everything right before launching.

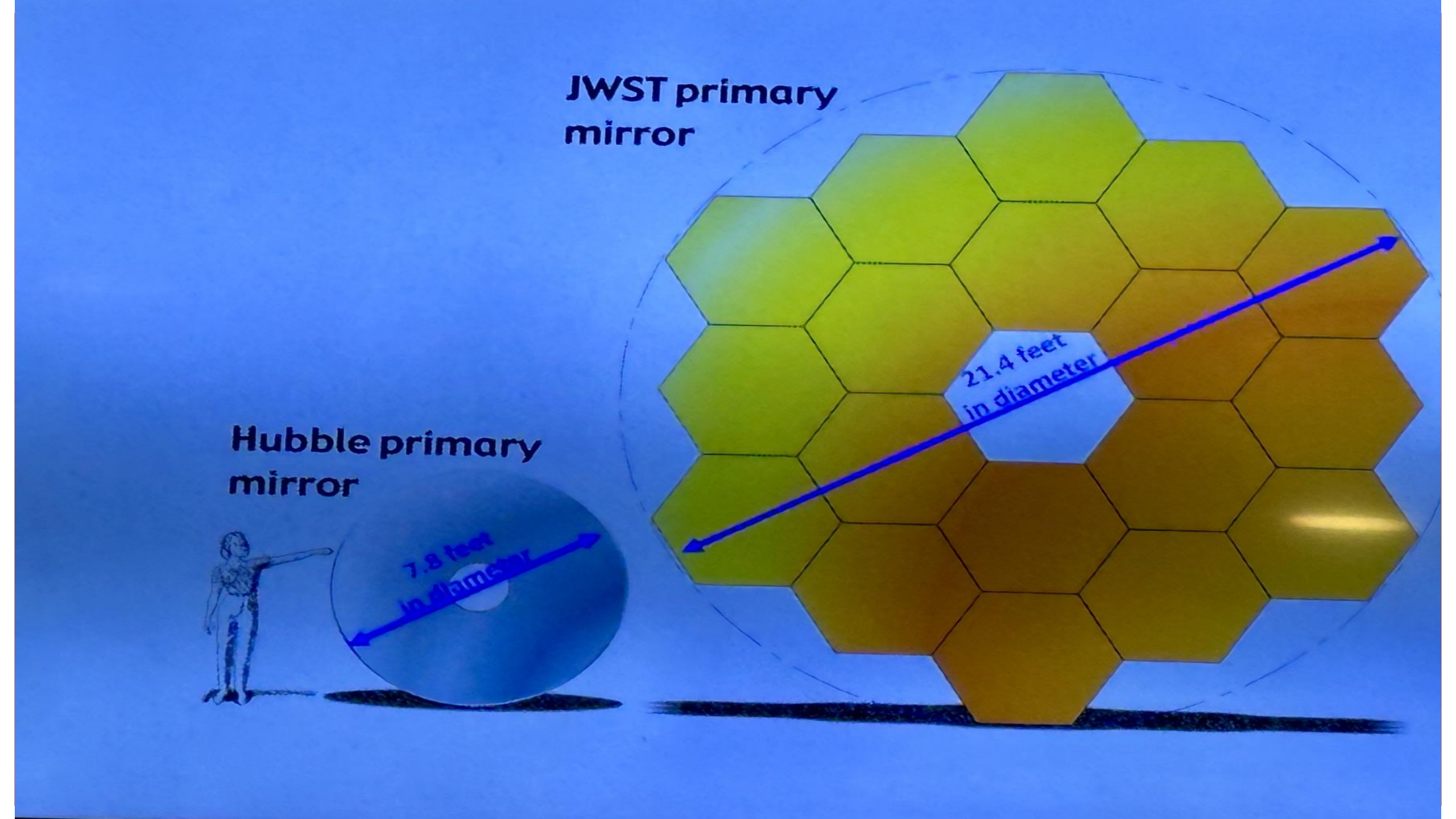
Bill Ochs was interviewed about the project in July 2022, which was seven months after Webb finally launched on Christmas morning 2021. Everything on the telescope deployed (or "opened") like it was supposed to on its way to the Lagrange point. He said:

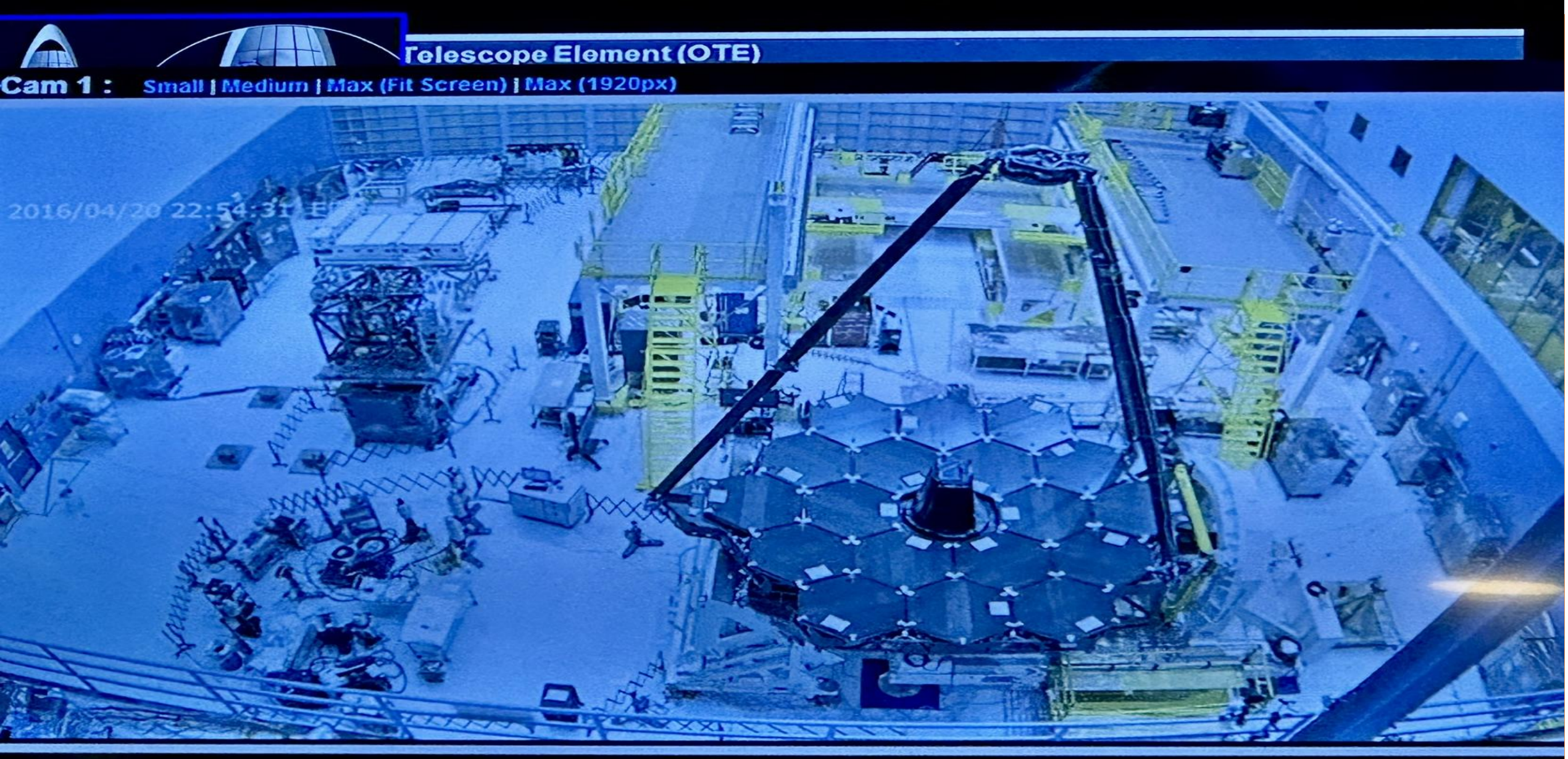
I tell folks all the time. The type of words I never heard on this project in the 11½ years that I've been here is "give up" or "failure". It was always, "Hey, we've got an issue." Whether it was a design complexity issue or a mistake that was made, the response was always "How do we correct this? How do we make sure this doesn't happen again? And, how do we move on?"



Prior to launch, we had 344 single-points of failure. A single-point failure means if this one thing fails, we could lose the whole mission. And a majority of those single-points of failure were going to be retired through the first two weeks of deployments. So, when you think about it, anything in that first two weeks could have taken us out.

When we got through the first two weeks, there was a big sigh of relief when we deployed that final mirror wing. Then we started aligning the mirrors. But there were 155 motors on the backs of these mirrors to make them function properly during alignment. Every single one of those motors worked. Every single one of them survived.


JWST primary mirror
21.4 feet in diameter
Hubble primary mirror
7.9 feet in diameter

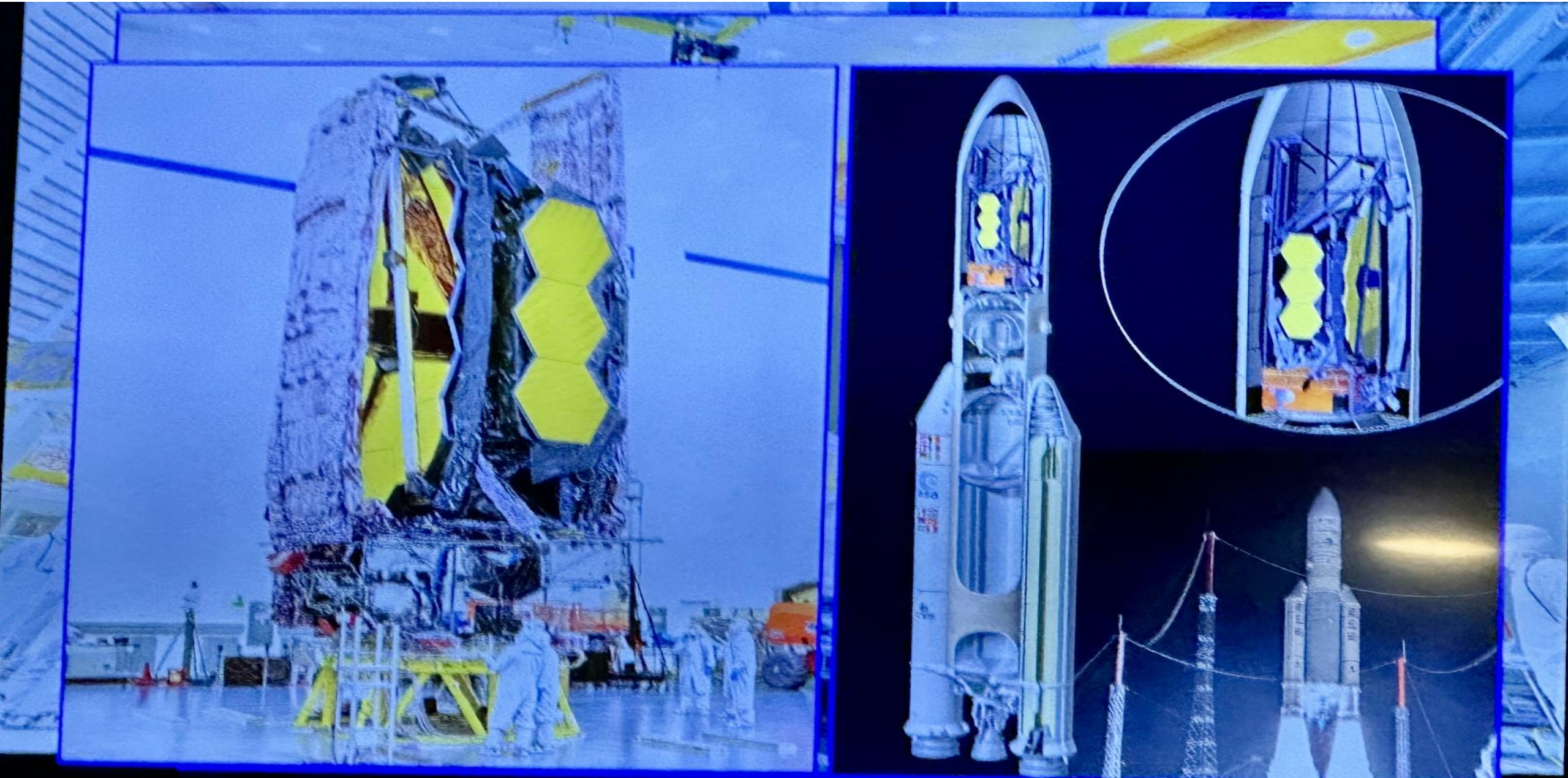


JWST and its construction

JWST and its construction

JWST and its construction

JWST and its construction



JWST and its construction

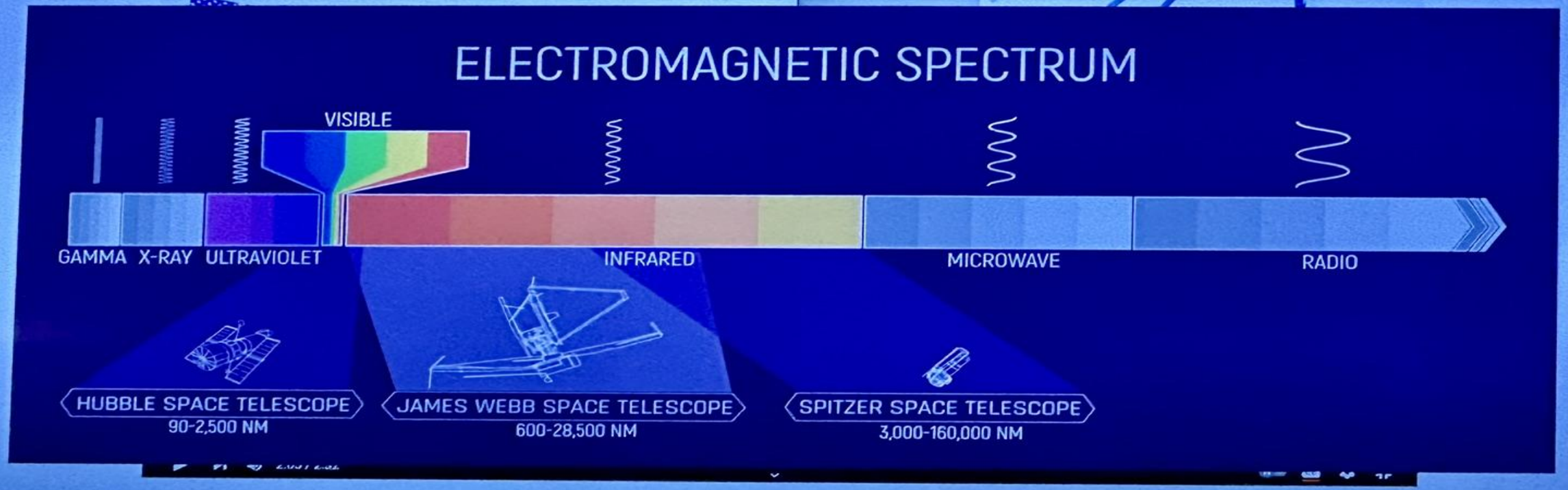
https://youtu.be/hWAVey53AC4

Webb's "Sunshield" (Keeping Webb Cool)

Webb primarily observes infrared light, which can sometimes be felt as heat. Because the telescope observes very faint infrared signals of very distant objects, it needs to be shielded from any bright, hot sources. The **sunshield** serves to separate the sensitive mirrors and instruments from not only the Sun, Earth, and Moon, but also from the spacecraft bus.

The telescope itself operates at about -370° Fahrenheit. **ABSOLUTE ZERO is 0° Kelvin, or about -459.6° Fahrenheit** (nothing colder anywhere in the universe). The temperature difference between the hot and cold sides of the telescope is huge - you could almost boil water on the hot side, and freeze nitrogen on the cold side!

One of Webb's instruments, the "Mid-Infrared Instrument" (MIRI) has to operate at 7° Kelvin, or about -447° F. That's only 12° F above absolute zero! That's colder than what the sunshield can provide, so MIRI is cryogenically cooled to about 6.2° Kelvin.



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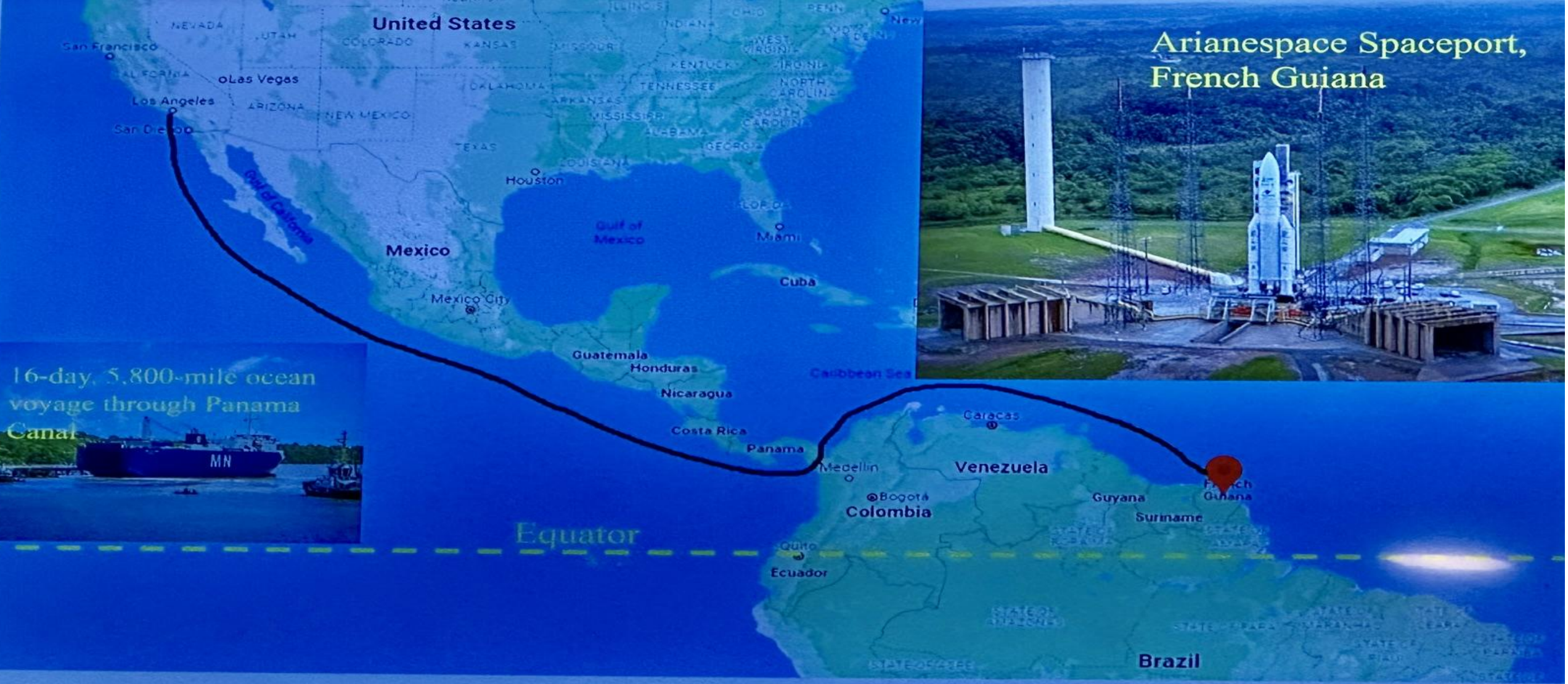


It is beneficial for launch sites to be located near the equator because the spin of the Earth can help give an additional push. The surface of the Earth at the equator (0° latitude) is rotating at **1,037 mph**.

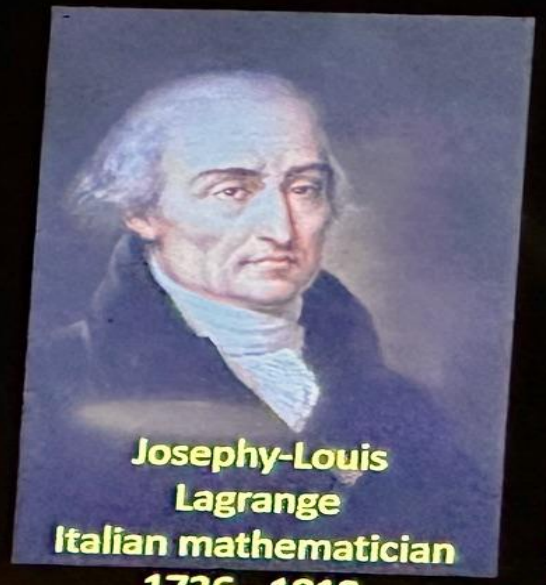
Whereas at Kennedy Space Center in Florida (28.5° latitude), it spins at 914 mph, and here in Rapid City, SD (44° latitude), it spins at only 748 mph.

- Launch of James Webb Space Telescope
- Christmas Day, Dec. 25, 2021, 7:20 a.m. EDT
- Ariane 5 rocket
- Ariane Space Spaceport, French Guiana

Getting There

- It took 30 days for Webb to reach the start of its orbit at Lagrange Point 2 (L2) located just under a million miles away , but it took only 3 days to get as far away as the Moon's orbit, which is about a quarter of the way there.

- Getting Webb to its orbit around L2 is sort of like putting a golf ball toward the hole a long way off, on the other side of the green. You putt hard to get the ball rolling with enough energy to reach the hole. The ball start off fast, but as it slows down approaching the hole, it is barely moving as it drops in the hole!

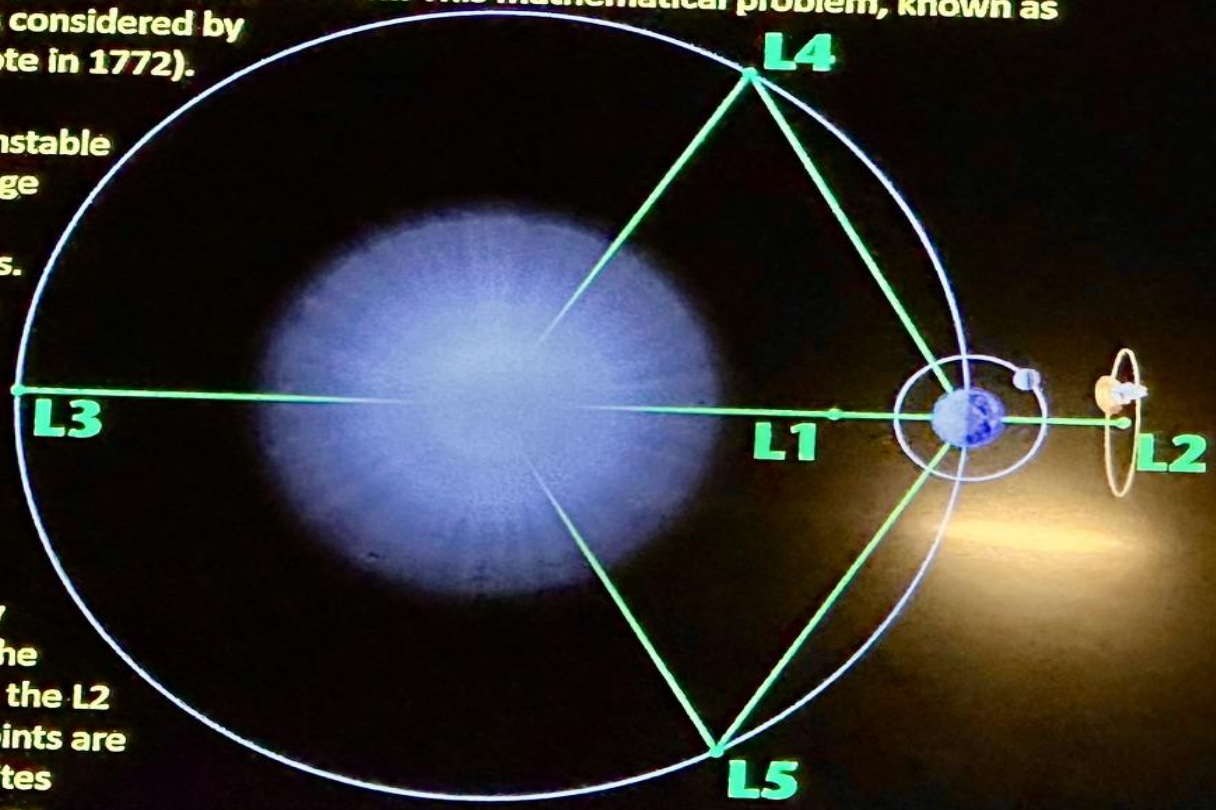


Josephy-Louis
Lagrange
Italian mathematician
1736 - 1813

What is a Lagrange Point?

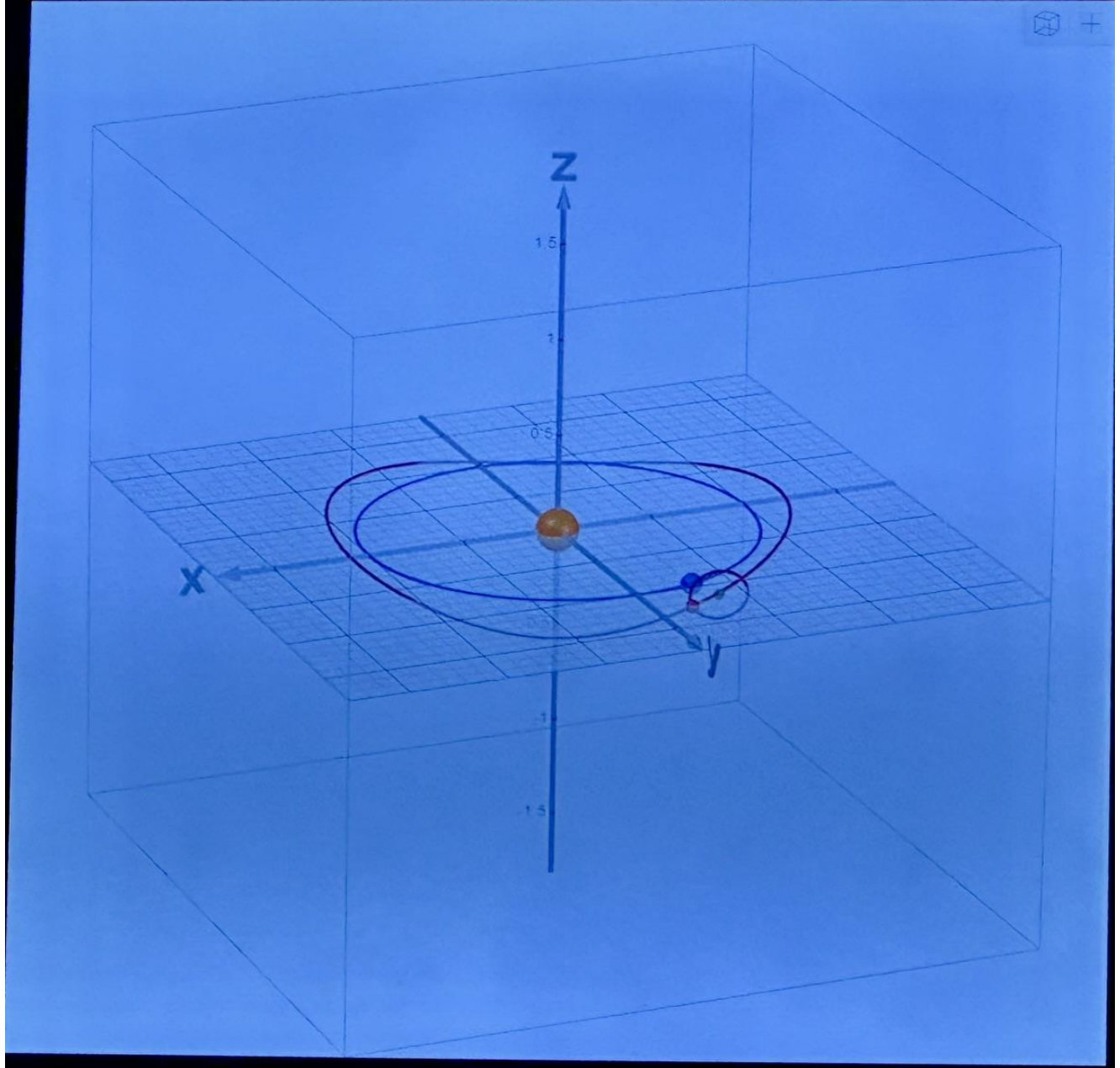
There are five points where a small mass can orbit in a constant pattern with two larger masses. The Lagrange Points are positions where the gravitational pull of two large masses precisely equals the centripetal force required for a small object to move with them. This mathematical problem, known as the "General Three-Body Problem" was considered by Lagrange in a famous paper that he wrote in 1772).

Of the five Lagrange points, three are unstable and two are stable. The unstable Lagrange points - labeled L1, L2 and L3 - lie along the line connecting the two large masses. The Stable Lagrange points - L4 and L5 – form the apex of two equilateral triangles that have the large masses at their vertices.

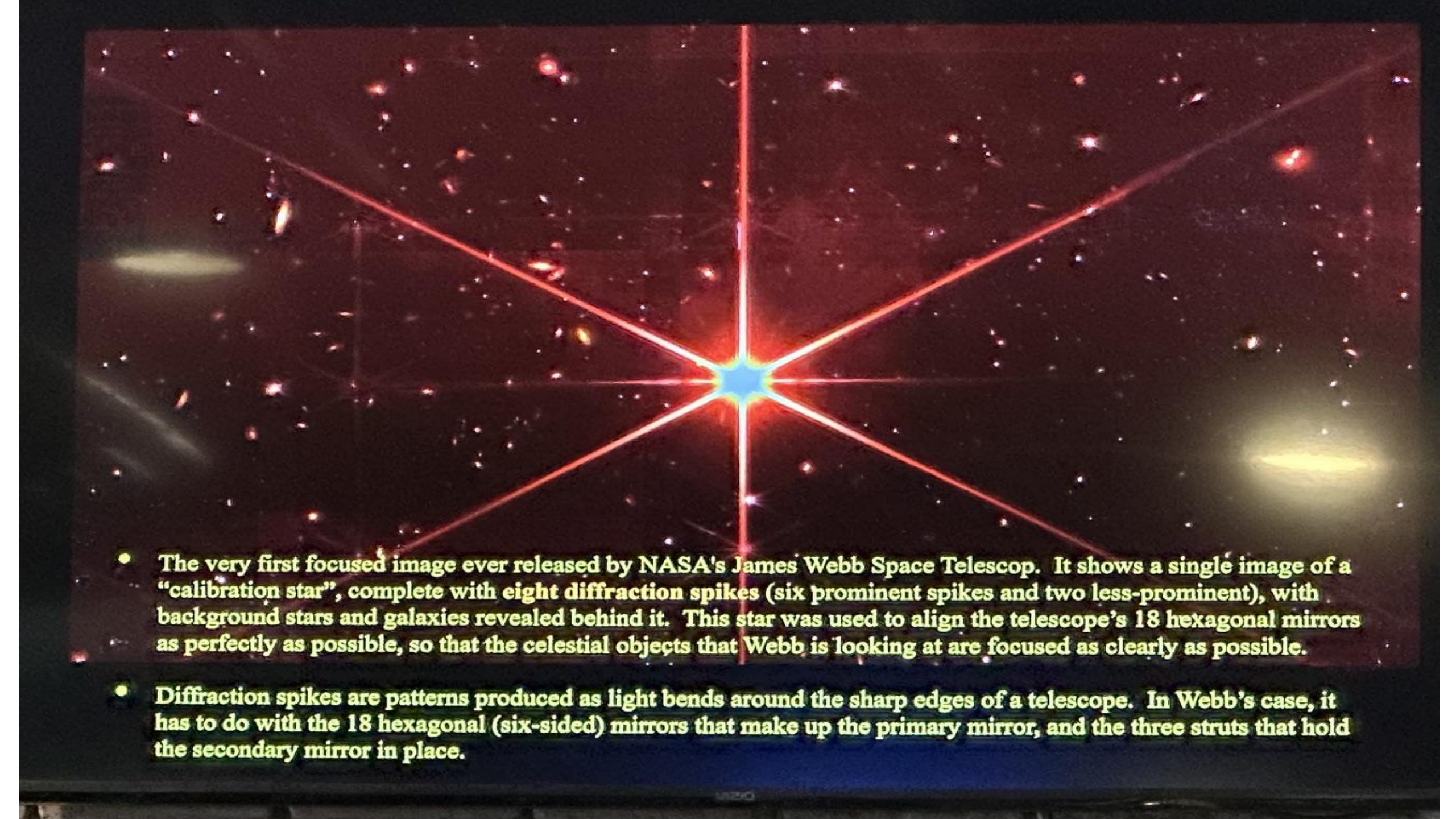


The L2 point of the Earth-Sun system is the current home of the James Webb Space Telescope.

L2 is ideal for astronomy because a spacecraft is close enough to readily communicate with Earth, "and" can keep Sun, Earth and Moon behind the spacecraft for solar power. With appropriate shielding on the telescope, the L2 location provides a clear view of deep space for Webb. The L1 and L2 points are unstable on a time scale of approximately 23 days, which requires satellites orbiting these positions to undergo regular course and attitude corrections.

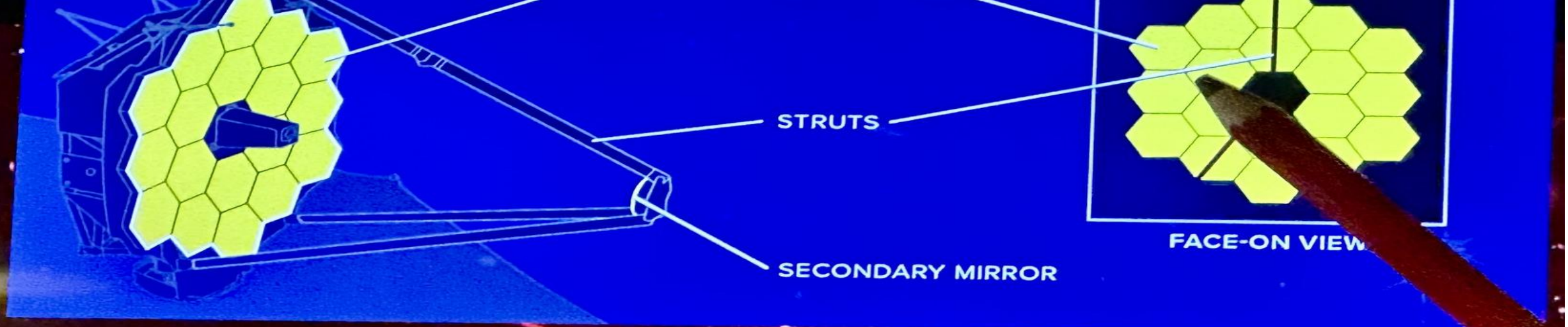


Dr. Don Teets' Desmos video of Earth/L2/Webb orbits



- The very first focused image ever released by NASA's James Webb Space Telescop. It shows a single image of a "calibration star", complete with **eight diffraction spikes** (six prominent spikes and two less-prominent), with background stars and galaxies revealed behind it. This star was used to align the telescope's 18 hexagonal mirrors as perfectly as possible, so that the celestial objects that Webb is looking at are focused as clearly as possible.

- Diffraction spikes are patterns produced as light bends around the sharp edges of a telescope. In Webb's case, it has to do with the 18 hexagonal (six-sided) mirrors that make up the primary mirror, and the three struts that hold the secondary mirror in place.



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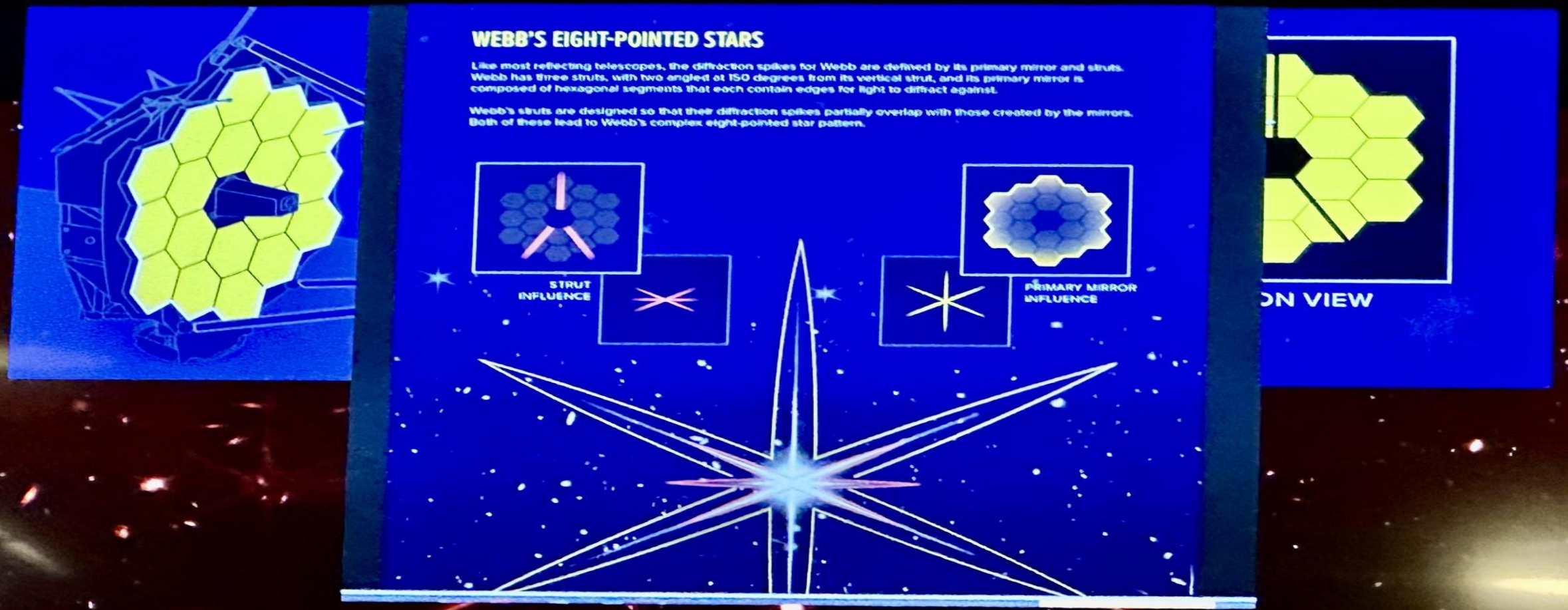

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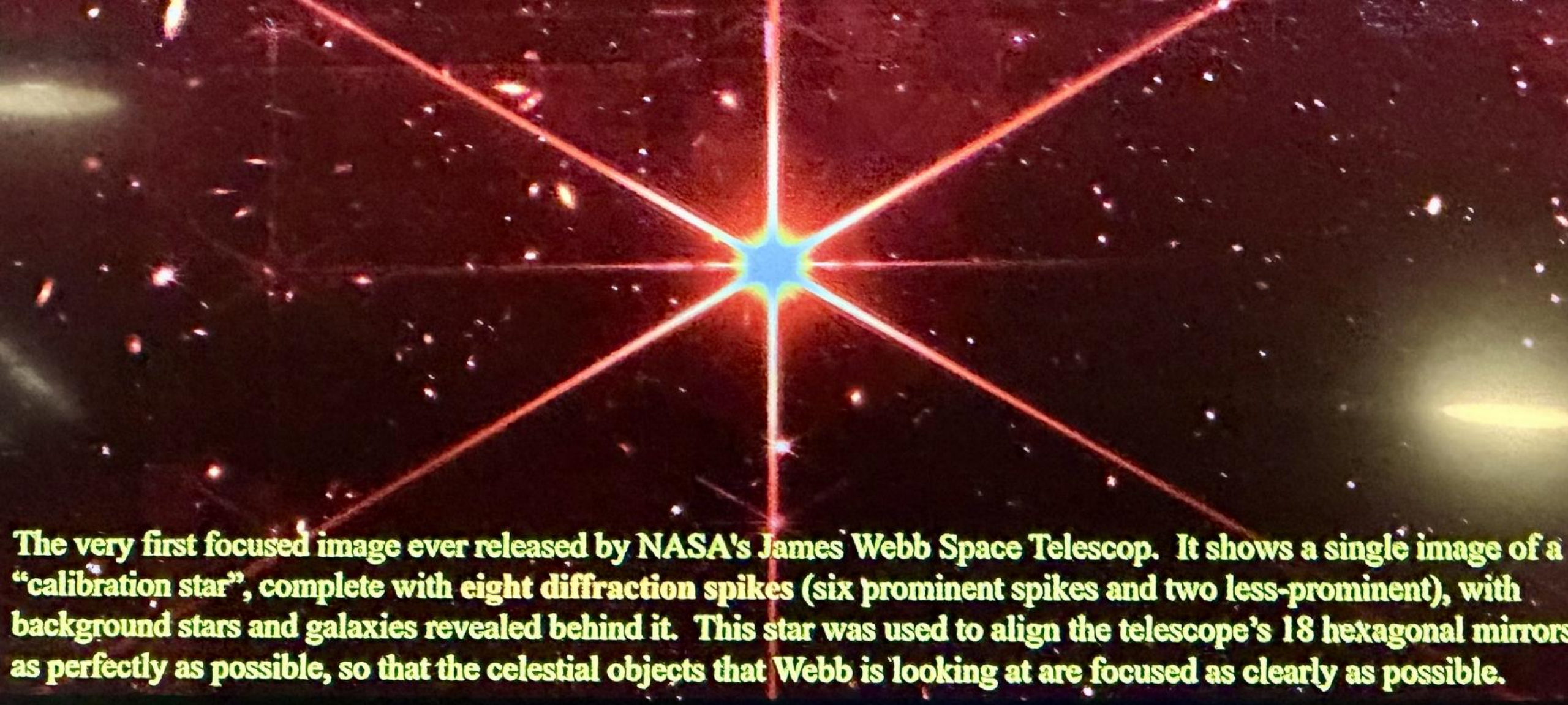

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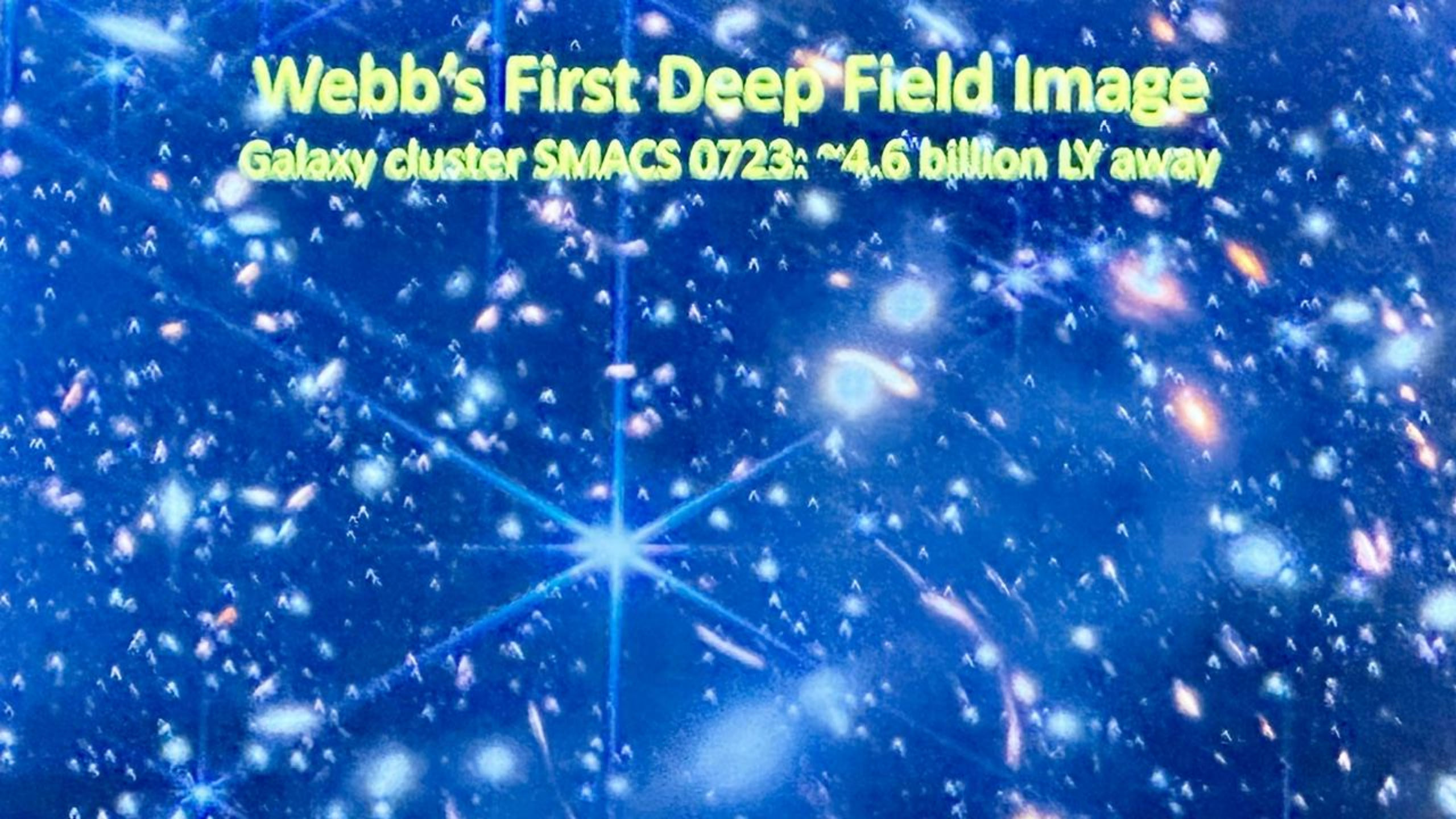
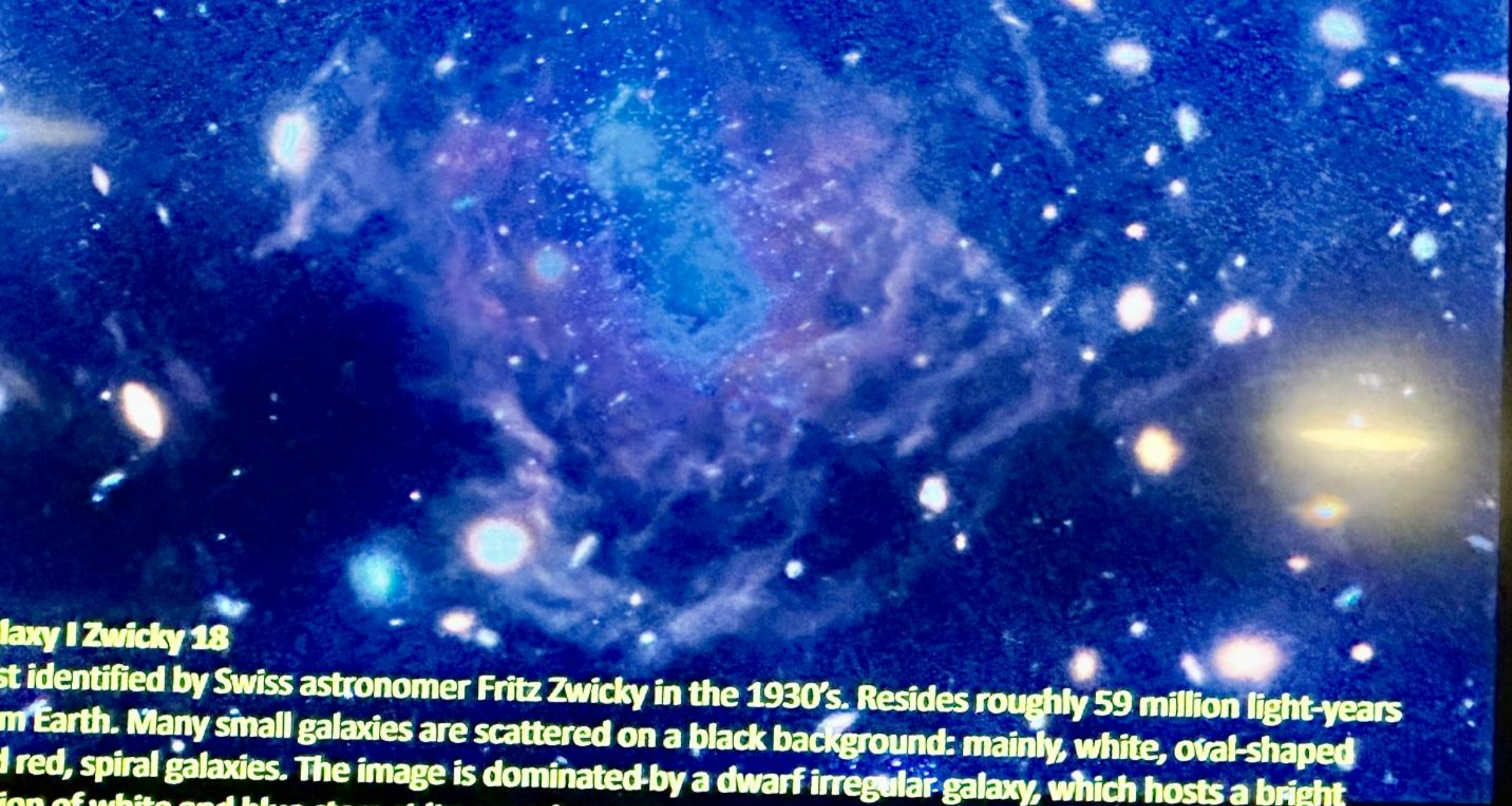

Webb's First Deep Field Image
Galaxy cluster SMACS 0723: ~4.6 billion LY away

Carina Nebula - A star is born! Behind the curtain of dust and gas in these “Cosmic Cliffs” are previously hidden baby stars, now uncovered by Webb.

The Pillars of Creation:

A small region within the vast Eagle Nebula, which lies 6,500 light-years away.

Thousands of stars are spread throughout the scene. The stars primarily show up in near-infrared light, marking a contribution of Webb's Near-Infrared Camera. Near-infrared light also reveals thousands of newly formed stars – look for bright orange spheres that lie just outside the dusty pillars.



laxy I Zwicky 18

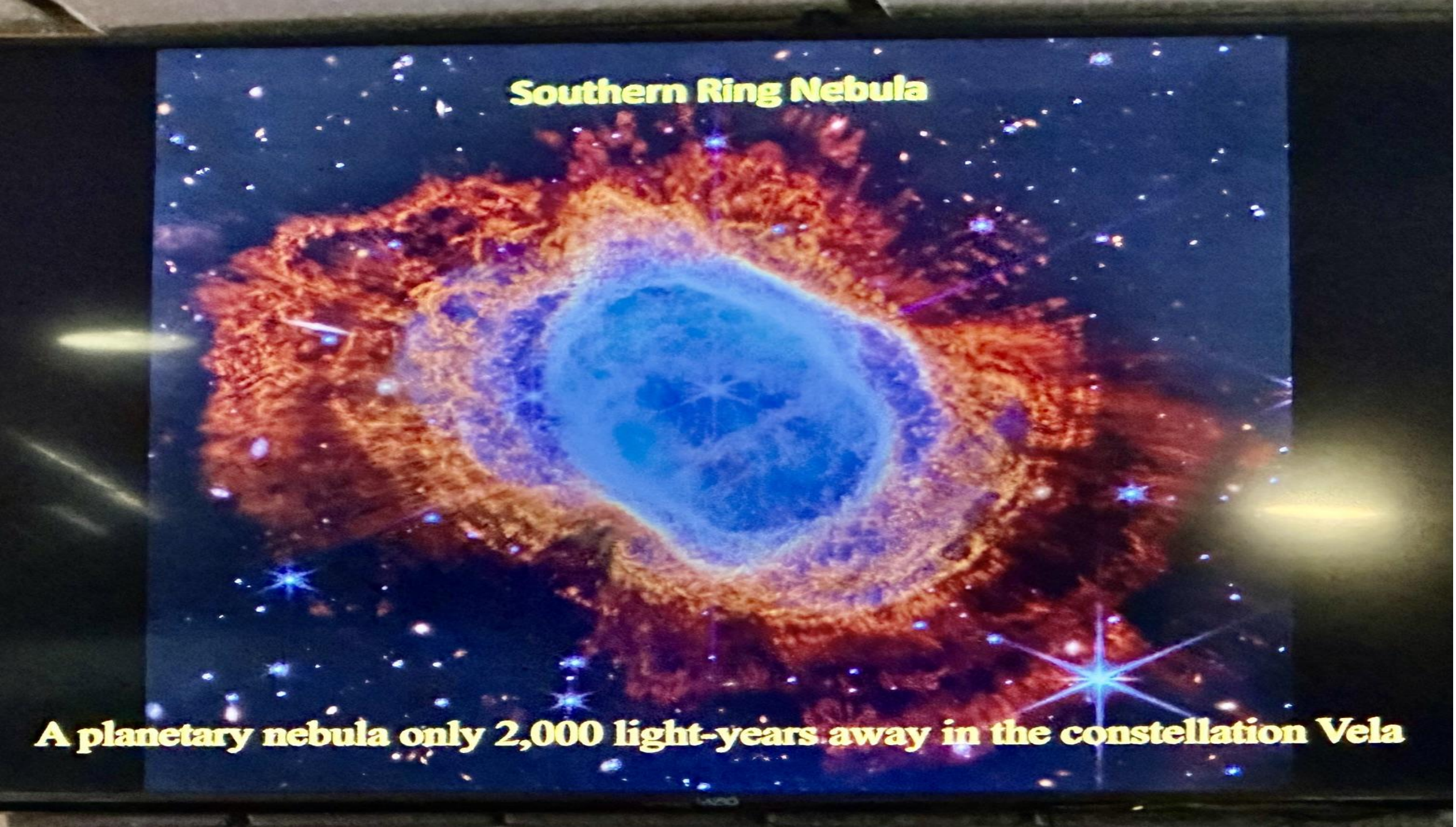
st identified by Swiss astronomer Fritz Zwicky in the 1930's. Resides roughly 59 million light-years
m Earth. Many small galaxies are scattered on a black background: mainly, white, oval-shaped
l red, spiral galaxies. The image is dominated by a dwarf irregular galaxy, which hosts a bright
ion of white and blue stars at its core that appear as two distinct lobes.

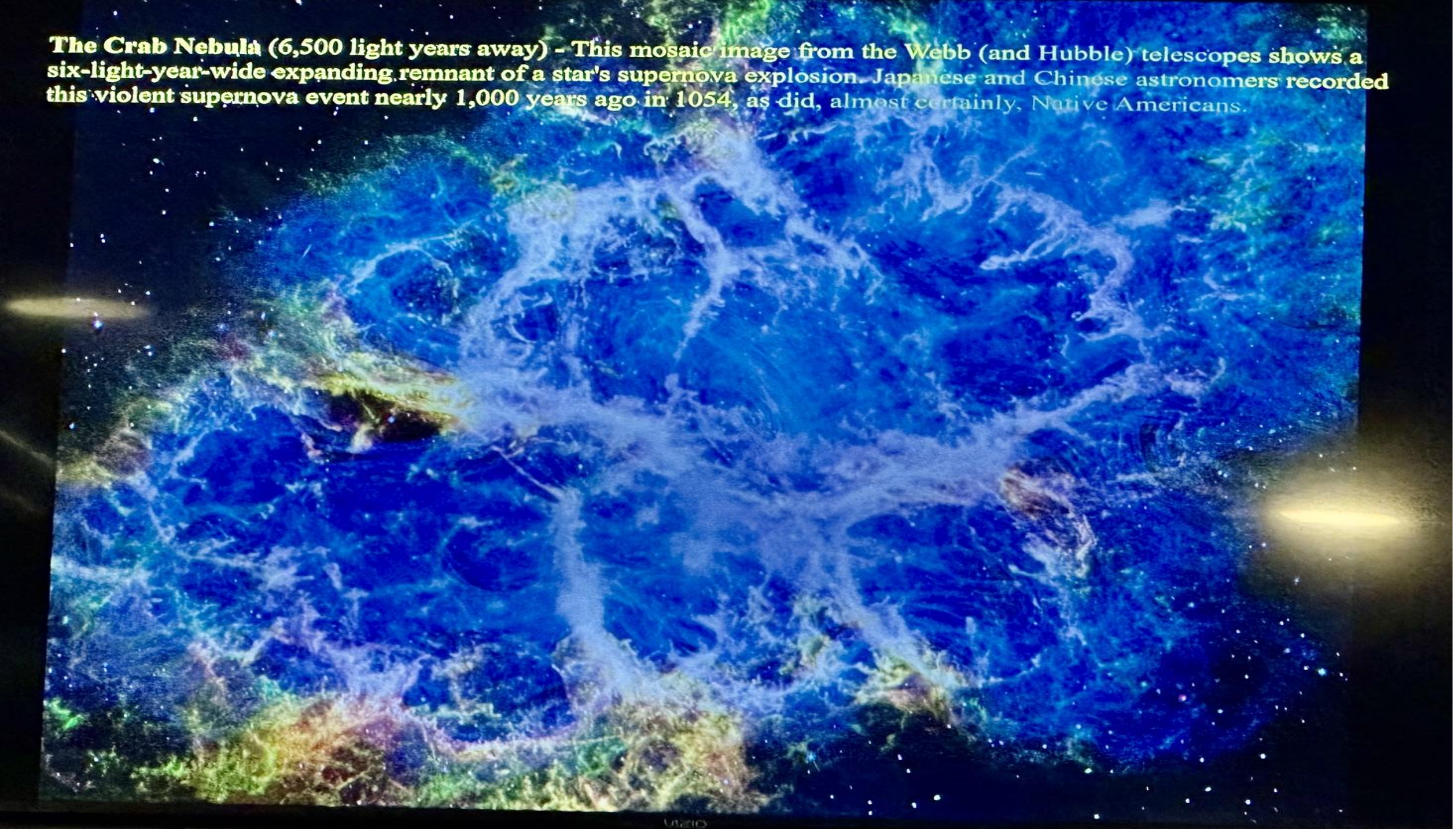
Stephan's Quintet

- This grouping of five galaxies located in the constellation Pegasus is best known for being prominently featured in the holiday classic film, *"It's a Wonderful Life."*
- Of the five galaxies, four interact with each other.
- The left galaxy is actually much closer to us (about 40 million LY from Earth) than the rest of the group (each about 290 million LY away.)
- The four colliding galaxies are pulling and stretching each other in a gravitational dance, triggering new star formation.

Phantom Galaxy (M74)

A spiral galaxy located 32 million light-years from Earth in the constellation Pisces. Webb gazed into M74 with its Mid-InfraRed Instrument (MIRI) in order to learn more about the earliest phases of star formation in the local Universe.


Southern Ring Nebula
A planetary nebula only 2,000 light-years away in the constellation Vela


The Crab Nebula (6,500 light years away) - This mosaic image from the Webb (and Hubble) telescopes shows a six-light-year-wide expanding remnant of a star's supernova explosion. Japanese and Chinese astronomers recorded this violent supernova event nearly 1,000 years ago in 1054, as did, almost certainly, Native Americans.

Star cluster NGC 602 lies on the outskirts of the Small Magellanic Cloud, which is one of the closest galaxies to the Milky Way, about 200,000 light-years from Earth. The stars in this cluster are much younger than our Sun and most of the other stars in our galaxy, and they have fewer heavier elements. Instead, the conditions within these stars mimic those for stars found billions of years ago whtn the universe was much younger.

Around and within the gas, a huge number of distant galaxies can be seen, some quite large, as well as a few stars nearer to us which are very large and bright.

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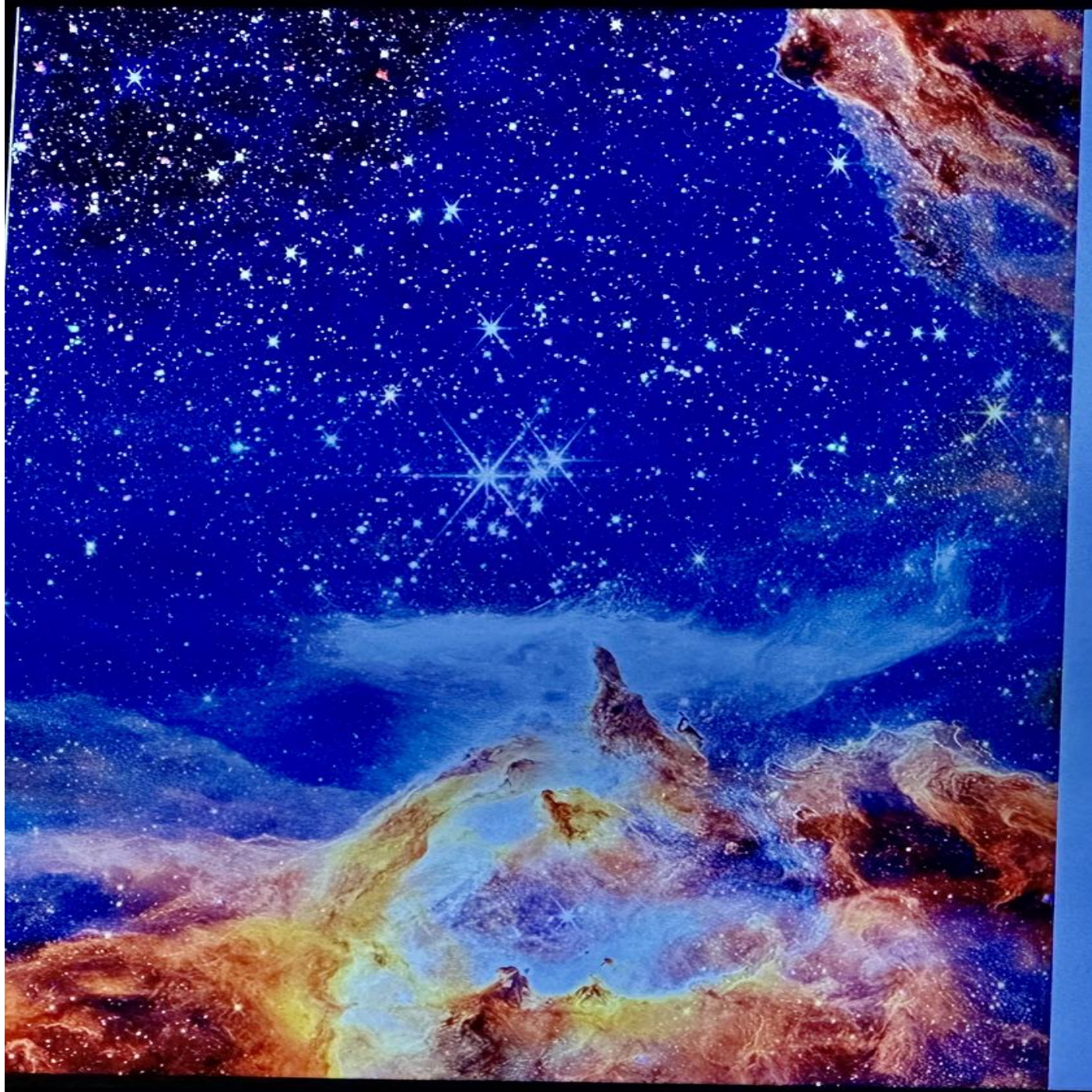


NGC 6357/Pismis 24 (Chandra/Webb)

Nebula NGC 6357 that contains Pismis 24, a young cluster of stars about 5,500 light-years from Earth. This stellar landscape is reminiscent of a winter vista in a view from NASA's James Webb Space Telescope (red, green, and blue). Chandra data (red, green and blue) punctuate the scene with bursts of colored lights representing high-energy activity from the active stars.

NGC 6357/Pismis 24 (Chandra/Webb) | Nebula NGC 6357 that con... | Flickr

For more Webb images, go to:

ttps://science.nasa.gov/mission/webb/


KARL
MERBACH
PEPSI


RAPID CITY
CLUB
Make Life More Fun!
PRESIDENT
DAN MILLER
MAUREEN YANTES
KETCH
TICKET


Tom Durkin, SD Space Grant Consortium (Retired)
Cosmopolitan Club
June 22, 2026
GONE Squatchin
BURGERS


HAPPY HOUR


KARL
MERBACH
PEPSI


Thirsty's
BURGERS & BEER
819 MAIN ST. RAPID CITY, SD 57702
MOUNT MARTY
HAPPY HOUR
DAN MILLER
PAUL YANTES


DESCHUTES
BREWERY


ELLIS
14
Thirsty's
BURGERS & BEER
JACKRABBITS


PRESIDENT
PEPSI


Boiled Beer

Dennis Wagner was the Lucky Mrs. X for the Day.
He won $5.00 .

Rhonda Reuwsaat was the Lucky 50-50 winner. She won $10.00.

Cindy Spreizer was the Lucky 2 of Diamonds Winner. She drew the Queen of Clubs. There were 46 Cards left and it was worth $100.

Upcoming Cosmopolitan Meetings

June 29, 2026. Noon Meeting at Thirst's

July 6, 2026 Noon Meeting at Thirsty's

July 13, 2026 . Larry Larson, Mayor of Box Elder

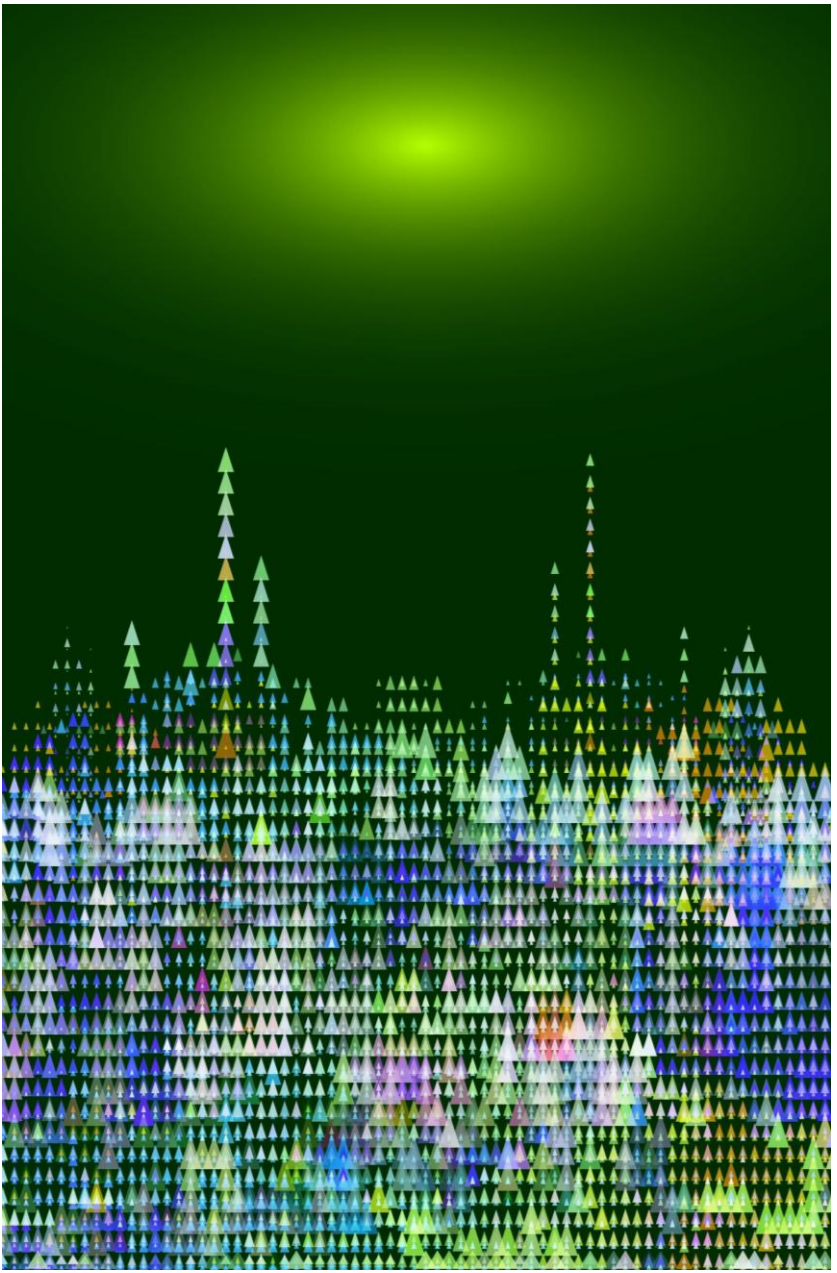
July 20, 2-26. Lindsey Seachris and Jamie from BH Center for Aging.

July 27, 2026. No Noon Meetiing – Internatio al Convention.

August 3, 2026. No Noon Meeti g – Bike Rally.

Member Birthdays

Name	Date
Yantes, Liam	June 4
Varilek, Laura	June 6
Diers, Cleon	June 12
Kahler, Richard	June 15
Lux, Deb	June 27
Preston, Dee	June 30



Date Joined RC Cosmopolitan Club

Name	Years	Date
Dzintars, Viktor	38 years	Jun. 09 1988
Keck, Jr., Jim	38 years	Jun. 22 1988
Duffield, Kaye	8 years	Jun. 04 2018

•

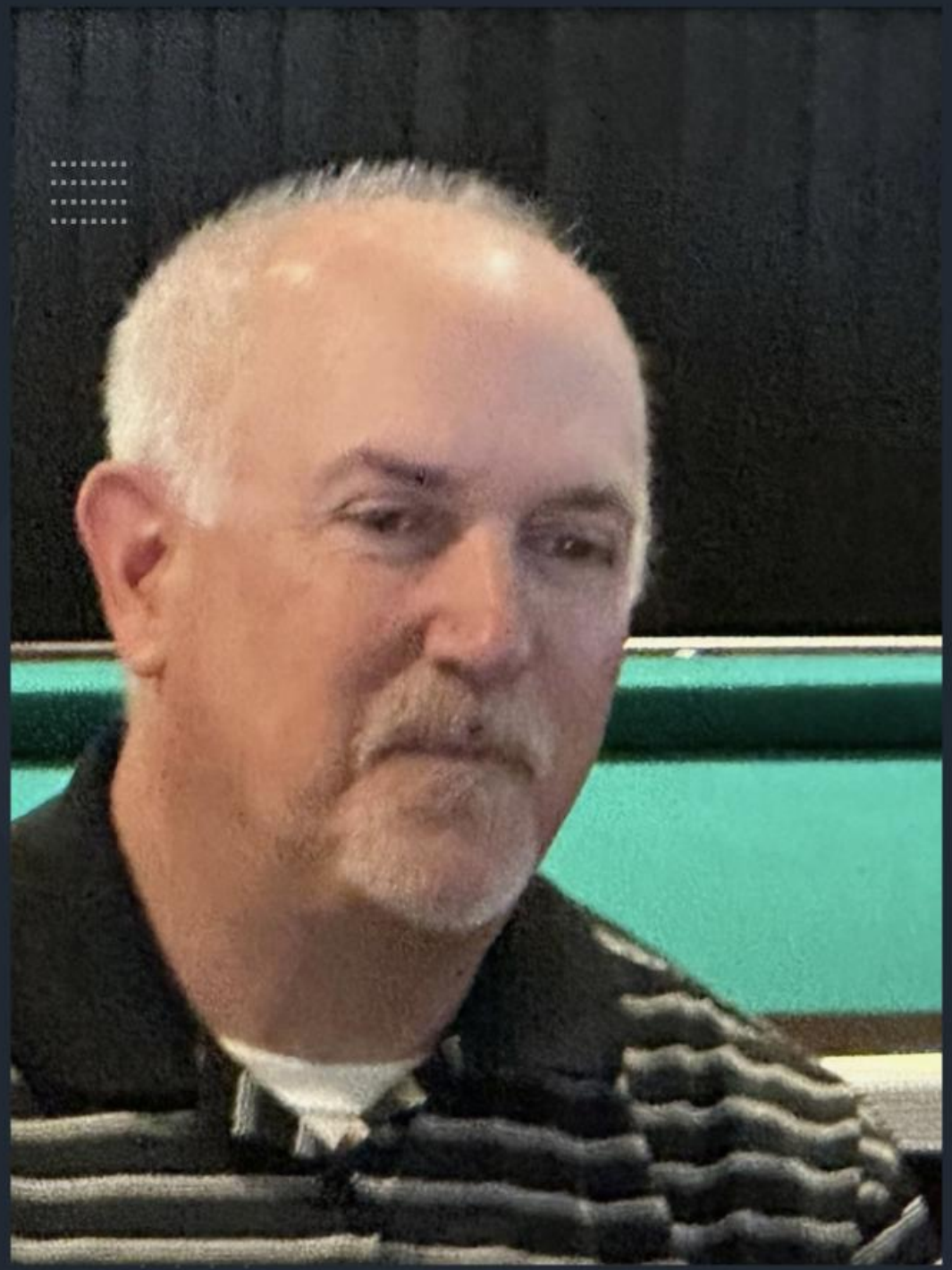
Cosmo Ushering Event Coordinators

Please e-mail or call the team in charge to sign up for the event or if you need to cancel.

- **Becky Kerr – Theater** barefootbecky3209@gmail.com (C) (605) 391-8738
- **Karl Merbach – Ice Arena** emckarl@aol.com (C) (605)-939-9299
- **Lori 7 Kelly Whiting – Summit and Barnett Arena** loriewhiting13@gmail.com (C) (695) 484-4625
- **Rod Gunn–Club's Website** https://portal.clubrunner.co/101337
- © (605)381-3532
- **Gloria Gunn-Summer Nights** grgunn@rap.midco.net (C) (605)-381-7075
-
- **Rhonda Reuwsaat** Facebook Coordinator "RC Cosmopolitan" rhonda.reuwsaat@gmail.com © (605)-209-0615

Rapid City Cosmopolitan Club President

- *Becky Kerr*
- *PO Box 994*
- *Rapid City, South Dakota*
- *57709*



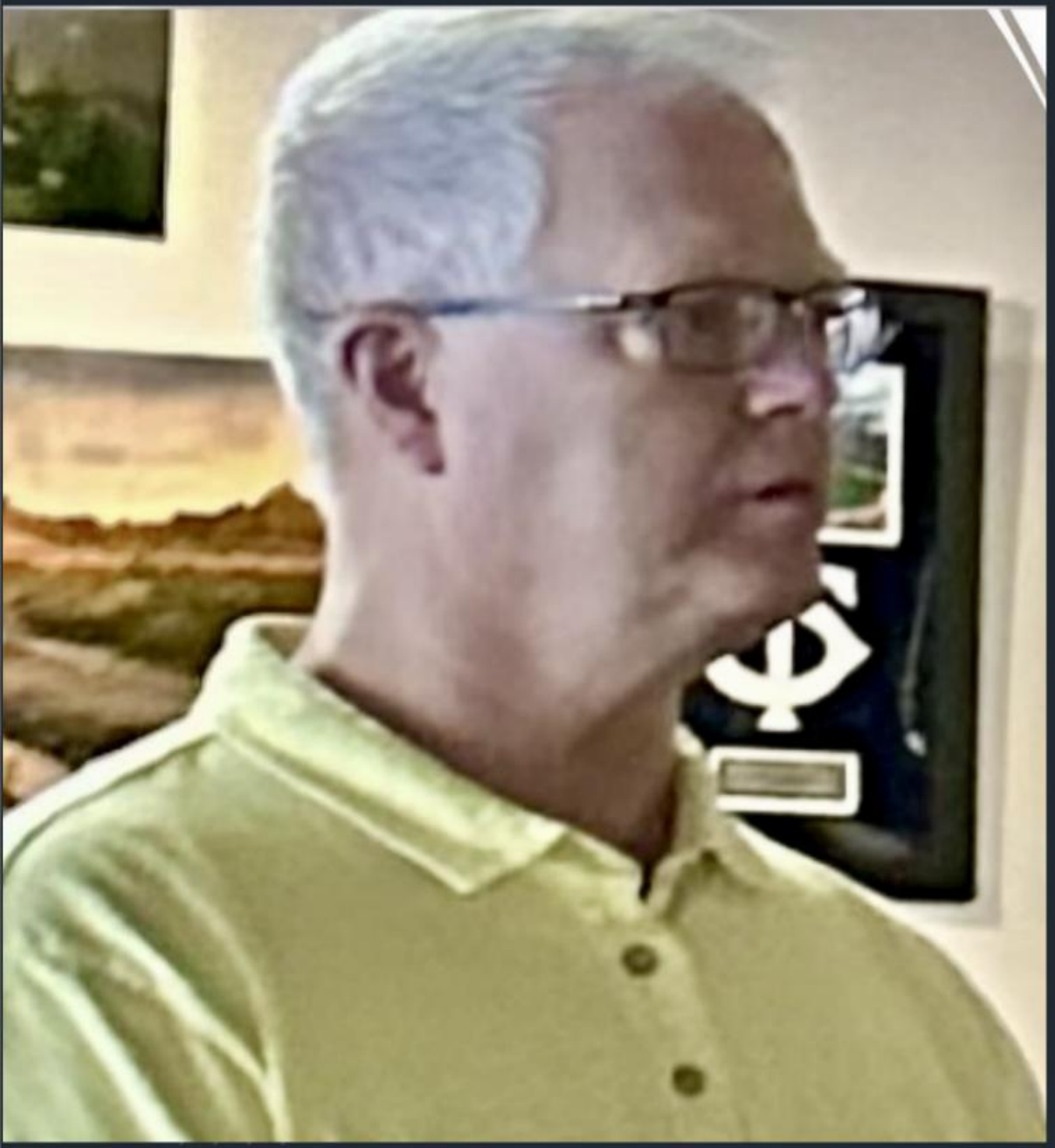
Rapid City Cosmopolitan Club President Elect

- **Kelly Whiting**
- **Rapid City, South Dakota**

Rapid City Cosmopolitan Club Secretary

. **Rhonda Reuwsatt**

- **Rapid City, South Dakota**



Rapid City Cosmopolitan Club Treasurer

. **Jim Keck Jr.**

- **Rapid City, South Dakota**

Rapid City Cosmopolitan Club Sergent Of Arms

- *Kathy Miller*
- *Rapid City, South Dakota*

CFC Board Member

CFC Board Member

John Duffield

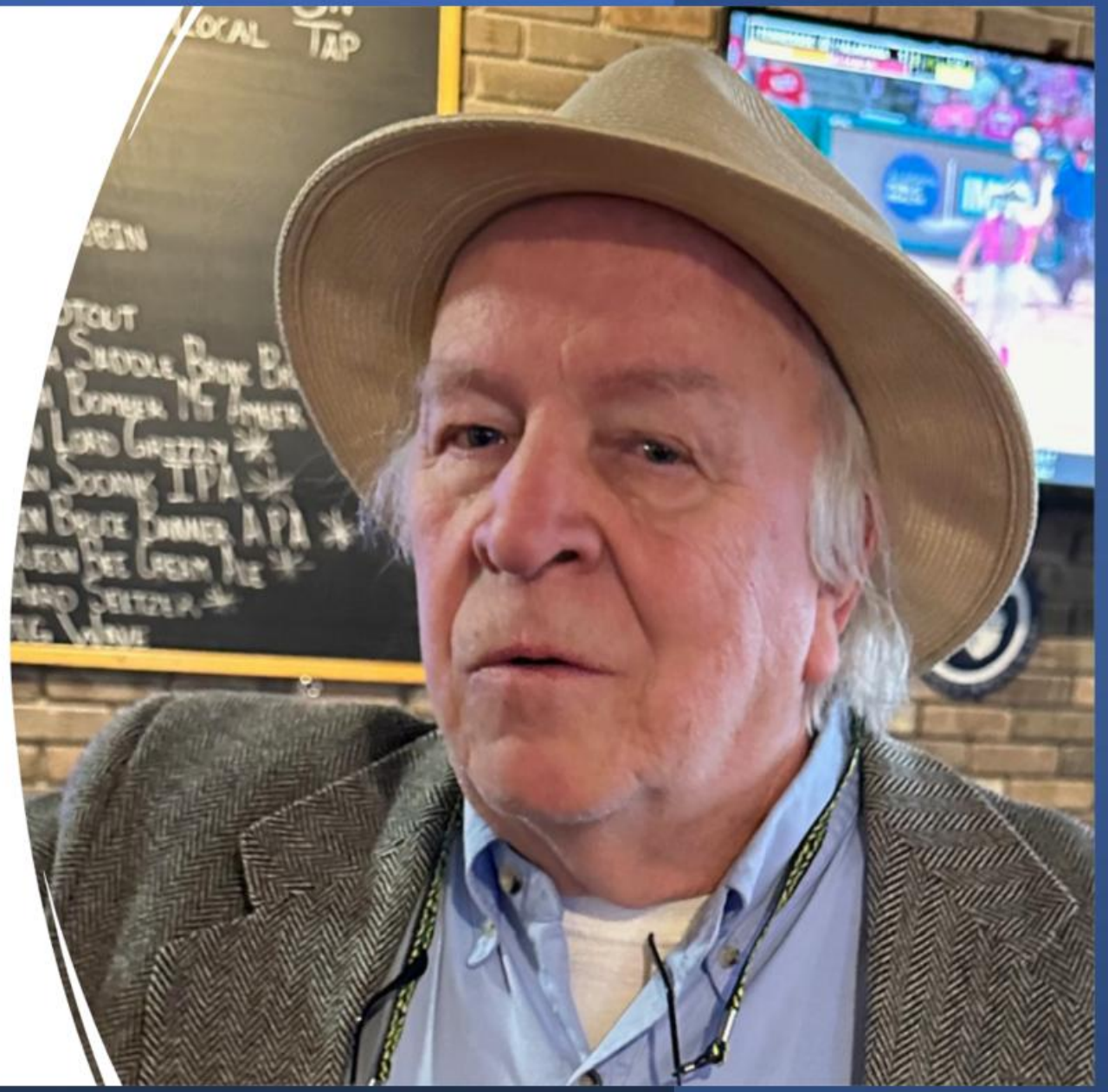
Rapid City, South Dakota

CDF Board Member

CDF Board Member

BOB White

Rapid City, South Dakota



Cosmopolitan Yearly Board Members

1 Year Board Member	Club Board Member	Dave Daughters
2 Year Board Member	Club Board Member	Richard Edelen
2 Year Board Member	Club Board Member	Susan Dittman
3 Year Board Member	Club Board Member	Lorie Whiting
3 Year Board Member	Club Board Member	Lenny Wright
3 Year Board Member	Club Board Member	Karl Merbach

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Cosmopolitan International Executive Director

- ***In today's dynamic landscape, where competition is fierce, organizations are constantly seeking innovative ways to retain their members. Now more than ever, the key to longevity lies not only in acquiring new members but also in fostering a deep sense of engagement and belonging within existing ones. Enter the World of Winners (WOW), a realm where membership transcends mere transactions, offering an immersive experience that captivates and retains.***

Melvina Newman

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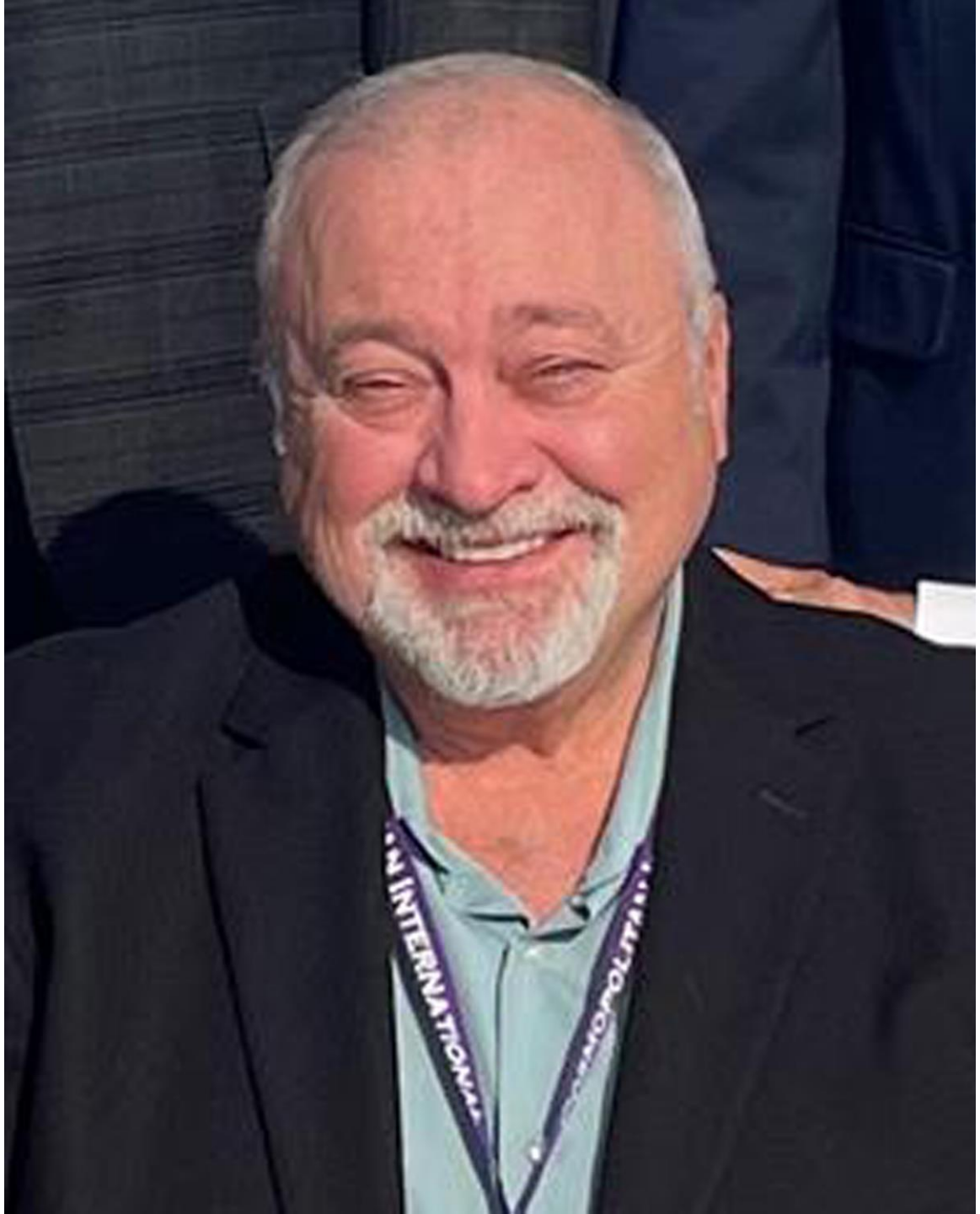
WHAT IS YOUR WISH FOR COSMOPOLITAN INTERNATIONAL – THE SKY'S THE LIMIT!

President
John Kyrsak
Western Canada Federation
john.krysak@cosmopolitan.org



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