# STRATFORD ASTRONOMY GROUP

OCT 7TH, 2025

# AGENDA

- Meet and Greet
- Club NEWS and Activities
- Club Q & A
- Equipment Lessons
- Software and Imaging Information: Ken & Patrick and SOG
- Latest Astronomy NEWS
- What's UP this Month
- Show and Tell
- Astronomy Lessons / Talks Doug Fyfe and Asteroids
- Cosmology Lessons
- Conclusion

# MEET AND GREET

**Welcome**
New Visitors

**Regrets**

# UPCOMING MEETINGS

## NEXT MEETING DATES

**Tuesday - September 16, 2025**

**October 07, 2025**

**November 04, 2025**

**December 02, 2025**

**January 06, 2026**

**February 03, 2026**

**March 03,2026**

**April 07, 2026**

**May 05, 2026**

**June 02, 2026**

CLUB NEWS AND ACTIVITIES

## Group Funds

**Total = $1257.82**

- If you would like to contribute to the group, then please e-transfer Tim at:

**timannemariepauli@gmail.com**

or by cheques:

Tim Pauli

96 Front Street

Stratford, ON

N5A4H2

# CLUB NEWS AND ACTIVITIES

## EQUIPMENT:

New Equipment Donation: Tim

STRATFORD ASTRONOMY CLUB EQUIPMENT

CLUB EQUIPMENT LOCATION:

Paul Bartlett is now storing all the group's equipment. If you wish to borrow an item, then please contact him at:

1948paul.bartlett@gmail.com

519-274-2010

# CLUB NEWS AND ACTIVITIES

- New Web site: (https://stratfordastronomy.com/)
  Tim Pauli - Owner/Administrator
  Ken Roberts - technical contact
  Tom Kimber - Administrator/Editor
  Doug Fyfe - Administrator
  Michael Burns- Administrator
  Tom will build it on WordPress.

# CLUB Q & A

# WHAT'S UP

## STRATFORD ASTRONOMY GROUP

### WHAT'S UP FOR OCTOBER


# HEY, THERE BE A MOON OVERHEAD

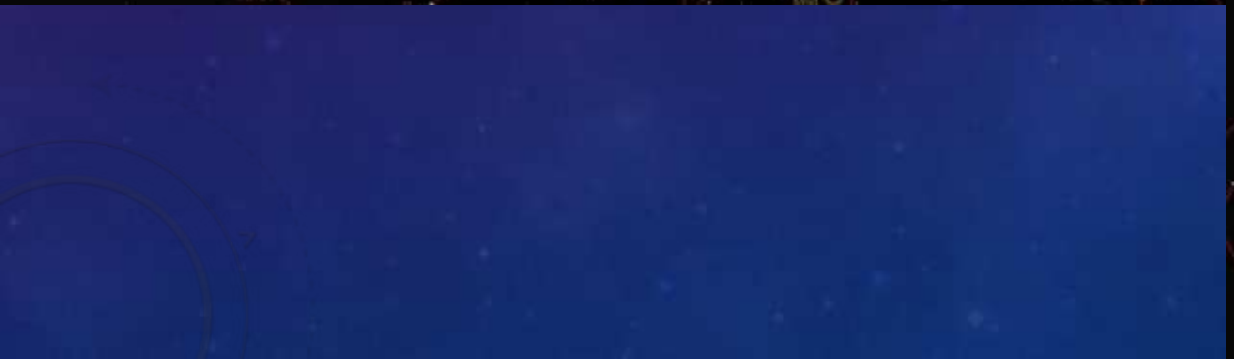
**MOON PHASES FOR THE MONTH OF OCTOBER**

# « October 2025 »

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|
| | | | 1 | 2<br>Venus at perihelion<br>1 Ceres at opposition<br>The Andromeda Galaxy is well placed | 3<br>NGC 253 is well placed | 4<br>136472 Makemake at solar conjunction<br>The Moon at aphelion<br>The Small Magellanic Cloud is well placed |
| 5<br>October Camelopardalid meteor shower 2025<br>NGC 300 is well placed<br>Close approach of the Moon and Saturn<br>Conjunction of the Moon and Saturn | 6<br>Full Moon | 7<br>NGC 362 is well placed | 8<br>Comet C/2025 K1 (ATLAS) passes perihelion<br>The Moon at perigee<br>Draconid meteor shower 2025 | 9 | 10<br>Close approach of the Moon and M45<br>Southern Taurid meteor shower 2025<br>Mercury at aphelion | 11<br>δ-Aurigid meteor shower 2025<br>Lunar occultation of Beta Tauri |
| 12 | 13<br>Moon at Last Quarter<br>Conjunction of the Moon and Jupiter<br>Close approach of the Moon and Jupiter | 14 | 15<br>The Triangulum Galaxy is well placed | 16 | 17 | 18<br>136199 Eris at opposition<br>ε-Geminid meteor shower 2025 |
| 19<br>Conjunction of the Moon and Venus | 20 | 21<br>Conjunction of Mercury and Mars<br>Comet C/2025 A6 (Lemmon) passes perigee<br>Orionid meteor shower 2025<br>New Moon | 22 | 23<br>Conjunction of the Moon and Mars<br>Conjunction of the Moon and Mercury<br>The Moon at apogee | 24<br>The Moon at perihelion<br>Leonis Minorid meteor shower 2025<br>Lunar occultation of Antares | 25<br>136108 Haumea at solar conjunction |
| 26<br>The Perseus Double Cluster is well placed | 27 | 28 | 29<br>Comet 3I/ATLAS passes perihelion<br>Moon at First Quarter<br>Mercury at greatest elongation east | 30 | 31 | |


Saturn
Sun
Venus
Mercury
Mars
Jupiter
Uranus
Moon
Evening Sky
Daylight
Morning Sky
Opposition


New Hamburg, Canada, 07-Oct-2025 07:40 America/Nipigon
Object: C/2025 A6 (Lemmon) [ • Tracker ]
RA 10h 35m 54s Dec +41° 54' 13" Appar J2000
Mag: 7.95 Alt: 55° Solar Elong: 57.0° Const: UMa
Sun Dist: 132.93 MKm Earth Dist: 125.76 MKm
Rise: 01:00 Transit: 10:51 Set: 20:45 America/Nipigon




New Hamburg, Canada, 07-Oct-2025 19:41 America/Nipigon
Object: C/2025 R2 (SWAN) [ • Tracker ]
RA 15h 45m 43s Dec -16° 30' 45" Appar J2000
Mag: 9.10 Alt: 12° Solar Elong: 43.1° Const: Lib
Sun Dist: 115.73 MKm Earth Dist: 54.67 MKm
Rise: 11:06 Transit: 16:00 Set: 20:57 America/Nipigon

# LATEST ASTRONOMY NEWS

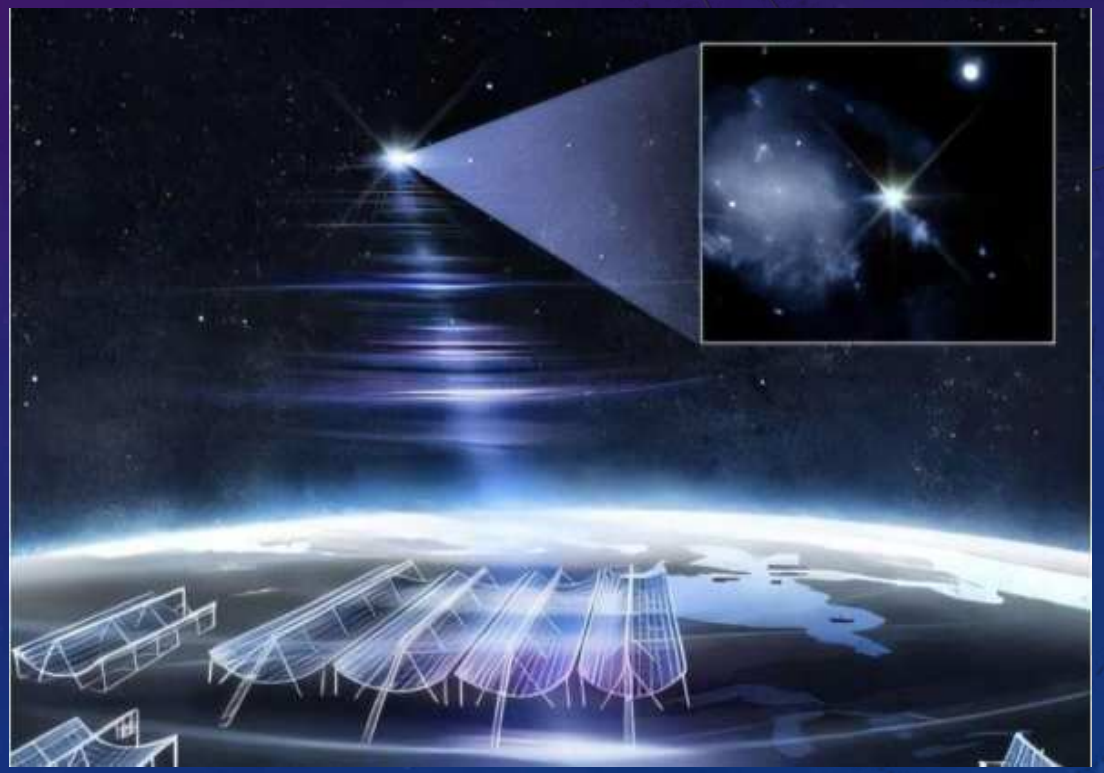
SEPT

# ASTRONOMERS PINPOINT THE LOCATION OF THE BRIGHTEST FAST RADIO BURST TO DATE SEPTEMBER 24TH

•An international collaboration of astronomers, including researchers from the University of Toronto, have detected the brightest Fast Radio Burst (FRB) to date—and have been able to pinpoint its location in a nearby galaxy by using a network of radio telescopes.

•

FRBs are extremely energetic flashes from distant sources from across the universe that are caused by extreme astrophysical phenomena. Yet, they remain poorly understood by scientists and are among astronomy's most mysterious phenomena. Pinpointing their location promises to usher in a new era of discovery, allowing scientists to trace their true cosmic origins.



The new FRB signal, called FRB 20250316A and playfully nicknamed RBFLOAT ("radio brightest flash of all time"), was very precisely localized using a new FRB Outrigger array as part of the Canadian Hydrogen-Intensity Mapping Experiment (CHIME), which has detected thousands of FRBs since 2018. These smaller versions of the CHIME instrument—located in British Columbia, Northern California and West Virginia—allow astronomers to perform very long baseline interferometry (VLBI), a technique that can pinpoint the location of FRBs with unprecedented accuracy.

"We were ultimately extremely lucky that we were able to pinpoint the precise sky position of this rare event," said Mattias Lazda, a U of T Ph.D. student in the David A. Dunlap department of astronomy and astrophysics in the Faculty of Arts & Science, who is an author on two new papers about the discovery.
Although FRBs are among the most powerful radio sources in the universe, they last only a few milliseconds to seconds, briefly outshining all other radio sources in their galaxy. RBFLOAT, detected on March 16, 2025, lasted only about one-fifth of a second.

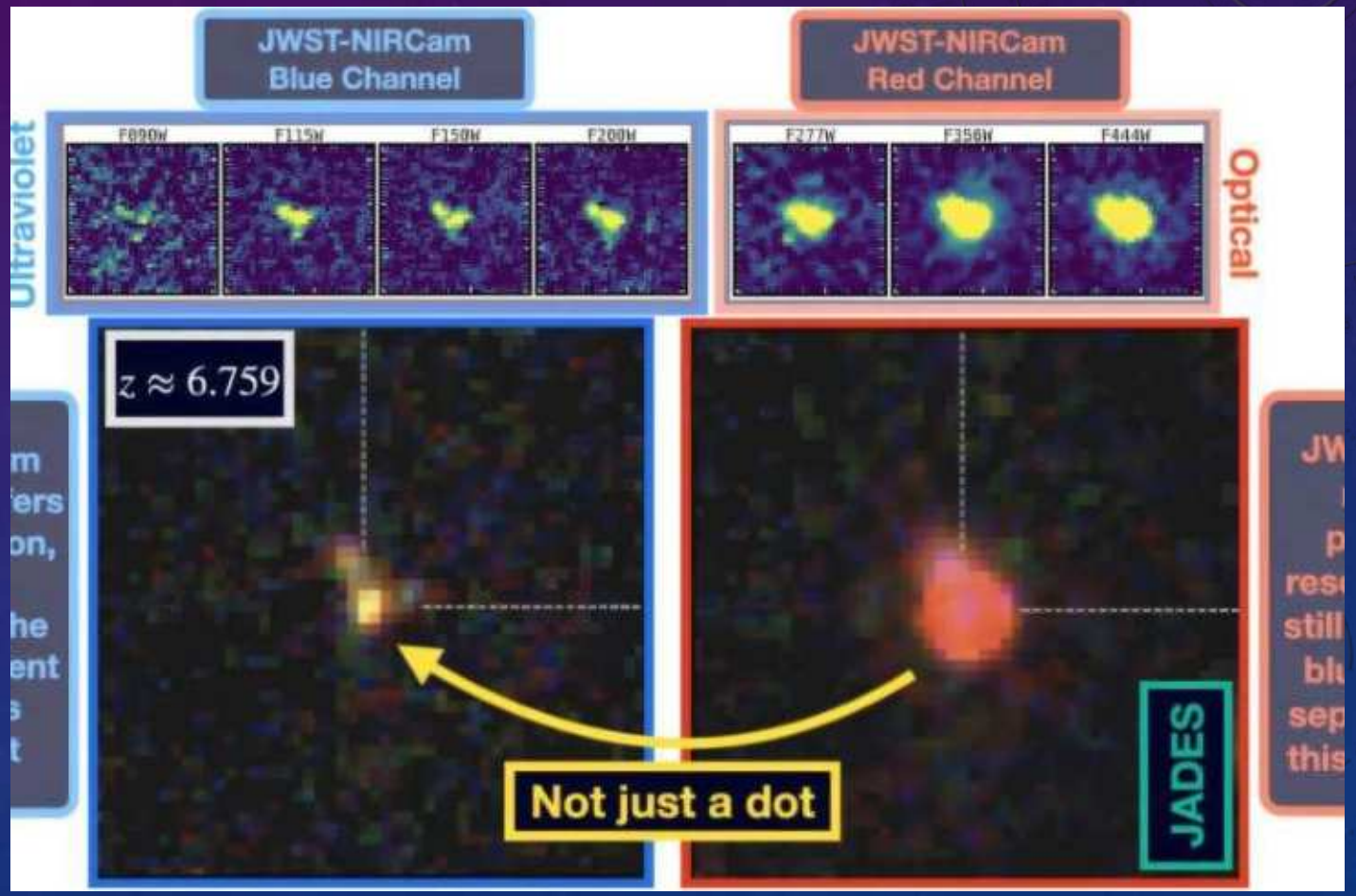
# LITTLE RED DOTS FREQUENTLY REVEAL CLUMPY MORPHOLOGIES, SOME OF WHICH BEAR HALLMARKS OF ACTIVE BLACK HOLES

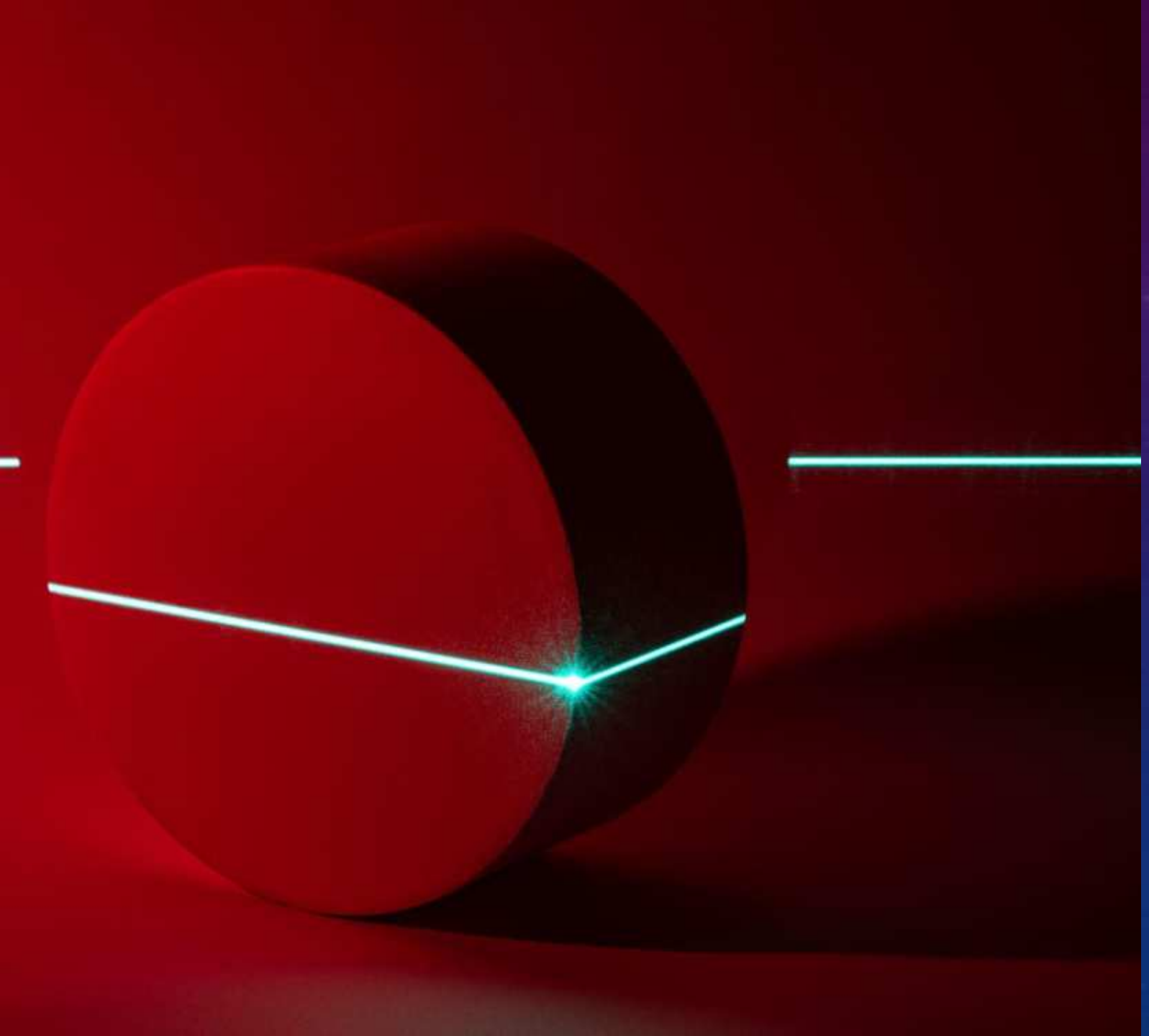
## OCT 1ST

The discovery of a large population of compact, red objects, now widely known as Little Red Dots (LRDs) is one of the most exciting results by the James Webb Space Telescope (JWST) to date. An international team of astronomers, led by Pierluigi Rinaldi (Postdoctoral Research Fellow at STScI in Baltimore) studied 99 LRDs to shed more light on their structure. Their paper will be published in The Astrophysical Journal, and is now available on the arXiv preprint server..

Many of the Little Red Dots (LRDs) show signs of hosting actively growing supermassive black holes (AGNs), which appear overly massive compared to their host galaxies. This raises one of the central puzzles in modern astronomy: how could such giant black holes already exist when the universe was only a few billion years old? The problem was first highlighted with the discovery of rare luminous quasars in the distant universe, but their scarcity made it difficult to study them in detail.

"The discovery of LRDs is changing this," says Rinaldi. "The more abundant population JWST provides, allows us to explore these cosmic giants statistically for the first time."





# DARK MATTER AND DARK ENERGY MAY ONLY BE A COSMIC ILLUSION

•Led by Rajendra Gupta, adjunct professor in the Department of Physics at the University of Ottawa, the study asserts that if the basic strengths of nature's forces (like gravity) slowly change over time and in space, they can explain the strange phenomena we observe, such as the way galaxies evolve and spin and how the universe expands.

•The study, titled "Testing CCC+TL Cosmology with Galaxy Rotation Curves," is published in the journal Galaxies.

•Challenging established concepts, "The universe's forces actually get weaker on the average as it expands," Professor Gupta explains. "This weakening makes it look like there's a mysterious push making the universe expand faster (which is identified as dark energy). However, at galactic and galaxy-cluster scale, the variation of these forces over their gravitationally bound space results in extra gravity (which is considered due to dark matter). But those things might just be illusions, emergent from the evolving constants defining the strength of the forces."

https://www.mdpi.com/2075-4434/13/5/108

The universe is approaching the midpoint of its 33-billion-year lifespan, a Cornell physicist calculates with new data from dark-energy observatories. After expanding to its peak size about 11 billion years from now, it will begin to contract—snapping back like a rubber band to a single point at the end.

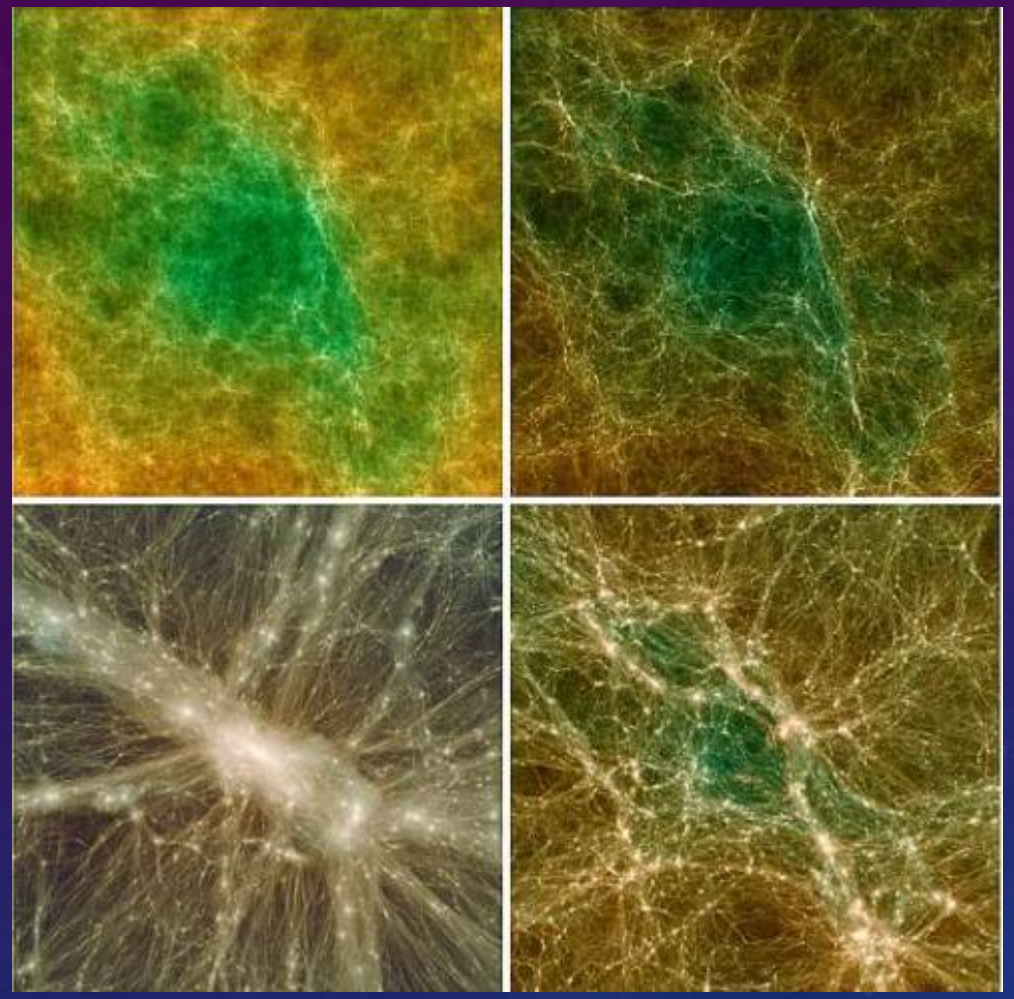
https://iopscience.iop.org/article/10.1088/1475-7516/2025/09/055

# DATA FROM DARK-ENERGY OBSERVATORIES INDICATE UNIVERSE MAY 'END IN A BIG CRUNCH' AT 33 BILLION YEARS OLD

Henry Tye, the Horace White Professor of Physics Emeritus in the College of Arts and Sciences, reached this conclusion after adding new data to a model involving the "cosmological constant"—a factor introduced more than a century ago by Albert Einstein and used by cosmologists in recent years to predict the future of our universe.

"For the last 20 years, people believed that the cosmological constant is positive, and the universe will expand forever," Tye said. "The new data seem to indicate that the cosmological constant is negative, and that the universe will end in a big crunch."

# COULD DARK ENERGY CHANGE OVER TIME? SUPERCOMPUTER SIMULATIONS CHALLENGE ΛCDM ASSUMPTION



For decades, the leading cosmological model, known as the Lambda Cold Dark Matter (ΛCDM), has assumed that dark energy is a constant entity, unchanging throughout cosmic time. While this simple assumption has served as the bedrock of modern cosmology, it has left a fundamental question unanswered: what if dark energy is not constant, but instead a time-varying property of the universe?

Recent observations have provided some of the first hints that the above-mentioned assumption may not be correct. The Dark Energy Spectroscopic Instrument (DESI), a sophisticated experiment for conducting astronomical surveys of distant galaxies, has produced data suggesting a preference for a dynamic dark energy (DDE) component.

This finding represents a significant deviation from the standard ΛCDM model. Though this discovery implies a richer and more complex universe's history, it also highlights an important knowledge gap: our understanding of how a time-varying dark energy component could influence the growth and evolution of large-scale structures in the universe remains very limited.

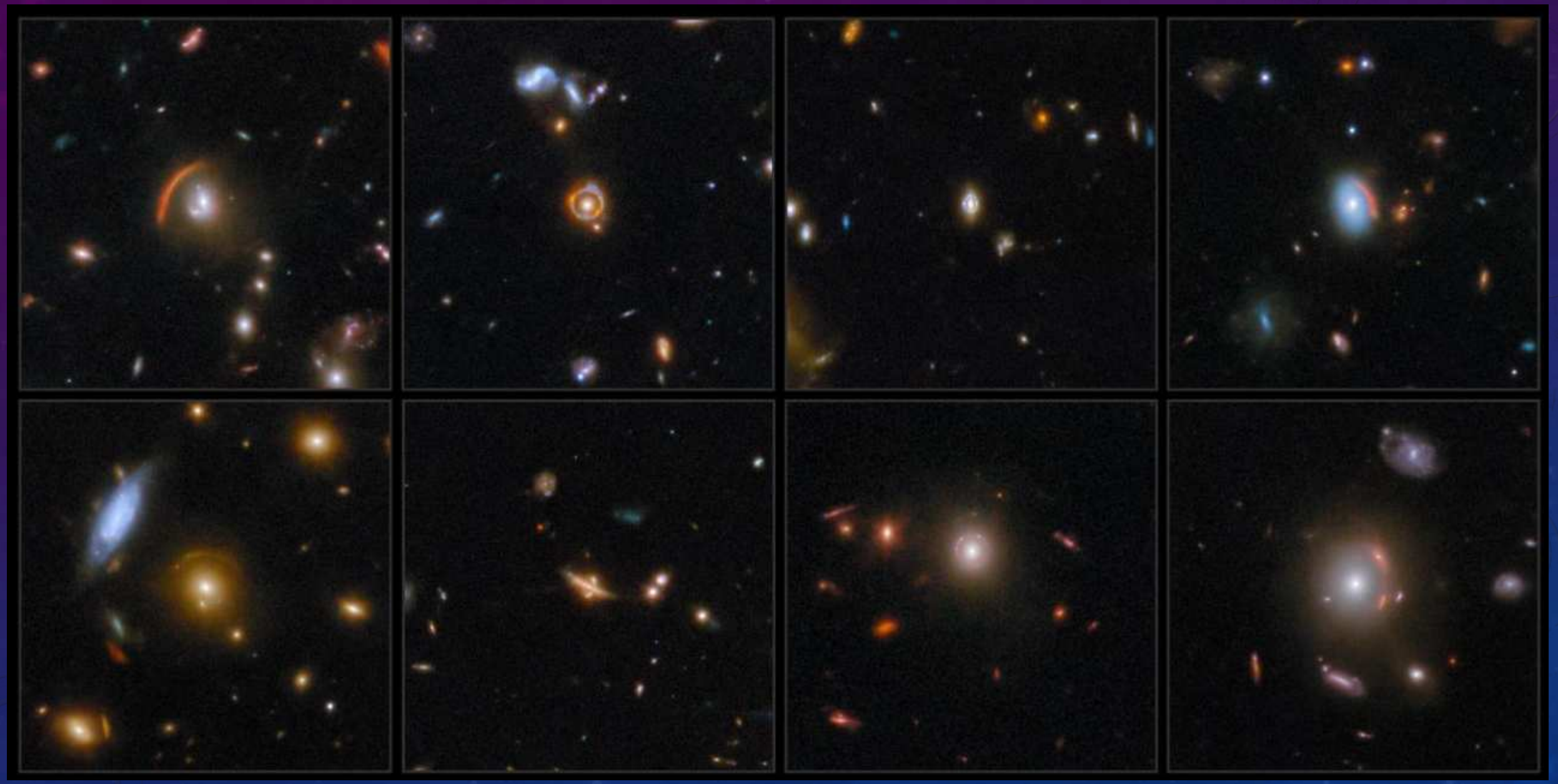
https://journals.aps.org/prd/abstract/10.1103/4k5f-gyrx

# LATEST WEBB/HUBBLE/S50 IMAGES

- Hubble captures the galaxy in NGC 2775, which lies 67 million light-years away in the constellation Cancer (the Crab). NGC 2775 sports a smooth, featureless center that is devoid of gas, resembling an elliptical galaxy. It also has a dusty ring with patchy star clusters, like a spiral galaxy. Which is it: spiral or elliptical — or neither?

**Hubble** spies this scene is in the Large Magellanic Cloud, a dwarf galaxy situated about 160,000 light-years away in the constellations Dorado and Mensa. With a mass equal to 10–20% of the mass of the Milky Way, the Large Magellanic Cloud is the largest of the dozens of small galaxies that orbit our galaxy.

# WEBB REVEALS MORE GRAVITATIONAL LENSING GALAXIES



# Webb Explores Largest Star-Forming Cloud in Milky Way (NIRCam image)

Webb took a look at Sagittarius B2 molecular cloud, the most massive, and active star-forming region in our galaxy, located only a few hundred light years from our central supermassive black hole.

# S50 Images

S50
Michael Burns
Iris


# SHOW AND TELL

# COSMOLOGY TALK