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This is an exciting time for Astronomy and Space Exploration and I hope COSMIC DIMENSIONS will be your go to source for current information. I am still looking for contributors for future issues. Anyone interested in contributing articles, photos, etc. should contact me. Two new newsletters will be offered on a subscription basis and will begin in the Spring. Be on the lookout for information regarding these. This newsletter will continue to be free. Below is a list of what is covered in this issue.

- **WHAT'S UP IN THE NIGHT SKY FOR FEBRUARY**
- **NASA's Fatal Challenger Launch**
- **Astronomers Can't Wait to Search for Signs of Life and Massive Black-Hole Mergers**
- **Coldest Interstellar Ice Ever Seen**
- **Webb Confirms Its First Exoplanet**
- **Nuclear Rocket by 2027**
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- **SPACE EXPLORATION BENEFITS**
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- **INSPIRATIONAL QUOTE of the MONTH**
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## ***WHAT'S UP IN THE NIGHT SKY FOR FEBRUARY***

**Presented by**

**Peter Detterline** <https://www.youtube.com/watch?v=gdx1aV9SSac>

**Adventure Science Center** <https://www.youtube.com/watch?v=gXdf6lorIEw>

# ***NASA's Fatal Challenger Launch Still Echoes Through NASA***

By Elizabeth Howell

While on leave in January 1986, NASA administrator James Beggs turned on the television and spotted icicles on Challenger's launch tower. A day later, seven astronauts lost their lives.



The Challenger space shuttle disaster of Jan. 28, 1986. (Image credit: Nasa)



Challenger's STS-51L crew. Front row, left to right: Michael J. Smith, front row left, Francis R. "Dick" Scobee, Ronald E. McNair; Ellison S. Onizuka. Back row, left to right, S. Christa McAuliffe, Gregory B. Jarvis, and Judith A. Resnik. (Image credit: Nasa)

The day before the Challenger launch disaster, senior NASA official James Beggs made an urgent phone call to the agency's chief engineer.

Beggs was on temporary leave from his [NASA](#) administrator position on Jan. 27, 1986 due to a brief legal matter unrelated to his agency work. While watching pre-launch television coverage of [Challenger](#), Beggs (and many others) spotted icicles on the launch tower. But neither Beggs nor engineer Milt Silveira could get a hold of the launch decision team to stop the countdown.

"He's calling the Cape, begging them to stop the count," current NASA administrator Bill Nelson said of Beggs during a televised NASA town hall today (Jan. 24). "And they won't take his call, because he's not the administrator. There was [instead] an acting administrator." (That person was William Graham.) To get the whole story click: [https://www.space.com/challenger-launch-decision-anniversary-senior-nasa-official?utm\\_term=D66A7F3E-FC72-4CF0-BBC7-9BBE5286D454&utm\\_campaign=58E4DE65-C57F-4CD3-9A5A-609994E2C5A9&utm](https://www.space.com/challenger-launch-decision-anniversary-senior-nasa-official?utm_term=D66A7F3E-FC72-4CF0-BBC7-9BBE5286D454&utm_campaign=58E4DE65-C57F-4CD3-9A5A-609994E2C5A9&utm)

# ***Astronomers Can't Wait to Search for Signs of Life and Massive Black-Hole Mergers***

By Briley Lewis

From black holes to the search for life, scientific breakthroughs are on the horizon.



Artist's depictions of what rocky exoplanets might look like.  
(Image credit: NASA/JPL-Caltech/R. Hurt)

The [James Webb Space Telescope](#) (JWST or Webb) might get all the credit, but a whole new era of telescopes — in space and on the ground — is set to revolutionize astronomy in the next two decades.

From [black holes](#) to the search for life and beyond, all of astronomy's greatest mysteries are on the table — and astronomers are already planning how to solve them, using tools that range from the biggest space telescopes to arrays of tiny radio telescopes scattered across a desert on [Earth](#). Even if some ideas feel far-fetched, astronomers are hard at work brainstorming how best to bring these projects to fruition, and how they will complement today's cutting-edge instruments, as scientists explained at the 241st meeting of the American Astronomical Society held in Seattle and online earlier this month. To read more click:

[https://www.space.com/future-astronomy-exoplanets-gravitational-waves?utm\\_term=D66A7F3E-FC72-4CF0-BBC7-9BBE5286D454&utm](https://www.space.com/future-astronomy-exoplanets-gravitational-waves?utm_term=D66A7F3E-FC72-4CF0-BBC7-9BBE5286D454&utm)

## ***James Webb Space Telescope Discovers Coldest Interstellar Ice Ever Seen***

By Sharmila Kuthunur

NASA's newest space telescope isn't just stretching astronomers' view deeper into the universe, it's also reaching colder temperatures than scientists have before.

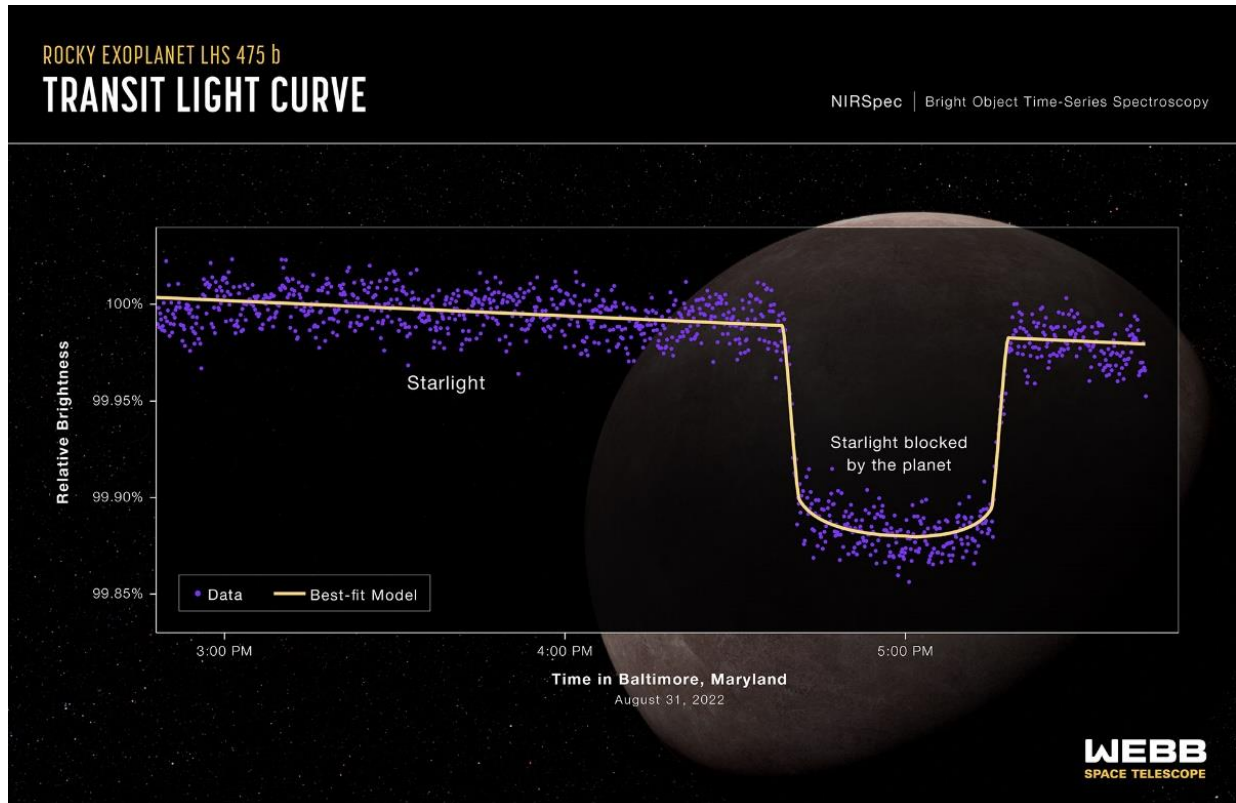
The [James Webb Space Telescope](#) (JWST or Webb), the most powerful space observatory yet, has peered deep into a dense molecular cloud and found a rich variety of pristine interstellar ice — including a range of molecules crucial for life. Spotted at frigid temperatures of minus 440 degrees Fahrenheit (minus 263 degrees Celsius), these finds are the coldest ices ever measured. Get the whole story by clicking the link:

[https://www.space.com/james-webb-space-telescope-coldest-ice?utm\\_term=D66A7F3E-FC72-4CF0-BBC7-9BBE5286D454&utm](https://www.space.com/james-webb-space-telescope-coldest-ice?utm_term=D66A7F3E-FC72-4CF0-BBC7-9BBE5286D454&utm)

# Webb Confirms Its First Exoplanet

Researchers confirmed an exoplanet, a planet that orbits another star, using NASA's James Webb Space Telescope for the first time. Formally classified as LHS 475 b, the planet is almost exactly the same size as our own, clocking in at 99% of Earth's diameter. The research team is led by Kevin Stevenson and Jacob Lustig-Yaeger, both of the Johns Hopkins University Applied Physics Laboratory in Laurel, Maryland.

The team chose to observe this target with Webb after carefully reviewing targets of interest from NASA's Transiting Exoplanet Survey Satellite (TESS), which hinted at the planet's existence. Webb's [Near-Infrared Spectrograph](#) (NIRSpec) captured the planet easily and clearly with only two transit observations.



How do researchers spot a distant planet? By observing the changes in light as it orbits its star. A light curve from NASA's James Webb Space Telescope's Near-Infrared Spectrograph (NIRSpec) shows the change in brightness from the LHS 475 star system over time as the planet transited the star on August 31, 2022. LHS 475 b is a rocky, Earth-sized exoplanet that orbits a red dwarf star roughly 41 light-years away, in the constellation Octans. The planet is extremely close to its star, completing one orbit in two Earth-days. The planet's confirmation was made possible by Webb's data.

“There is no question that the planet is there. Webb's pristine data validate it,” said Lustig-Yaeger. “The fact that it is also a small, rocky planet is impressive for the observatory,” Stevenson added.

“These first observational results from an Earth-size, rocky planet open the door to many future possibilities for studying rocky planet atmospheres with Webb,” agreed Mark Clampin, Astrophysics Division director at NASA Headquarters in Washington. “Webb is bringing us closer and closer to a new understanding of Earth-like worlds outside our solar system, and the mission is only just getting started.” To read more click the link: <https://exoplanets.nasa.gov/news/1722/webb-confirms-its-first-exoplanet/>

# ***NASA and DARPA Will Build a Nuclear Rocket by 2027***

By Brett Tingley

The agency wants the technology for use in crewed missions to Mars.



Artist concept of Demonstration for Rocket to Agile Cislunar Operations (DRACO) spacecraft, which will demonstrate a nuclear thermal rocket engine. Nuclear thermal propulsion technology could be used for future NASA crewed missions to Mars. (Image credit: DARPA)

NASA wants to design and demonstrate a working nuclear thermal rocket by 2027.

NASA Administrator Bill Nelson introduced the project on Tuesday (Jan. 24) during a presentation at the 2023 American Institute of Aeronautics and Astronautics (AIAA) SciTech Forum and Exposition held in National Harbor, Maryland. Nelson said that the agency will partner with the Pentagon's Defense Advanced Research Projects Agency (DARPA) in order to "develop and demonstrate advanced nuclear thermal propulsion, a revolutionary technology that will allow the United States to expand the possibilities for future human spaceflight missions." Click the link for more information: [https://www.space.com/nasa-darpa-nuclear-thermal-rocket-2027?utm\\_term=D66A7F3E-FC72-4CF0-BBC7-9BBE5286D454&utm](https://www.space.com/nasa-darpa-nuclear-thermal-rocket-2027?utm_term=D66A7F3E-FC72-4CF0-BBC7-9BBE5286D454&utm)

## ***FAMOUS ASTRONAUT***

### **Nicole Mann First Native American woman in space conducts seven-hour long spacewalk**

By Jasveen Kaur

WASHINGTON, DC: Nicole A Mann, a NASA astronaut and the first Native American woman in space, did a spacewalk on Friday, January 20. Mann and Japan's Koichi Wakata ventured out on a spacewalk to prep the International Space Station for more solar panels. This was the first spacewalk for both of them and they were assigned the duty of assembling the mounting brackets in preparation for the station's next set of solar arrays. It was in October 2022 when Mann rocketed into the orbit with SpaceX, becoming the first Native American woman in space.

Mann, 45, and Japan Aerospace Exploration Agency (JAXA) astronaut Wakata were scheduled to begin their spacewalk about 8.15 am EST. The spacewalk lasted 7 hours and 21 minutes before concluding at 3.35 pm EST. NASA has tweeted several videos on Friday, providing updates of their spacewalk.

## Who is Nicole Mann?



On October 5, 2022 Nicole Mann became the first native American to go to space and she conducted her first spacewalk on January 20 (NASA; Screenshot from NASA/YouTube)

Nicole Aunapu Mann, is a member of the Wailacki of the Round Valley Indian Tribes. She was selected by NASA in June 2013 and completed her astronaut candidate training in July 2015. On October 5, 2022, she was launched to the International Space Station as the mission commander of NASA's SpaceX Crew-5 mission aboard the SpaceX Crew Dragon spacecraft.

According to NASA, Born in Petaluma, California, Mann obtained her Bachelor of Science in Mechanical Engineering from the United States Naval Academy in 1999 and in 2001, earned a Master of Science in Mechanical Engineering with a specialty in Fluid Mechanics from Stanford University. Speaking of her personal life, Mann is married to Travis and they have a son together. The family lives in Houston, Texas.

Mann, who is a Colonel in the US Marine Corps, served as a test pilot in the F/A-18 Hornet and Super Hornet. She was also deployed for 47 combat missions in Iraq and Afghanistan. Mann has been awarded with two Air Medals, two Navy and Marine Corps Commendation Medals, two Navy and Marine Corps Achievement Medals and various unit commendations. She was even inducted into the Academic All-American Hall of Fame.

Source: [MEAWW.COM](https://www.meaww.com)

## ***SPACE EXPLORATION BENEFITS*** ***Thermal Blanket***

A simple NASA technology that protected Apollo and Skylab is still coming to the rescue in space and on Earth.

NASA has used the same thin, shining insulation material on virtually all manned and unmanned missions. A memorable moment in the insulation's history was seeing its shiny swath around the base of the Apollo lunar landing vehicles.

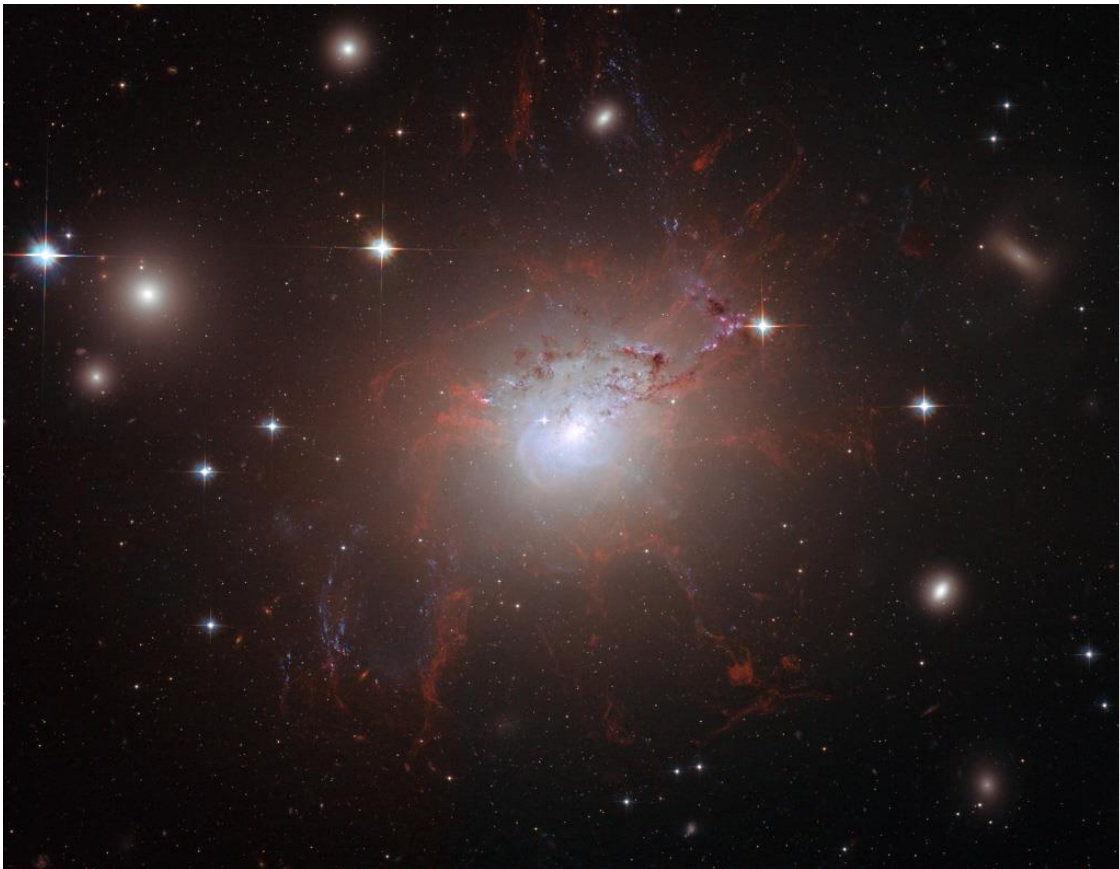
The silvery insulation is a heavyweight on benefits and a flyweight on mass in order not to weigh down spacecrafts while protecting them. The material is made of a strong, plastic, vacuum-metallized film with an efficient, infrared-reflective coating of aluminum applied as a vapor.

The same properties that are critical in space have proved to be life-saving on Earth. NASA's insulation technology has been widely used to create slim thermal blankets. Perhaps no one can appreciate these benefits more than victims of the earthquake that razed Pakistan, Afghanistan and India in October 2005.

Marathon runners can also thank the NASA insulation for making their lives more comfortable. After running long distances in chill temperatures, runners may shiver from more than joy once they cross the finish line and begin a rapid cool-down. As hordes cross the finish line, it may take runners more than 20 minutes to climb into warmer clothes, opening the door to hypothermia. Today many marathons use "space blankets" to ward off the post-race chill. The silver-backed crowds of runners have become a well-known symbol of having finished a race. To read the full article click:

[https://www.nasa.gov/vision/earth/technologies/silver\\_insulation.html](https://www.nasa.gov/vision/earth/technologies/silver_insulation.html)

## SPACE PIC OF THE MONTH



### Active Galaxy NGC 1275

Image Credit: [NASA](#), [ESA](#), [Hubble Heritage](#), A. Fabian (University of Cambridge, UK)

Explanation: [Active galaxy](#) NGC 1275 is the central, dominant member of the large and relatively nearby [Perseus Cluster of Galaxies](#). Wild-looking at visible wavelengths, the active galaxy is also a prodigious source of [x-rays](#) and [radio](#) emission. NGC 1275 accretes matter as entire galaxies fall into it, ultimately feeding a supermassive black hole at the galaxy's core. This color composite [image made from Hubble Space Telescope](#) data recorded during 2006. It highlights the resulting [galactic debris](#) and [filaments](#) of glowing gas, some up to 20,000 light-years long. [The filaments persist](#) in NGC 1275, even though the turmoil of galactic collisions should destroy them. What keeps the filaments together? [Observations](#) indicate that the structures, pushed out from the galaxy's center by the black hole's activity, are held together by magnetic fields. Also known as [Perseus A](#), NGC 1275 spans over 100,000 light years and lies about 230 million light years away.

## Coming Soon

Two new newsletters are being introduced in the continuing effort of promoting science to the public. They are **CURIOUS about STEAM** (Science, Technology, Engineering, Art and Math). The other is **WORLDS BEYOND** and **SEARCHING for LIFE ELSEWHERE**.

**CURIOUS About STEAM** will include information about trends, current events and hands-on activities that can be done in a school environment, at home and elsewhere. The **WORLDS BEYOND** newsletter will include updates on findings, current research and some of the research I am doing. Both will be available on a subscription basis. Emails will be sent out when the subscription details are finalized. I am currently looking at using the platform **PATREON** because there are different levels to subscribe.

### CURIOUS About STEAM



Image by Freepik

### WORLDS BEYOND and SEARCHING for LIFE ELSEWHERE

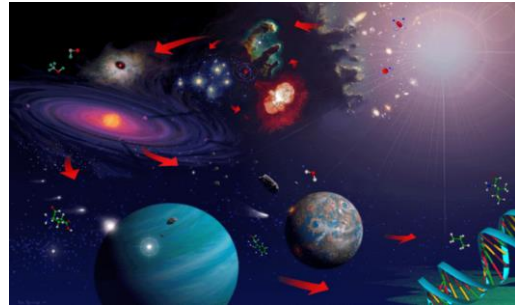


Image Source: [NASA Astrobiology Institute](#)

## INSPIRATIONAL QUOTE of the MONTH

“It always seems impossible until it is done.” -- **Nelson Mandela**

## SPACE QUOTE of the MONTH

“Space has the ability to produce a triple bottom line, or ROIII: Return on Investment, Innovation, and Inspiration.” -- **Robert C. Jacobson**

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