

COSMIC DIMENSIONS



**November
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CENTI ASTRO-SPACE ACTIVITIES

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Hello and welcome to the November edition of COSMIC DIMENSIONS, the newsletter that explores the universe, Space Exploration and beyond. In this issue, we will dive into topics such as:

- WHAT'S UP IN THE NIGHT SKY FOR NOVEMBER
- Annular and Total Solar Eclipse
- **PURCHASE YOUR ECLIPSE GLASSES**
- NASA's Bennu Asteroid Sample
- Asteroid Facts
- and more

Whether you are a curious beginner or a seasoned enthusiast, COSMIC DIMENSIONS will take you on a journey of intrigue and fascination. So, begin to explore and enjoy the ride!

- WHAT'S UP IN THE NIGHT SKY FOR NOVEMBER
- Annular and Total Solar Eclipse
- NASA's Bennu Asteroid Sample
- Psyche Mission Successfully Launches
- Asteroid Facts
- Annibale de Gasparis – Psyche Discoverer
- Space Pic of the Month
- How Astronomers Search for Life on Exoplanets
- How Do Humans Try to Communicate with Aliens
- Meaningful Quote

WHAT'S UP IN THE NIGHT SKY FOR NOVEMBER

Presented by

Adventure Science Center Nightwatch - Bill McClain

<https://www.youtube.com/watch?v=6LKbls7JwFo>

Tonight's Sky: November

<https://www.youtube.com/watch?v=iNgtaM8uKNg>

Annular & Total Solar Eclipse

Annular Solar Eclipse October 14, 2023



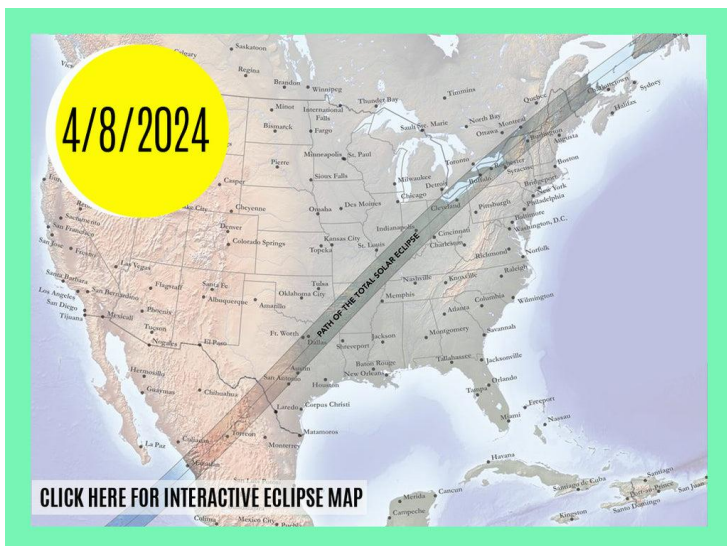
If you missed the Annular Solar Eclipse on October 14th here is a NASA video and a map of where it was visible. Outside of this the event was partial. Click on the picture to view the video.



FAST FACT

Annular eclipses are the rarest kind of solar eclipse. They only happen when syzygy (the Sun, Moon and Earth lining up) coincides with apogee (the farthest point from Earth in the Moon's elliptical orbit).

Total Solar Eclipse on April 8, 2024



Are you ready for the total solar eclipse 2024? If not, it is time to start placing your order for [solar eclipse glasses](#). This is one of the most impressive astronomical events, and it is just around the corner. Be sure to have your solar glasses in hand early to get the best prices, and avoid the rush of later buyers!

The last total solar eclipse that the United States witnessed was in August 2017, and it was one of the biggest astronomical events in history. Despite the millions of people who witnessed this event, there were many who missed out. While 2024 might sound like it's a long way off, many people are already starting to get prepared.

Where Will the Eclipse Take Place?

On April 8, 2024, the shadow of the moon will once again completely block out the sun across the United States, on a path that will run roughly from Texas to Maine.

Cities include: Austin and Dallas, Texas; Little Rock, Arkansas; Indianapolis (Festival Country), Indiana; Toledo, Cleveland and Akron, Ohio; Buffalo (*I am in the path of totality as I live an hour southwest of Buffalo*) and Rochester, New York; Montpelier, Vermont; and Montreal will be directly in the path of totality. Portions of Mexico and eastern Canada will also experience a total solar eclipse. To get the full details click here: <https://tinyurl.com/3zvuxb44>

Don't forget your eclipse glasses!!

Click this link to purchase [solar eclipse glasses](#).



This is an affiliate link. If you click on it and purchase any items, I will receive an affiliate commission at no extra cost to you.

This commission helps support my education programs.

NASA's Bennu Asteroid Sample Contains Carbon, Water

Abbey A. Donaldson October 11, 2023

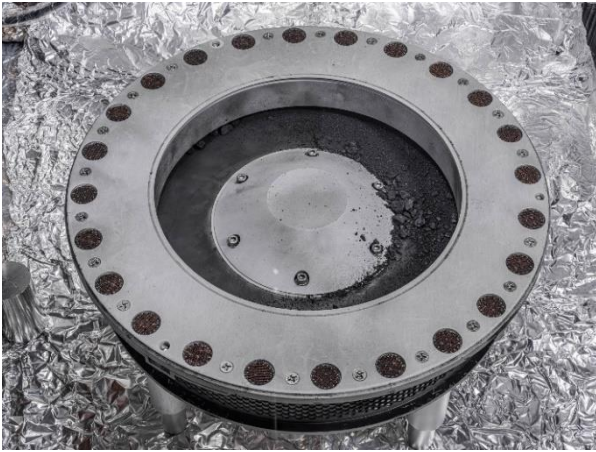


Photo: NASA/Erika Blumenfeld & Joseph Aebersold

Initial studies of the 4.5-billion-year-old asteroid Bennu sample collected in space and brought to Earth by NASA show evidence of high-carbon content and water, which together could indicate the building blocks of life on Earth may be found in the rock. NASA made the news Wednesday from its Johnson Space Center in Houston where leadership and scientists showed off the asteroid material for the first time since it landed in September.

A view of the outside of the OSIRIS-REx sample collector. Sample material from asteroid Bennu can be seen on the middle right. Scientists have found evidence of both carbon and water in initial analysis of this material. The bulk of the sample is located inside.

Click on the link to read more: <https://rb.gy/zm2gx>

Hear more about the mission from Danny Glavin, OSIRIS-REx co-investigator, on [this week's Planetary Radio](#).

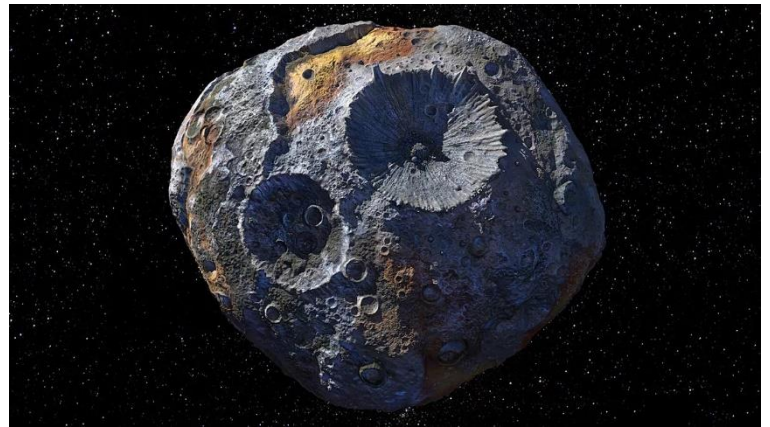
Psyche Mission Successfully Launches

Jason Davis • Oct 13, 2023

NASA's **Psyche** spacecraft has begun its journey to a metal asteroid.

The space mission successfully blasted off from NASA's Kennedy Space Center in Florida on Oct. 13, 2023 at 10:19 a.m. EDT (14:19 UTC). Heavy clouds at the launch site hampered views of a SpaceX Falcon Heavy rocket carrying Psyche into Earth orbit. After a 45-minute coast above the planet, a final engine burn pushed Psyche away from Earth, putting it on course for the main asteroid belt.

To read more click: <https://rb.gy/skwdf>



PSYCHE THE ASTEROID An artist's concept. NASA/JPL-Caltech/ASU

Asteroid Facts

- Asteroids have jagged and irregular shapes.
- Some asteroids are hundreds of miles in diameter, but many more are as small as pebbles.
- Most asteroids are made of different kinds of rocks, but some have clays or metals, such as nickel and iron.

Annibale de Gasparis

by Alison Feb 25, 2023



Annibale de Gasparis was a star-gazing legend who brought light to the world of astronomy in the 19th century. Hailing from the rustic town of Bugnara in Italy's Abruzzo region, de Gasparis possessed a rare combination of mathematical genius and celestial curiosity that fueled his groundbreaking discoveries.

As a young man, de Gasparis attended the University of Naples, where he honed his skills in mathematics and celestial mechanics. His passion for the stars led him to work at the Astronomical Observatory of Capodimonte and the University of Naples Federico II, where he spent countless hours peering through telescopes and crunching numbers.

It was during these long nights that de Gasparis made his mark on the scientific world, discovering several asteroids and contributing to the field of theoretical astronomy. His discoveries earned him accolades, including the prestigious Lalande Prize and the Gold Medal of the Royal Astronomical Society.

But de Gasparis was more than just a scientific prodigy. He was a true pioneer, pushing the boundaries of what was thought possible in his field. He had an innate ability to think outside the box, to see patterns and connections where others saw only chaos.

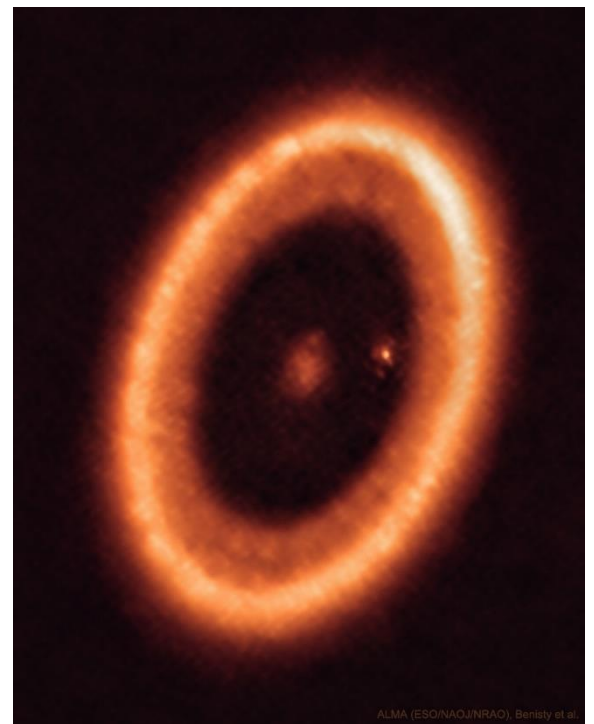
Click on the link to read more: <https://acearchive.org/annibale-de-gasparis>

Space Pic of the Month

PDS 70: Disk, Planets, and Moons

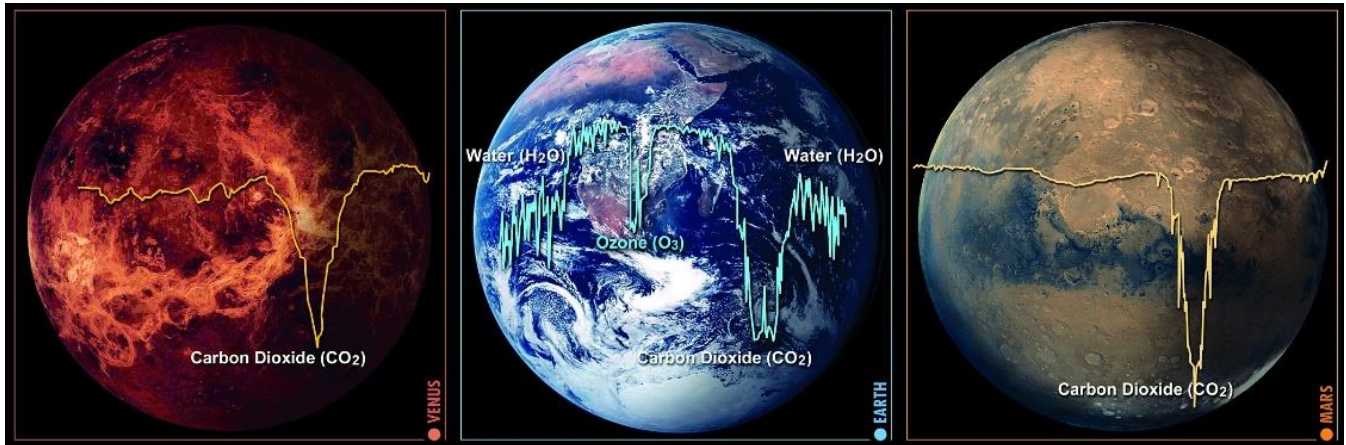
Image Credit: [ALMA](#) ([ESO/NAOJ/NRAO](#)); [M. Benisty et al.](#)

Explanation: It's not the big ring that's attracting the most attention. Although the big planet-forming ring around the star [PDS 70](#) is clearly imaged and itself quite interesting. It's also not the planet on the right, just inside the [big disk](#), that's being talked about the most. Although the planet [PDS 70c](#) is a newly formed and, interestingly, similar in size and mass to [Jupiter](#). It's the fuzzy patch around the [planet PDS 70c](#) that's [causing the commotion](#). That fuzzy patch is thought to be a [dusty disk](#) that is now forming into moons -- and that had never been seen before. The [featured image](#) was taken in 2021 by the [Atacama Large Millimeter Array](#) (ALMA) of 66 [radio telescopes](#) in the high [Atacama Desert](#) of northern [Chile](#). Based on ALMA data, [astronomers infer](#) that the moon-forming exoplanetary disk has a radius similar to our Earth's orbit, and may one day form three or so [Luna](#)-sized moons -- not very different from our [Jupiter's four](#).



How Astronomers Search for Life on Exoplanets

William Balmer • Oct 11, 2023



SPECTRA FROM DIFFERENT EARTH-LIKE PLANETS Of the four terrestrial planets in our Solar System (Mercury, Venus, Earth and Mars) the last three possess atmospheres. These are the kinds of spectra we would expect when searching for Earth-like planets in other solar systems. *ESA*

One of humanity's biggest questions remains: **"Are we alone?"**

For nearly half a century, astronomers have **looked for messages from extraterrestrial intelligences** that might reach Earth. Many other astronomers hope to answer this question by taking detailed observations of exoplanets: planets orbiting distant stars. But how can astronomers hope to answer this kind of question by observing planets they'll never get to visit? And how (or, when) will we know if a claim of a sign of life is believable?

Looking for signs of life in light

For the past century, astronomers have used **spectroscopy** to learn more about stars, galaxies, super massive black holes, and the planets in our own Solar System. Only in the last two decades, with powerful new telescopes, cameras, and computers, have we finally achieved the precision necessary to measure the spectra of exoplanets. The first spectrum of an exoplanet, **published in 2002**, was taken

using the Hubble Space Telescope and showed evidence of vaporized sodium in the atmosphere of the exoplanet HD 209458 b.

There are major prospects in the next few decades to observe the spectra of planets and hunt for potential **"biosignatures."** Biosignatures are the spectral markers of molecules that might be necessary for, or produced by, life as we know it.

There are three ways to measure a planet's spectrum:

- 1) look for light **bouncing off the planet's surface or atmosphere** (reflection spectroscopy),
- 2) observe the light **produced by the heat of the planet itself** (thermal emission spectroscopy), or
- 3) watch light **pass through the planet's atmosphere** (transmission spectroscopy).

To read more click on the link: <https://tinyurl.com/5fps2rew>

How Do Humans Try to Communicate with Aliens?

Kate Howells October 10, 2023

Scanning for signals and sending out our own



THE ALLEN TELESCOPE ARRAY UP CLOSE - A close-up shot of some of the receiving dishes of the Allen Telescope Array in California. Image: SETI Institute

The question of whether life exists beyond Earth has intrigued humans for centuries. The search for signs of alien life involves a variety of efforts, from the Perseverance rover collecting samples of Martian rocks to space telescopes peering at the atmospheres of distant exoplanets. It also includes the search for extraterrestrial intelligence, also known as SETI.

Most SETI projects are focused on looking for artificial or unusual signals coming from elsewhere in the Cosmos that might have been broadcast by technologically advanced life forms. Others involve sending out our own signals, showing that intelligent life exists here on Earth. And the potential implications of contact with an advanced alien species drives discussions not only based on science, but also ethics and policy. To get the full details click on the following link:

<https://tinyurl.com/f7sxaykv>

Don't forget your eclipse glasses!!

Click here: [solar eclipse glasses](#).



If you click on it and purchase any items, I will receive an affiliate commission at no extra cost to you to support my education programs.

Meaningful Quote

BEING HUMBLE means recognizing that we are not on earth to see how important we can become, but to see how much difference we can make in the lives of others. -- **G. Hinckley**

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