

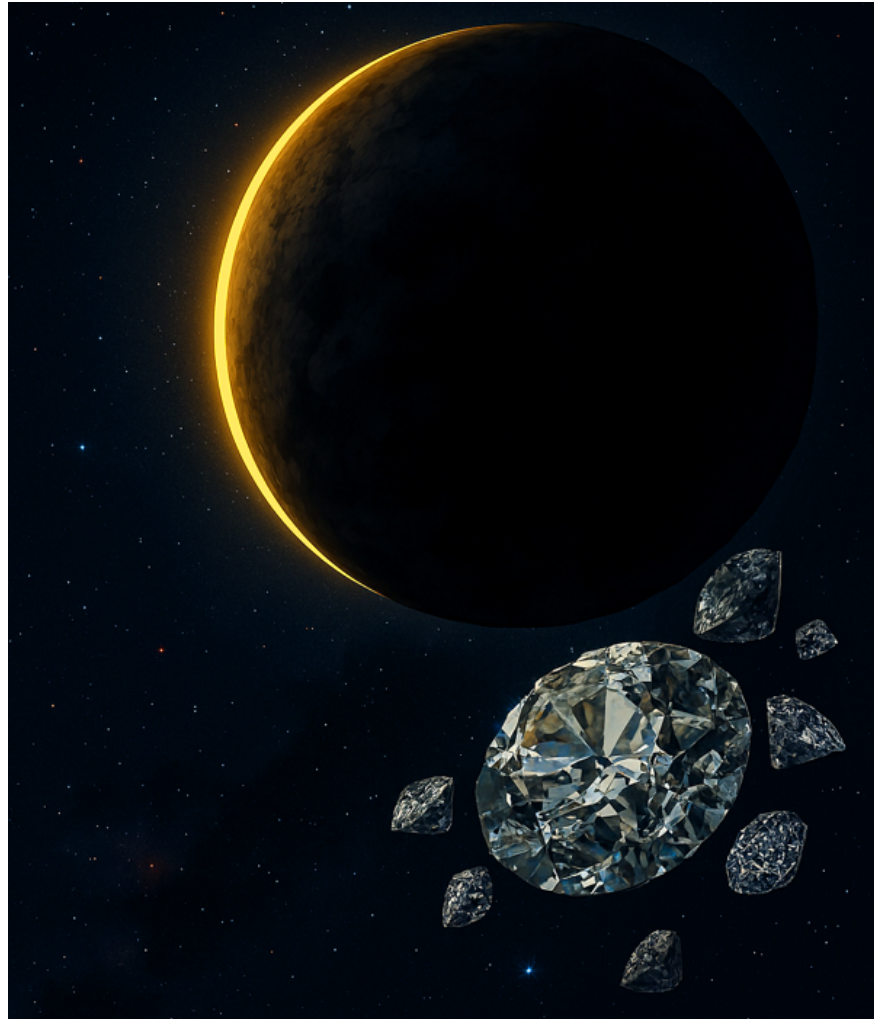
# The James Webb Telescope has discovered a lemon-shaped diamond planet.

Webb discovered the lemon-shaped planet PSR J2322-2650b, which is full of diamonds and has a bizarre, never-before-seen carbon atmosphere.

Scientists using the James Webb Space Telescope (JWST) have identified a previously unknown type of exoplanet. With an atmosphere that defies all current planet-forming theories, this new world has an elongated, lemon-like shape and may contain vast reserves of diamonds.

## The Dissimilar Carbon World

This planet is named **PSR J2322-2650b** . Unlike most other planets, its atmosphere contains no water vapor or CO<sub>2</sub>, but is dominated by helium and carbon. With a mass comparable to Jupiter, this planet is covered in thick, sooty black clouds. Under extreme pressure at its core, scientists believe that this carbon is compressed into sparkling diamonds.



"This is a new type of planetary atmosphere that no one has ever seen before," said astrophysicist Michael Zhang from the University of Chicago. "It orbits an extremely unusual star: as massive as the Sun but only the size of a city."

## **The deadly "Black Widow" system**



PSR J2322-2650b orbits a neutron star (also known as a pulsar) at breakneck speed. The distance between them is only 1.6 million km (compared to 150 million km for Earth and the Sun), allowing the planet to complete one orbit in just **7.8 hours** .

The tremendous gravitational pull of the pulsar has stretched this Jupiter-massive planet into a bizarre, lemon-like shape. This system is classified as a "Black Widow" – where the pulsar constantly emits high-energy winds and radiation to "eat away" at and gradually erode matter from its companion planet.

## Challenging the laws of physics



What puzzled astronomers the most was the planet's chemical composition. Instead of ordinary molecules, Webb discovered pure carbon molecules (C<sub>2</sub> and C<sub>3</sub>).

"It's hard to imagine how a planet could have such an extremely high carbon content," Zhang shared. "It seems to defy every planet-forming mechanism we've ever known." One hypothesis suggests that as the planet cooled, the carbon and oxygen mixture inside began to crystallize, causing pure carbon crystals to rise to the surface and blend into the helium crust.

This discovery was only possible thanks to James Webb's exceptional infrared sensitivity. Because the pulse primarily emitted gamma rays and high-energy particles (which are invisible to infrared equipment), it did not blind Webb's sensors. This allowed scientists to directly observe the planet in its purest state, without being obscured by the light of its host star.

You finished reading the article "**The James Webb Telescope has discovered a lemon-shaped diamond planet.**" edited by the [TipsMake](#) team. We hope this article has provided you with many useful tech tips and tricks. You can search for similar articles on tips and guides. Thank you for reading and for following us regularly.