

Admire a rare direct view of an exoplanet very similar to Jupiter

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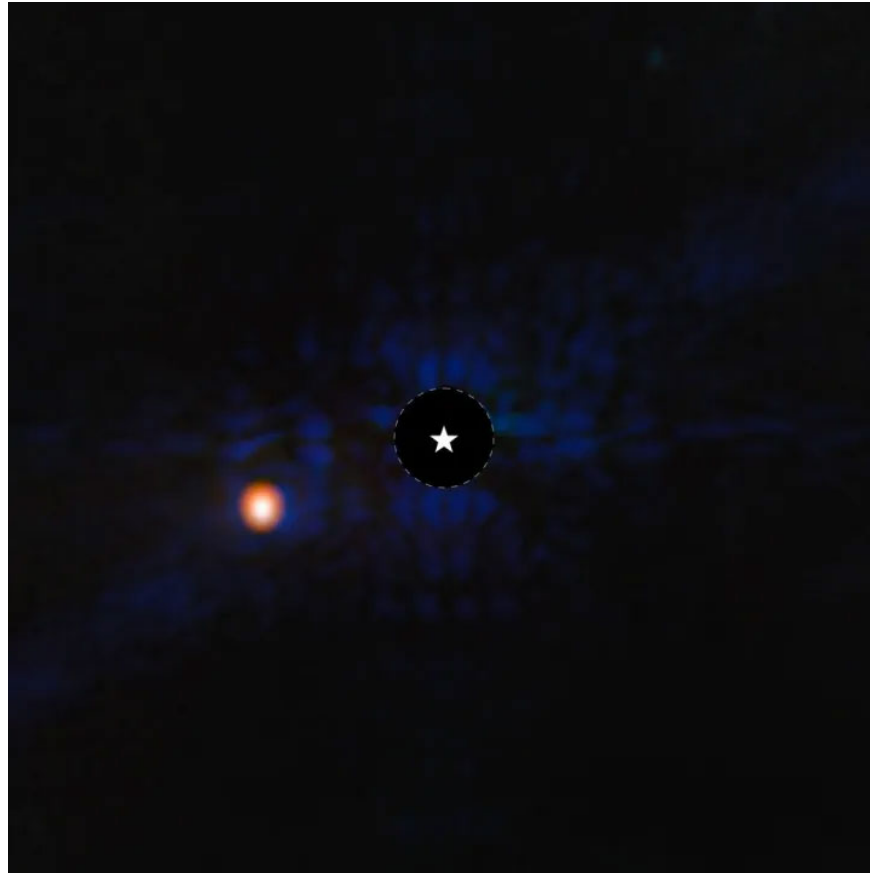
Even at the present time, when humanity already possesses giant, ultra-modern ground observatories, as well as state-of-the-art space-based telescope systems, it is still difficult to capture images of an alien. Planets are still quite rare and often considered a miracle.

Exoplanet are planets located outside the Solar System. Essentially, exoplanets belong to a planetary system but follow the orbit of a star, black hole, remnant or another planet instead of following the orbit of the Sun. Therefore, it contains countless strange features and characteristics that are considered valuable knowledge stores for astronomy researchers.

These exoplanets are often located very far from Earth, and are small and faint compared to the host star they orbit, making direct study extremely difficult. That's why most observations of exoplanets to date are still made by studying their host stars. However, now, with the world's most modern space telescope James Webb in operation, taking pictures of exoplanets has become easier. James Webb recently sent back to Earth a direct photo of a gas giant — and it's one of the coldest exoplanets observed to date.

The planet, named Epsilon Indi Ab, is located 12 light-years away and has an estimated temperature of just 35 degrees Fahrenheit (2 degrees Celsius). The fact that Epsilon Indi Ab has a very cool climate compared to most known exoplanets requires scientists to take full advantage of James Webb's modern equipment to conduct in-depth research. .

' Cold planets appear very faint, and most of their radiation is in the mid-infrared region ,' explains researcher Elisabeth Matthews of the Max Planck Institute for Astronomy in Germany. ' James Webb has a good ability to observe objects at mid-infrared wavelengths, which is extremely difficult to do from the ground. In addition, good spatial resolution will also be needed to separate the planet and star in the image, and James Webb's large-sized mirror system is particularly useful in this respect '.



The image above was taken with James Webb's MIRI instrument. The instrument has an instrument called a coronagraph, which is a disk that blocks light from very bright sources (in this case the planet's host star) so that nearby fainter objects can be observed (Epsilon Indi Ab). Relatively speaking, there is a clearer separation between planet and star here.

This planet is quite similar to Jupiter, although a bit warmer and larger. There are some indications that it may have a cloudy atmosphere, or may contain heavy elements such as carbon. But researchers want to collect more data with the spectrometer to get a better look at the planet's atmosphere before drawing conclusions.

Studying Epsilon Indi Ab is expected to help astronomers better understand the giant gas planets in our solar system, as well as many other distant exoplanets.

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