Elias 2-24 b: Youngest Known Planet

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Why in News?

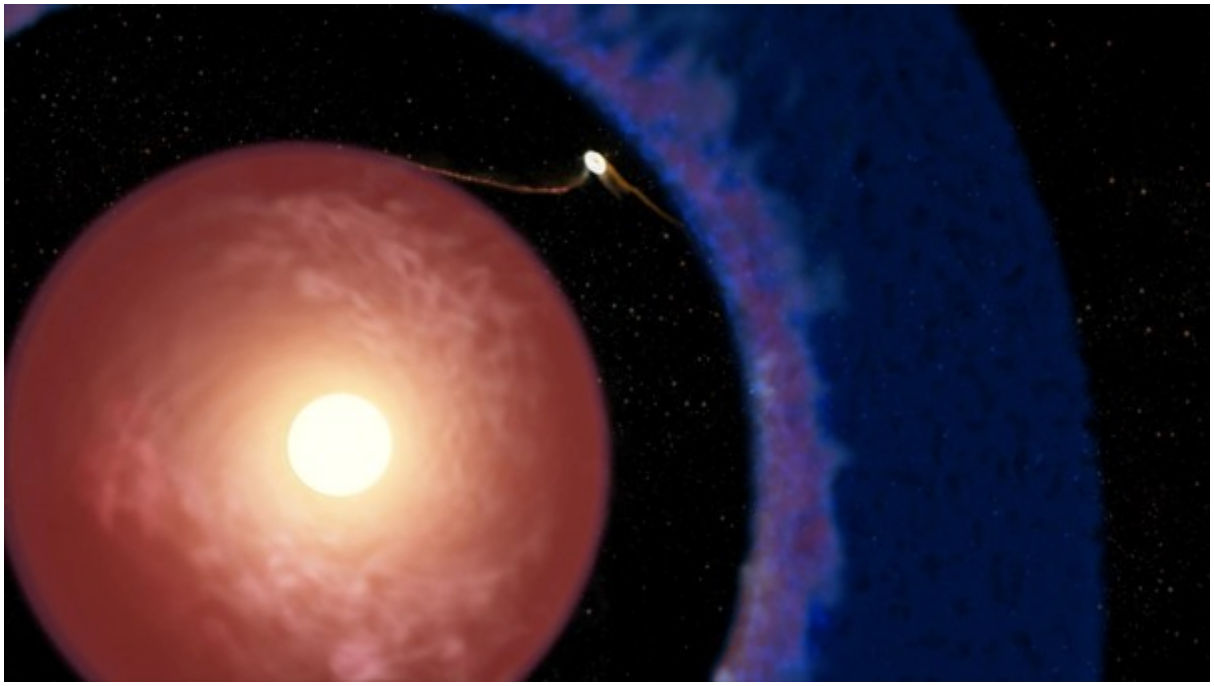
Astronomers have confirmed Elias 2-24 b as the youngest known planet.

Key Findings

- **Location** – The star lies in the ρ Ophiuchi star-forming region, a nearby stellar nursery.
- **Size** - The planet is roughly Jupiter-sized.
- It sits about ***450 light-years from Earth*** and is still embedded in the gas and dust where it formed.
- **Age** – Elias 2-24 b beats the earlier record holders, a four-way tie of worlds that are all more than 5 million years old.
- Those four are two planets around PDS 70 and two in the WISPIT 2 system.
- **Host star** – Earlier studies put the star at about 400,000 years old, and one suggested about 200,000 years.
- The authors therefore infer the planet is under a million years old, but assumed one million years to model its size.
- **Distance from its star** – The planet orbits roughly 55 times farther out than Earth does from the Sun.
- **Mass** – Most reports say it is about Jupiter's mass.
- The authors' modelling puts it at two to 14 times Jupiter, and the exact figure is uncertain because the planet is still growing inside a thick cloud of gas and dust.

Founding details

- **Decade-old debate** – Atacama Large Millimeter/submillimeter Array (ALMA) in Chile first revealed a gap in the disk around Elias 2-24.
- The European Southern Observatory's Very Large Telescope later spotted a light source within it.
- Astronomers argued for about 10 years over whether it was a planet.
- **Archival Keck data** – Bernardi's team re-examined Keck Observatory observations from 2018 and 2020 and found the object's motion matched a planet rather than a background star or imaging artifact.
- **Coronagraph technique** – A coronagraph blocks a star's glare so light from orbiting planets can be seen directly.
- The team searched coronagraph data for seven stars with debris disks, expecting a planet in a gap, and found one.
- **Multi-telescope effort** – Bernardi said the confirmation was possible only by using several telescopes together (ALMA, VLT and Keck).



Reference

[Space | Youngest exoplanet on record — a 'newborn' named Elias]

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