

New Exoplanet in Beta Pictoris

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Why in News?

Recently, Astronomers using NASA's James Webb Space Telescope (JWST) have discovered a new giant exoplanet, Beta Pictoris d, in the Beta Pictoris system.

- **Beta Pictoris** - A **nearby system in the Milky Way** known for its bright debris disc and role as a "laboratory" for planetary formation.
- 63 light-years away, 23 million years old.
- Already known for two imaged planets (Beta Pictoris b & c), it becomes only the 2nd system with three imaged planets.

Beta Pictoris has long served as a laboratory for understanding how planetary systems form and evolve.

- **Planet Discovery** - Beta Pictoris d was discovered using spectroscopy with Webb's NIRSpec (Near-Infrared Spectrograph).
- Identified by carbon monoxide lines, and later confirmed with water vapor and methane by Webb's MIRI
- It shows a new way to detect planets through atmospheric fingerprints instead of traditional imaging.

Planet Characteristics -

- **Mass** - 2× Jupiter (smallest of the three).
- **Orbit** - 30 astronomical units (comparable to Neptune's region in our solar system).
- Lies inside the inner edge of the debris disc.

Significance -

- Explains sharp inner edge and structures of the debris disc.
- Validates predictions of a hidden planet influencing disc dynamics.

- First planet discovered primarily through **moderate-resolution spectroscopy**, opening new pathways for exoplanet detection.

Reference

[NASA | Beta Pictoris](#)

