

Exoplanets

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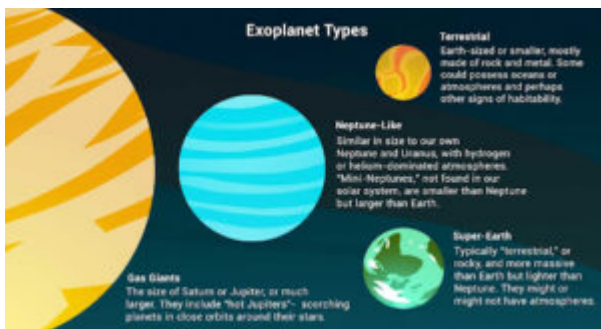
In news– Recently, Indian Astronomers have found a new method to understand the atmosphere of exoplanets.

Key updates–

- In the recent past, astronomers have discovered that many other stars have planets going around them, like our Solar System.
- Till now, around 5000 such exoplanets have been detected.
- Recently, **Aritra Chakrabarty, a postdoctoral researcher at Indian Institute of Astrophysics (IIA), Bangalore, developed a detailed three-dimensional numerical method** and simulated the polarization of exoplanets.
- Just like the Solar-planets, exoplanets are slightly oblate due to their rapid spin rotation.
- Further, depending on its position around the star, only a part of the planetary disk gets illuminated by the starlight.
- This **asymmetry of the light-emitting region gives rise to non-zero polarization.**
- The polarization at different wavelengths is sufficiently high and hence can be detected even by a simple polarimeter if the starlight is blocked.
- **It helps study the atmosphere of the exoplanets** along with its chemical composition.
- **Unlike the traditional and popular methods such as Transit Photometry and Radial Velocity methods** that can detect planets that are viewed almost edge-on only, **this polarimetric method can detect and probe exoplanets** orbiting with a broad range of orbital inclination angles.

What are exoplanets?

- Exoplanets are planets that lie beyond our solar system.
- Most orbit other stars, but free-floating exoplanets, called rogue planets, orbit the galactic center and are untethered to any star.
- The first possible evidence of an exoplanet was noted in 1917, but was not recognized as such.
- The first confirmation of detection occurred in 1992.
- This was followed by the confirmation of a different planet, originally detected in 1988.



- Exoplanets are very hard to see directly with telescopes.
- They are hidden by the bright glare of the stars they orbit.
- So, astronomers use other ways to detect and study these distant planets.
- They search for exoplanets by looking at the effects these planets have on the stars they orbit.