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What is PARAS? Used for Discovery of a Sub-Saturn Like Planet Around a Sun-Like Star (ISRO) (Download PDF)

(August 22, 2018)

Indian team of scientists led by Professor Abhijit Chakraborty of Physical Research Laboratory (PRL), Ahmedabad, discovered sub-Saturn or super-Neptune size planet around Sun-like star using PARAS.

W/this discovery, India has joined handful of countries that have discovered planets around stars.

Image of PARAS: A Stable Fiber Fed Echelle Spectrograph

PRL Advance Radial-velocity Abu-sky Search' (PARAS)

- Discovery was made by measuring mass of planet using indigenously designed 'PRL Advance Radial-velocity Abu-sky Search' (PARAS) spectrograph integrated w/1.2m Telescope at PRL's Gurushikhar Observatory in Mount Abu, India.

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- PARAS is first-of-its-kind spectrograph in Asia, which can measure mass of planet going around star.
- Very few such spectrographs exist around world (mostly in US & in Europe) that can do such precise measurements.

How is Size of Planet Measured?

- Size of planet is determined based on amount of starlight it can block when in transit, which is when planet body comes in b/w star & observer on Earth.

Sub- Saturn/Super-Neptune like Planet

- Planet will be known as EPIC 211945201b or K2 - 236b, as name of host star is EPIC 211945201 or K2 - 236.
- It has mass of about 27 Earth Mass & size of 6 Earth Radii. It goes around host star in about 19.5 days.
- Host star is about 600 light years away from Earth.

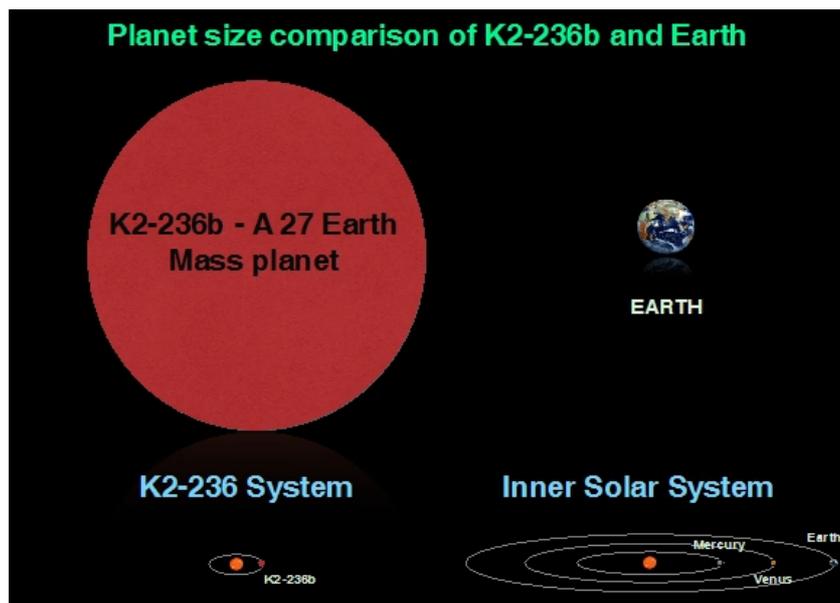


Image of Planet Size Comparison of K2 - 236b and Earth

- Surface temp. of planet is around 600°C, as it is very close to host star, around 7 times nearer than Earth-Sun distance. Such close proximity might make the planet uninhabitable.

Significance of the Discovery

- Discovery is of importance to understand formation mechanism of such kind of planets that are too close to their host star & as well as planet formations around Sun-like stars.
- Only 23 such planetary systems including this discovery are known to this date w/masses b/w 10 & 70 Earth mass & size of 4 to 8 Earth radii w/such precise measurement of mass.
- Research appeared online in Astronomical Journal of American Astronomical Society & was published by IOP Publishing.

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