

K2-236b: Indian Scientists Discover Planet 600 Light Years Away (Download PDF)

(August 31, 2018)

Team of scientists from Physical Research Laboratory (PRL), Ahmedabad, discovered sub-Saturn or super-Neptune size exoplanet, which is about 27 times mass of Earth & 6 times radius of Earth.

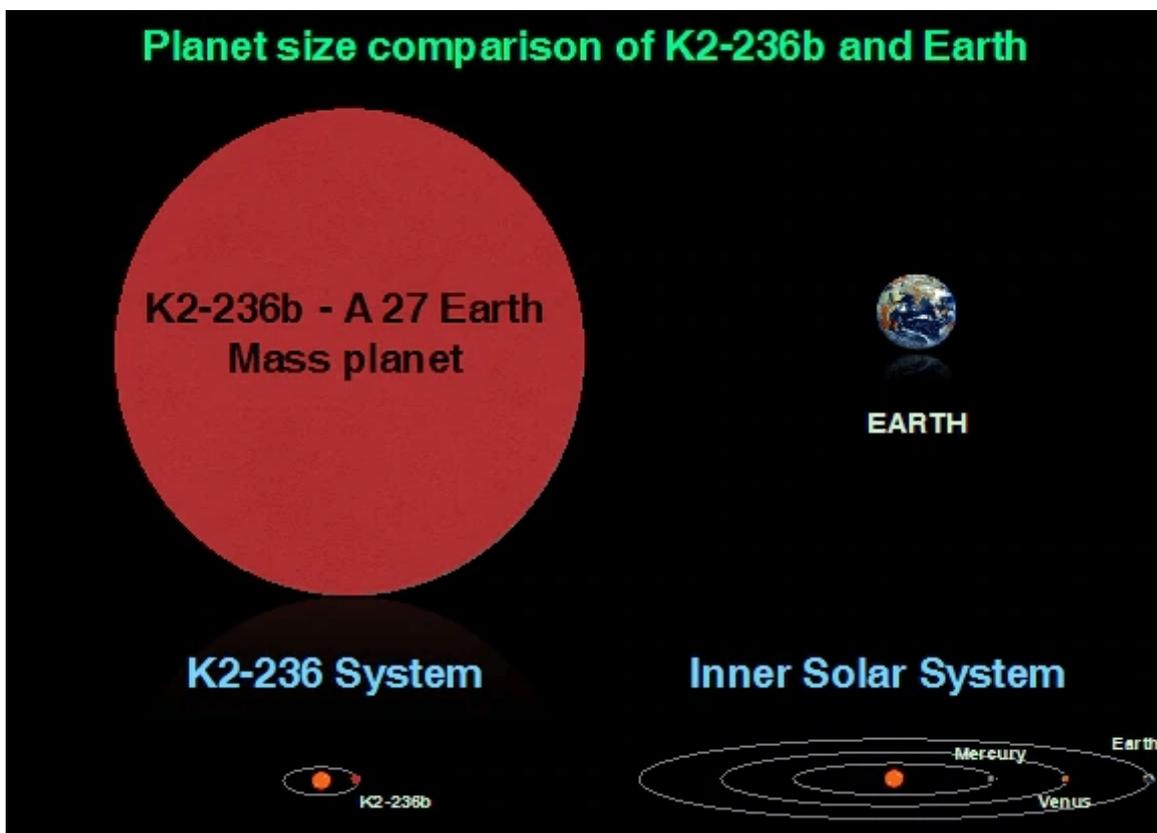


Image of Planet 600 Light Years Away

- Exoplanet was found around Sun-like star & goes around star in abt 19.5 days. Host star is about 600 light years away from Earth.
- Name of host star around new planet is EPIC 211945201 or K2 - 236, planet will be known as EPIC 211945201b or K2 - 236b.
- Scientists found that surface temp. of the planet is around 600 degrees Celsius given fact that it is very close to host star- new planet is 7 times nearer to host star than earth.
- Indian scientists at PRL, Ahmedabad, found new planet K2 - 236b to be 6 Earth radii.
- New planet will help understand formation mechanism of such super-Neptune or sub-Saturn kind of planets.

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

- Host star is about 600 light years away from Earth. Discovery of new planet was made by measuring mass of planet using indigenously designed “PRL Advance Radial-velocity Abu-sky Search” (PARAS) spectrograph.
- PARAS spectrograph was integrated w/1.2m telescope at PRL’s Gurushikhar Observatory in Mount Abu, India.
- Only few spectrographs that can do such precise measurements exist around world & mostly are found in USA & in Europe.
- PARAS is 1st of its kind spectrograph in India. It can measure mass of planet going around star & w/this latest feat, India has joined club of only few countries that have discovered planets around stars.

What is Spectrograph?

- Spectrograph separates and measures the wavelengths present in Electromagnetic radiation. It also measures the relative amounts of radiation at each wavelength.

How Are Planets Discovered?

- Source was found to be planetary candidate from NASA K2 (Kepler2) photometry because it was transiting.
- When planet body comes in b/w star & observer on Earth as it goes around star, it blocks tiny amount of star-light.
- By measuring amount of light blocked by planet body, scientists can measure diameter or size of planet.

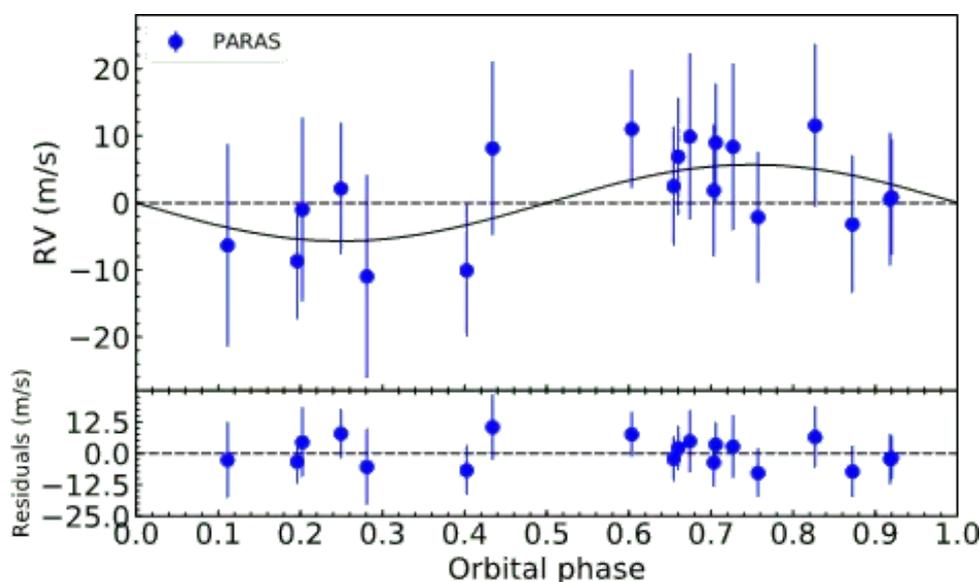


Image of Process of Planets Discovered

Hurdles & PARAS Spectrograph

- Independent measurement of mass of body was necessary for discovery, which was made by PARAS spectrograph.
- Gravitational pull caused by planet on its host star makes it wobble around their common centre of mass.
- Gravitational pull shifts spectra & can be measured in terms of Radial Velocity using precise & stabilised High Resolution Spectrographs, like PARAS.
- PRL scientists observed target over time-baseline of 420 days, 1.5 years, using PARAS spectrograph for probing nature of system.
- Model shows wobbling of host star & its amplitude gives us mass of exoplanet K2 - 236b.
- Model-dependent calculations suggest that heavy elements, like ice, silicates, & iron content is 60 - 70 % of total mass.

Saraswati

- Last year, team of Indian astronomers discovered massive supercluster of galaxies. Saraswati - supercluster of galaxies is as big as 20 million billion suns.
- According to Pune-based Inter University Centre for Astronomy & Astrophysics (IUCAA), Saraswati is one of largest known structures in neighbourhood of universe.
- It is 4, 000 million light-years away from Earth & roughly more than 10 billion years old.

Physical Research Laboratory (PRL), Ahmedabad

- Founded in – 1947
- Known as cradle of Space Sciences in India

- Published/Last Modified on: August 31, 2018

[Sci-Tech, Space and ISRO](#)

<u>↩ PREVIOUS</u>	<u>NEXT ↪</u>
<u>India'S 4 Ports Abroad: India'S Strategic Coastline Extends from Seychelles to Indonesia(Important)</u>	<u>Invasive Species: Giant Hammerhead Worms Invading France</u>

-Examrace Team

▶ Monthly-updated, fully-solved, large current affairs-2018 question bank(more than 2000 problems): Quickly cover most-important current-affairs questions with pointwise explanations especially designed for IAS, CBSE-NET, Bank-PO and other competitive exams.