

Kepler Space Telescope Detects New Solar System Twins: 1 Hosts 3 Earth-Sized Exoplanets

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One of the newly discovered Solar System twins hosts three rocky planets that are similar to Earth's size. Scientists said the temperatures in these exoplanets could be dozens higher than Earth due to the strong radiation of their stars. (Gabriel Pérez Díaz, SMM | Instituto de Astrofísica de Canarias)

Astronomers, who work on the K2 mission of NASA's Kepler Space Telescope, discovered two new [planetary systems similar to the Solar System](#). One of the systems is reported to host three planets similar to the size of Earth.

Researchers at the University of Oviedo and the Instituto de Astrofísica de Canarias published their study in the June 6 edition of *Monthly Notices of the Royal Astronomical Society*. Data from the [Kepler satellite](#) detected eclipses produced by the stars of the newly discovered planetary systems.

"Until now, the Kepler mission has been the most successful facility detecting exoplanets by the transit method. Since the beginning of 2014, Kepler has been on its second mission, monitoring different fields near the ecliptic plane for ~80 days," the authors [wrote](#), led by Javier de Cos and Rafael Rebolo, professors at the University of Oviedo and IAC, respectively.

Characteristics Of The Exoplanets

The first exoplanet system is detected in the star K2-239, which is located in the Sextant constellation, some 50 parsecs or 160 light-years away from the Sun. The system described as a red dwarf type M3V hosts at least three rocky planets that are similar to Earth's size. They orbit their star every 5.2, 7.8, and 10.1 days, respectively.

The other system located in the red dwarf star K2-240 has planets about twice the size of Earth. K2-239 and K2-240 have temperatures of 3,450 and 3,800 Kelvin, respectively, which is approximately half the temperature of the Sun.

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Scientists estimate that all planets discovered have temperatures dozens of degrees higher than Earth due to the strong radiation emitted by their stars.

Future studies will explore the atmospheric compositions of the discovered planets using the James Webb Space Telescope. Spectrographs using the ESPRESSO instrument at the European Southern Observatory shall determine the masses, densities, and other physical properties of the exoplanets.

Other Solar System Twins

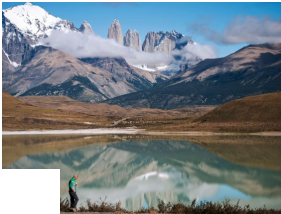
In 2015, an international team of astronomers discovered a Solar System twin that has an [orbiting planet similar to Jupiter](#) and a star identical to the Sun.

The discovery, which was [published](#) in the journal *Astronomy and Astrophysics*, is made possible using High Accuracy Radial velocity Planet Searcher. HARPS is, by far, the most precise planet-hunting instrument installed on the ESO 3.6-meter telescope at the La Silla Observatory in Chile.

"After two decades of hunting for exoplanets, we are finally beginning to see long-period gas giant planets similar to those in our own Solar System thanks to the long-term stability of planet-hunting instruments like HARPS," [said](#) lead author Megan Bedell of the University of Chicago.

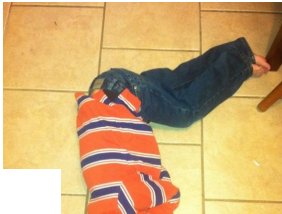
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