

= Kepler @-@ 8b =

Kepler @-@ 8b is the fifth of the first five exoplanets discovered by NASA 's Kepler spacecraft , which aims to discover planets in a region of the sky between the constellations Lyra and Cygnus that transit (cross in front of) their host stars . The planet is the hottest of the five . Kepler @-@ 8b was the only planet discovered in Kepler @-@ 8 's orbit , and is larger (though more diffuse) than Jupiter . It orbits its host star every 3 @. @ 5 days . The planet also demonstrates the Rossiter ? McLaughlin effect , where the planet 's orbit affects the redshifting of the spectrum of the host star . Kepler @-@ 8b was announced to the public on January 4 , 2010 at a conference in Washington , D.C. after radial velocity measurements conducted at the W.M. Keck Observatory confirmed its detection by Kepler .

= = Nomenclature and history = =

The Kepler @-@ 8b planet is named because it was the first planet discovered in the orbit of Kepler @-@ 8 . The star itself (and by extension , its planet) was named after the Kepler spacecraft , a NASA @-@ run satellite that searches for terrestrial planets between constellations Cygnus and Lyra that transit , or cross in front of , their host stars with respect to Earth . This crossing slightly dims the star at a regular interval , which is used to determine if the cause of the fluctuation in brightness is indeed due to a planetary transit . The planet was first noted as a potential transit event by the Kepler telescope , and was originally designated as KOI 10 @. @ 01 . Follow @-@ up observations by the High Resolution Echelle Spectrometer at Hawaii 's W.M. Keck Observatory yielded additional information about the planet , including its mass and radius . Kepler @-@ 8b was the fifth planet discovered by the Kepler telescope . The first three planets in Kepler 's field of view had already been confirmed , and were used to test Kepler 's accuracy .

Kepler @-@ 8b was the last of the first five planets that Kepler discovered . Its discovery , along with the planets Kepler @-@ 4b , Kepler @-@ 5b , Kepler @-@ 6b , and Kepler @-@ 7b , were announced to the public at the 215th meeting of the American Astronomical Society in Washington , D.C. This conference took place on January 4 , 2010 . The discovery of these first five planets helped confirm Kepler 's functionality .

= = Host star = =

Kepler @-@ 8 is an F @-@ type star in the Lyra constellation that lies approximately 1330 (± 180) parsecs away from Earth . With a mass and radius of , respectively , 1 @. @ 213 Msun and 1 @. @ 486 R_{sun} , the star is both more massive and wider than the Sun . With an effective temperature of 6213 K , Kepler @-@ 8 is also hotter than the Sun , although it is approximately three quarters of a billion years younger and is slightly less metal @-@ rich .

= = Characteristics = =

Kepler @-@ 8b has a mass of .603 MJ , but a radius of 1 @. @ 419 RJ . This means that although Kepler is approximately 60 % the mass of planet Jupiter , it is more diffuse , as it is 41 @. @ 9 % wider . Based on its size and the distance from its star , Kepler @-@ 8b is a Hot Jupiter planet , orbiting Kepler @-@ 8 from a distance of .0483 AU every 3 @. @ 52254 days . To compare , planet Mercury orbits the Sun at an average distance of .3871 AU every 87 @. @ 97 days . With an equilibrium temperature of 1764 K , Kepler @-@ 8b was the hottest of the five planets announced during the conference stating its discovery . Kepler @-@ 8b has an eccentricity of 0 , which means that its orbit is very circular . The planet also has a density of .261 grams / cc , approximately 74 % less dense than purified water at 4 ° C.

As Kepler @-@ 8b orbits its star , it demonstrates the Rossiter ? McLaughlin effect , in which the host star 's spectrum becomes red- and , later , blueshifted , as a body transits it . The identification of this effect established Kepler @-@ 8b as orbiting in a prograde motion (as opposed to retrograde

motion , in which a planet orbits in a direction opposite of its star 's rotation) .