= Kepler @-@ 8 =

Kepler @-@ 8 is a star located in the constellation Lyra in the field of view of the Kepler Mission , a NASA @-@ led operation tasked with discovering terrestrial planets . The star , which is slightly hotter , larger , and more massive than the Sun , has one gas giant in its orbit , Kepler @-@ 8b . This gas giant is larger than Jupiter , but is less massive , and thus more diffuse . The planet 's discovery was announced to the public on January 4 , 2010 along with four other planets . As the fifth confirmed planetary system verified by Kepler , it helped demonstrate the capabilities of the Kepler spacecraft .

= = Nomenclature and history = =

Kepler @-@ 8 was named the way it was because it is home to the eighth planetary system confirmed during the course of the Kepler Mission , a NASA @-@ directed program tasked with searching a region of the sky for terrestrial planets that transit , or cross in front of (and thereby , for a while , make dimmer) the stars that they orbit with respect to Earth . The planet in orbit around Kepler @-@ 8 , Kepler @-@ 8b , was the fifth of the first five planets discovered by the Kepler spacecraft ; the first three planets confirmed by Kepler had been previously discovered , and were only used to verify the accuracy of Kepler 's measurements . Kepler @-@ 8b 's discovery was announced to the public on January 4 , 2010 at the 215th meeting of the American Astronomical Society in Washington , D.C. , alongside planets in orbit around Kepler @-@ 4 , Kepler @-@ 5 , Kepler @-@ 6 , and Kepler @-@ 7 .

The data that was used to identify Kepler @-@ 8b 's existence was re @-@ examined and verified by observatories in Hawaii , Arizona , Texas , California , and the Canary Islands .

= = Characteristics = =

Kepler @-@ 8 is situated some 1330 (± 180) pc (or 4 @,@ 338 ± 587 light years) from Earth . With a mass of 1 @.@ 213 Msun and a radius of 1 @.@ 486 Rsun , Kepler @-@ 8 is more massive than the Sun by about a fifth of the Sun 's mass , and is nearly three halves its size . The star is predicted to be 3 @.@ 84 (± 1 @.@ 5) billion years old , compared to the Sun 's age at 4 @.@ 6 billion years . Kepler @-@ 8 has a metallicity of [Fe / H] = -0.055 (± 0 @.@ 03) , making it 12 % less metal @-@ rich than the metal @-@ rich Sun ; metallicity is important in stars because stars richer in metal are more likely to harbor planets . The star also has an effective temperature of 6213 (± 150) K , meaning that it is hotter than the Sun , which has an effective temperature of 5778 K.

Kepler @-@ 8 has an apparent magnitude of 13 @.@ 9 ; in other words , as seen from Earth , Kepler @-@ 8 is an extremely dim star . It cannot be seen with the naked eye .

= = Planetary system = =

Kepler @-@ 8b is the only planet that has been discovered in the orbit of Kepler @-@ 8 . With a mass of .603 MJ and a radius of 1 @.@ 419 RJ , the planet is 60 % the mass of , but 42 % larger than planet Jupiter . The planet is diffuse , with a density of .261 grams / cc , especially in comparison to Jupiter and its density of 5 @.@ 515 grams / cc . At a distance of .0483 AU , Kepler @-@ 8b orbits its star every 3 @.@ 5225 days . The eccentricity of Kepler @-@ 8 is assumed to be 0 , which would give the planet a circular orbit . In comparison , planet Mercury orbits the Sun at .3871 AU every 87 @.@ 97 days . Mercury also has an elliptical orbit , with an eccentricity of .2056 .