= Kepler @-@ 4b =

Kepler @-@ 4b , initially known as KOI 7 @.@ 01 , is an extrasolar planet first detected as a transit by the Kepler spacecraft . Its radius and mass are similar to that of Neptune ; however , due to its proximity to its host star , it is substantially hotter than any planet in the Solar System . The planet 's discovery was announced on January 4 , 2010 in Washington , D.C. along with four other planets that were initially detected by the Kepler spacecraft and subsequently confirmed by telescopes at the W.M. Keck Observatory .

= = Nomenclature and history = =

Kepler @-@ 4b was named because it was the first planet discovered in the orbit of its star , Kepler @-@ 4 . The star was , in turn , named for the Kepler Mission , a NASA satellite whose purpose is to discover Earth @-@ like planets in a section of the sky between constellations Cygnus and Lyra using the transit method . Using this method , Kepler notes small and steady decreases in a star 's brightness that are measured as a planet crosses in front of it . Initially , Kepler @-@ 4b was detected as a transit event by the Kepler telescope and considered a Kepler Object of Interest with the designation KOI 7 @.@ 01 .

Subsequent radial velocity measurements by the High Resolution Echelle Spectrometer on the telescopes of W.M. Keck Observatory confirmed the planetary nature of the transit event and established a mass estimate for the planet . The planet 's existence was announced on January 4 , 2010 along with four other planets detected by Kepler : Kepler @-@ 5b , 6b , 7b and 8b at the 215th meeting of the American Astronomical Society in Washington , D.C.

= = Host star = =

Kepler @-@ 4 is located within the Draco constellation on the sky , and is approximately 550 parsecs from the Solar System . It has an effective temperature almost identical to the Sun at 5857 Kelvin , but a mass and radius that are somewhat larger than the sun : respectively , 1 @.@ 092 <formula> and 1 @.@ 533 <formula> . The star is thought to be around 4 @.@ 5 billion years old , and at or very near the end of its main @-@ sequence hydrogen burning phase . In several tens of millions of years it will likely become a subgiant star .

= = Characteristics = =

Kepler @-@ 4b orbits its host star in 3 @.@ 213 days at a distance of 0 @.@ 046 AU . This places it almost 10 times closer to its star than Mercury is to the Sun . Consequently , Kepler @-@ 4b is thought to be extremely hot , with an equilibrium temperature greater than 1700 Kelvin (2600 Fahrenheit) . The planet is estimated to be 25 times more massive than the Earth with a radius that is 4 times greater than the Earth . This makes it similar to Neptune in terms of size and mass , but with a temperature that is not comparable to any planet in the Solar System (Venus , the hottest planet , is only 735 Kelvin) . Kepler @-@ 4b 's eccentricity was assumed to be 0 , however an independent reanalysis of the discovery data found a value of 0 @.@ 25 ± 0 @.@ 12 .