= HD 205739 b =

HD 205739 b is an extrasolar planet located approximately 350 light @-@ years away in the constellation of Piscis Austrinus , orbiting the star HD 205739 . This planet has a minimum mass 37 % more than Jupiter and orbits 90 % of the distance between the Earth and the Sun . The planet has a very elliptical orbit , which has led its discoverers to postulate that the planet 's surface temperature varies by about 100 K along the entire orbit . This planet was reported on September 5 , 2008 after its discovery at Las Campanas Observatory , where the planet was observed for years by the N2K Consortium while using the Magellan Telescopes . Follow @-@ up observations collected the radial velocity measurements necessary to confirm the candidate as a planet .

= = Discovery = =

HD 205739 's designation is from the Henry Draper catalogue . The star was also observed by Hipparcos , which released its catalogue in 1997 . The observations that led to the discovery of the planet HD 205739 b started when the N2K Consortium started an extended search for planets around 300 stars not usually targeted by Doppler spectroscopy surveys . In the case of HD 205739 , the star was observed using the Magellan Telescopes at Las Campanas Observatory in Chile . HD 205739 was selected primarily because it was a metal @-@ rich star ; the N2K collaboration biased their search towards metal @-@ rich stars with closely orbiting Jupiter @-@ size planets , hoping to find a connection between a star 's metallicity and its planets ' masses .

HD 205739 was flagged originally as a candidate hosting a Hot Jupiter , which is a large gas giant that orbits closely to its star , although later observations suggested that the planetary candidate orbited further out over the next 3 @.@ 5 years of observation .

The star was studied through the Magellan Inamori Kyocera Echelle spectrograph 's (MIKE) ability to use Doppler spectroscopy to measure radial velocity . Twenty @-@ four measurements were recorded for HD 205739 . The measurements were analyzed for accuracy . They were then used to derive the planet 's characteristics , which led to the planet 's confirmation .

The team of astronomers , which were from the United States , Chile , and the Vatican City , sent the paper to the Astronomical Journal on April 7 , 2008 . The paper was accepted , and was later published on October 7 , 2008 .

= = Host star = =

HD 205739 is an F @-@ type star with a mass that is 1 @.@ 22 times the mass of the Sun and a size that is 1 @.@ 33 times the radius of the Sun . In other words , it is slightly more massive and slightly larger than the Sun is . With an effective temperature of 6176 K , HD 205739 is also hotter than the Sun , although it is younger , at an estimated age of 2 @.@ 84 billion years . The star is rich in iron ; its measured metallicity is [Fe / H] = 0 @.@ 19 , or 1 @.@ 55 times the iron detected in the Sun . After analysis of HD 205739 's spectrum , it can be concluded that HD 205739 's chromosphere (its outermost layer) is not active . HD 205739 cannot be seen from Earth with the naked eye because the star has an apparent magnitude (V) of 8 @.@ 56 .

= = Characteristics = =

HD 205739 b is a Jupiter @-@ size planet . The estimated minimum mass is 1 @.@ 37 times the mass of Jupiter . The planet has been found to orbit its host star every 279 @.@ 8 days at a distance of 0 @.@ 896 AU , which is approximately 89 @.@ 6 % of the mean distance between the Sun and the Earth . HD 205739 b has a mildly elliptical orbit , given its orbital eccentricity of 0 @.@ 27 . The planet 's elliptical orbit is typical with respect to discovered planets whose orbits are longer than twenty days and have not grown circular because of tidal forces . According to its discoverers , HD 205739 b 's elongated orbit causes its surface temperature to fluctuate by up to 100 K.