= WASP @-@ 43b =

WASP @-@ 43b is a transiting planet in orbit around the young , active , and low @-@ mass star WASP @-@ 43 in the constellation Sextans . The planet is a Hot Jupiter with a mass twice that of Jupiter , and a radius equal to Jupiter 's . WASP @-@ 43b was flagged as a candidate by the SuperWASP program before they conducted follow @-@ ups using instruments at La Silla Observatory in Chile , which confirmed the planet 's existence and provided orbital and physical characteristics . The planet 's discovery was published on April 14 , 2011 .

At the time of its discovery , WASP @-@ 43b had an orbital period of approximately 0 @.@ 8 days (19 @.@ 2 hours) , the second shortest orbit ever detected , surpassed only by WASP @-@ 19b . In addition , at the time of discovery , WASP @-@ 43b was the most closely orbiting Hot Jupiter known , a phenomenon that can most likely be explained by its host star 's low mass .

= = Observational history = =

WASP @-@ 43 was first flagged as host to a potential transiting event (when a body crosses in front of and dims its host star) by data collected by SuperWASP , a British organization working to discover transiting planets across the entirety of the sky . In particular , WASP @-@ 43 was observed first by the leg of WASP @-@ South at the South African Astronomical Observatory between January and May 2009 .

Later observation by both SuperWASPs in the Northern and Southern Hemispheres led to the collection of 13 @,@ 768 data points between January and May 2010 and to the use of the CORALIE spectrograph at La Silla Observatory in Chile . Fourteen measurements using the radial velocity method confirmed WASP @-@ 43b as a planet , revealing its mass in the process . The use of La Silla 's TRAPPIST telescope helped the science team working on the planet to create a light curve of the planet 's transit in December 2010 .

The planet 's discovery was published in the journal Astronomy and Astrophysics on April 14 , 2011 .

In 2014 , secondary transit of the planet was reported . Full observation of phases of the planet was reported in the September of 2014 .

= = Host star = =

WASP @-@ 43 is a K @-@ type star in the Sextans constellation that is about 80 parsecs (261 light years) away . The star has a mass of 0 @.@ 58 times that of the Sun , but is more diffuse with a radius of 0 @.@ 93 times that of the Sun . The star 's effective temperature is 4400 K , making the star cooler than the Sun , and is metal @-@ poor with regards to the Sun because it has a metallicity of [Fe / H] = ? 0 @.@ 05 (89 % the amount of iron in the Sun) . The star is young , and is estimated to be 598 million years old (as compared to the Sun 's 4 @.@ 6 billion years) . Analysis of emission lines have indicated that WASP @-@ 43 is an active star .

WASP @-@ 43 has one detected planet in its orbit , WASP @-@ 43b . The star has an apparent magnitude of 12 @.@ 4 , and thus is too faint to be seen with the unaided eye from Earth .

= = Characteristics = =

WASP @-@ 43b is a dense Hot Jupiter with a mass of 1 @.@ 78 times the mass of Jupiter , but a radius of 0 @.@ 93 times that of Jupiter 's . The planet orbits its host star at a mean distance of 0 @.@ 0142 AU every 0 @.@ 813475 days (19 @.@ 5234 hours) ; this orbital period , at the time of WASP @-@ 43b 's discovery , was the second @-@ shortest orbit yet detected , surpassed only by WASP @-@ 19b . In addition , WASP @-@ 43b had the closest orbit to its host star (among Hot Jupiters) at the time of its discovery , comparable only to the Super @-@ Earth planet GJ 1214b and to the planetary candidate orbiting KOI @-@ 961 . While Hot Jupiters are known to have small orbital periods , planets with exceptionally small periods below three or four days are extremely rare

; however , in the case of WASP @-@ 43b , the planet 's proximity can be explained because its host star has a very low mass . The rarity of systems like that of WASP @-@ 43 and its planet suggest that Hot Jupiters do not usually occur around low @-@ mass stars , or that such planets cannot maintain stable orbits around such stars .

WASP @-@ 43b , along with the planets WASP @-@ 19b and WASP @-@ 18b , conflicted with currently accepted models of tidal movements derived from observations of the orbits of binary star systems . Revisions to the model with regard to planets were proposed to help the models conform to the orbital parameters of these planets .

In comparison , planet Mercury has an orbital period of 87 @.@ 97 days and lies at a mean distance of 0 @.@ 387 AU from the Sun .