= 16 Cygni Bb =

16 Cygni Bb or HD 186427 b is an extrasolar planet approximately 69 light @-@ years away in the constellation of Cygnus . The planet was discovered orbiting the Sun @-@ like star 16 Cygni B , one of two solar @-@ mass (M ?) components of the triple star system 16 Cygni . It makes one revolution every 799 days and was the first eccentric Jupiter and planet in a triple star system to be discovered .

= = Discovery = =

In October 1996 the discovery of a planetary @-@ mass companion to the star 16 Cygni B was announced , with a mass at least 1 @.@ 68 times that of Jupiter (MJ) . At the time , it had the highest orbital eccentricity of any known extrasolar planet . The discovery was made by measuring the star 's radial velocity .

As the inclination of the orbit cannot be directly measured and as no dynamic model of the system was then published , only a lower limit on the mass could then be determined .

= = Orbit and mass = =

Unlike the planets in the Solar System , the planet 's orbit is highly elliptical , and its distance varies from 0 @.@ 54 AU at periastron to 2 @.@ 8 AU at apastron . This high eccentricity may have been caused by tidal interactions in the binary star system , and the planet 's orbit may vary chaotically between low and high @-@ eccentricity states over a period of tens of millions of years .

Preliminary astrometric measurements in 2001 suggested the orbit of 16 Cygni Bb may be highly inclined with respect to our line of sight (at around 173 °) . This would mean the object 's mass may be around 14 MJ ; the dividing line between planets and brown dwarfs is at 13 MJ . However these measurements were later proved useful only for upper limits .

A mathematical study in 2012 showed that a mass of about 2 @.@ 4 MJ would be most stable in this system . This would make the body a true planet . With these tidal effects at that age , a gas giant would be most stable .

= = Physical characteristics = =

Because the planet has only been detected indirectly by measurements of its parent star , properties such as its radius , composition and temperature are unknown .

= = = Habitable zone = = =

The planet 's highly eccentric orbit means the planet would experience extreme seasonal effects . Despite this , simulations suggest that an Earth @-@ like moon would be able to support liquid water at its surface over the course of a year . Due to the eccentric orbit of this massive gas giant , it is unlikely that a habitable planet could survive in this system .