= 55 Cancri c =

55 Cancri c (abbreviated 55 Cnc c) , also named Brahe , is an extrasolar planet in an eccentric orbit around the Sun @-@ like star 55 Cancri A , making one revolution every 44 @.@ 34 days . It is the third known planet in order of distance from its star . 55 Cancri c was discovered on June 13 , 2002 and has a mass roughly half of Saturn .

In July 2014 the International Astronomical Union launched a process for giving proper names to certain exoplanets and their host stars . The process involved public nomination and voting for the new names . In December 2015 , the IAU announced the winning name was Brahe for this planet . The winning name was submitted by the Royal Netherlands Association for Meteorology and Astronomy of the Netherlands . It honors the astronomer Tycho Brahe .

= = Discovery = =

Like the majority of known extrasolar planets , 55 Cancri c was detected by observing changes in its star 's radial velocity . This was achieved by making sensitive measurements of the Doppler shift of the star 's spectrum . At the time of discovery , 55 Cancri A was already known to possess one planet (55 Cancri b) ; however , there was still a drift in the radial velocity measurements which was unaccounted for .

In 2002 , further measurements revealed the presence of a long @-@ period planet in an orbit at around 5 AU from the star . Even when both of the two planets were accounted for , there was still a periodicity at around 43 days . However , this period is close to the rotation period of 55 Cancri A , which led to the possibility that the 43 @-@ day period was caused by stellar rotation rather than a planet . Both the 43 @-@ day planet (designated 55 Cancri c) and the 5 AU planet (designated 55 Cancri d) were announced in the same paper , labeled in order of increasing distance from the star .

Further measurements which led to the discovery of the inner planet 55 Cancri e in 2004 lent support to the planet hypothesis . Photometric measurements of the star over 11 years show no activity with the same period as 55 Cancri c 's radial velocity variations , and furthermore the period is stable over long timescales , which is inconsistent with the hypothesis of stellar activity causing the radial velocity variations . The amplitude of the radial velocity signal is inconsistent with stellar variations on stars with 55 Cancri A 's low level of chromospheric activity .

= = Orbit and mass = =

In the 5 @-@ planet solution for the 55 Cancri system , the orbit of 55 Cancri c is mildly eccentric : at apoastron the planet is about 19 % further from the star than it is at periastron . It is located closer to 55 Cancri A than Mercury is to our sun , though it has a longer orbital period than the hot Jupiters . The planet is located close to a 3 : 1 resonance with the inner planet 55 Cancri b ; however , simulations indicate that the two planets are not actually in this resonance .

A limitation of the radial velocity method used to discover the planet is that only a lower limit on the mass can be obtained . Further astrometric observations with the Hubble Space Telescope on the outer planet 55 Cancri d suggest that planet is inclined at 53 ° to the plane of the sky ; but innermost b and e are inclined at 85 ° . Planet c 's inclination is unknown .

= = Characteristics = =

Since the planet was detected indirectly through observations of its star , properties such as its radius , composition , and temperature are unknown . With a mass similar to that of Saturn , 55 Cancri c is likely to be a gas giant with no solid surface .