= 55 Cancri f =

55 Cancri f (abbreviated 55 Cnc f) , also designated Rho1 Cancri f and named Harriot , is an extrasolar planet approximately 41 light @-@ years away from Earth in the constellation of Cancer (the Crab) . 55 Cancri f is the fourth known planet (in order of distance) from the star 55 Cancri and the first planet to have been given the designation of " f " .

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 Harriot for this planet . The winning name was submitted by the Royal Netherlands Association for Meteorology and Astronomy of the Netherlands . It honors the astronomer Thomas Harriot .

= = Discovery = =

The initial presentation of this planet occurred at a meeting of the American Astronomical Society in April 2005 , however it was another two and a half years before the planet was to be published in a peer @-@ reviewed journal . It is the first known planet outside our solar system to spend its entire orbit within what astronomers call the " habitable zone " . Furthermore , its discovery made 55 Cancri the first star other than the Sun known to have at least five planets .

= = Orbit and mass = =

55 Cancri f is located about 0 @.@ 781 AU away from the star and takes 260 days to complete a full orbit . A limitation of the radial velocity method used to detect 55 Cancri f is that only a minimum mass can be obtained , in this case around 0 @.@ 144 times that of Jupiter , or half the mass of Saturn . A Keplerian fit to the radial velocity data of 55 Cancri A indicates that the orbit is consistent with being circular , however changing the value in a range between 0 and 0 @.@ 4 does not significantly alter the chi @-@ squared statistic of the fit , thus a representative eccentricity of 0 @.@ 2 ± 0 @.@ 2 was assumed . In a Newtonian model which takes interactions between the planets into account , the eccentricity comes out as 0 @.@ 0002 , almost perfectly circular .

Astrometric observations made with the Hubble Space Telescope suggest that the outer planet 55 Cancri d is inclined at 53 ° with respect to the plane of the sky . The inner planets b and e are inclined at 85 ° . The inclination of f 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 half that of Saturn , 55 Cancri f is likely to be a gas giant with no solid surface . It orbits in the so @-@ called " habitable zone , " which means that liquid water could exist on the surface of a possible moon .

It is not known if the composition and appearance is more like Saturn or Neptune . Based on its temperature , it should be a Sudarsky Class II planet , covered in water clouds .