

= Upsilon Andromedae c =

Upsilon Andromedae c ( abbreviated ? Andromedae c , ? And c ) , also named Samh , is an extrasolar planet orbiting the Sun @-@ like star Upsilon Andromedae A every 241 @.@ 2 days . Its discovery in April 1999 by Geoffrey Marcy and R. Paul Butler made this the first multiple @-@ planet system to be discovered around a main @-@ sequence star , and the first multiple @-@ planet system known in a multiple star system . Upsilon Andromedae c is the second known planet in order of distance from its star .

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 Samh for this planet . The winning name was submitted by the Vega Astronomy Club of Morocco and honours the 11th Century astronomer Ibn al @-@ Samh of Muslim Spain .

= = Discovery = =

Like the majority of known extrasolar planets , Upsilon Andromedae c was detected by measuring variations in its star 's radial velocity as a result of the planet 's gravity . This was done by making precise measurements of the Doppler shift of the spectrum of Upsilon Andromedae A. At the time of discovery , Upsilon Andromedae A was already known to host one extrasolar planet , the hot Jupiter Upsilon Andromedae b , however by 1999 it was clear that the inner planet could not explain the velocity curve .

In 1999 , astronomers at both San Francisco State University and the Harvard @-@ Smithsonian Center for Astrophysics independently concluded that a three @-@ planet model best fit the data . The two new planets were designated Upsilon Andromedae c and Upsilon Andromedae d .

= = Orbit and mass = =

Like the majority of long @-@ period extrasolar planets , the orbit of Upsilon Andromedae c is eccentric , more so than any of the major planets in the Solar System ( including Pluto ) . If placed in the Solar System , Upsilon Andromedae c would lie between the orbits of Earth and Venus .

The high orbital eccentricity may be the result of gravitational perturbations from the planet Upsilon Andromedae d . Simulations suggest that the orbit of Upsilon Andromedae c returns to its original circular state roughly once every 6 @.@ 700 years .

One proposal is that interactions between Upsilon Andromedae d and a ( now lost ) outer planet moved Upsilon Andromedae d into an orbit closer to the star , where it gradually caused the orbit of Upsilon Andromedae c to become eccentric . If so , the rogue planet would have had to eject immediately ; it is unclear how likely this situation might be . Other models are possible .

A limitation of the radial velocity method used to detect Upsilon Andromedae c is that the orbital inclination is unknown , and only a lower limit on the planet 's mass can be obtained . However , by combining radial velocity measurements from ground @-@ based telescopes with astrometric data from the Hubble Space Telescope , astronomers have determined the orbital inclination as well as the actual mass of Upsilon Andromedae c , which is about 13 @.@ 98 times the mass of Jupiter . The mutual inclination between c and d is 29 @.@ 9 degrees .

= = Characteristics = =

Given the planet 's high mass , it is likely that Upsilon Andromedae c is a gas giant with no solid surface . Since the planet has only been detected indirectly through observations of its star , properties such as its radius , composition , and temperature are unknown .

Since its actual mass is approximately 14 times that of Jupiter , and its star 's metallicity is similar to that of the Sun , Upsilon Andromedae c may actually be a small brown dwarf .