Found: The planet that shouldn't exist (w/ Video)

August 26 2009

An artist's impression of a transiting exoplanet: Credit NASA/Hubble

(PhysOrg.com) -- The 'most unlikely' discovery of a new planet which could spiral into its star within the next 500,000 years, has been made by Scottish astronomers.

The find, by an international team including the University of St Andrews, is so bizarre that odds on catching it at this late stage in its life were 1000-1.

The 'huge new planet', found orbiting a star 1000 light years away, was discovered by the UK's WASP project, of which St Andrews is a founding member.

Newly-christened WASP-18b, the planet is so massive and so close to its host star that it is almost certain to spiral inwards to its destruction

during the lifetime of the star.

Researchers from St Andrews are currently calculating the rate at which tidal interactions between star and planet will eventually cause the planet's orbit to decay completely.

St Andrews' physicist, Professor Andrew Collier Cameron said, "This is another bizarre WASP planet discovery. The situation is analogous to the way tidal friction is gradually causing the earth's spin to slow down, and the Moon to spiral away from the earth.

"In this case, however, the spin of the star is slower than the orbit of the planet - so the star should be spinning up, and the planet spiralling in."

WASP-18b is ten times the mass of Jupiter and orbits its star in less than one Earth-day. The new planet belongs to a now-common class of extrasolar planets known as 'hot Jupiters' - massive planets thought to have formed far from their host stars that migrated inwards over time.

The discovery, led by Keele University's Coel Hellier, suggests that WASP-18's parent star is about a billion years old - making the likelihood of observing WASP-18b about one in a thousand.

If the planet's remaining life is as short as predicted, its orbital decay should be measurable within a decade.

Professor Cameron continued, "We don't yet know how long the planet will survive, because we don't understand fully how tides operate on the Sun and other stars. It could be half a million years, or half a billion. But if it's spiralling in quickly, we should be able to see measurable changes in the orbit within ten years."