

New planet displays exotic orbit

By Paul Rincon

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Planets with retrograde orbits should be rare

Astronomers have discovered the first planet that orbits in the opposite direction to the spin of its star.

Planets form out of the same swirling gas cloud that creates a star, so they are expected to orbit in the same direction that the star rotates.

The new planet is thought to have been flung into its "retrograde" orbit by a close encounter with either another planet or with a passing star.

The work has been submitted to the *Astrophysical Journal* for publication.

Co-author Coel Hellier, from Keele University in Staffordshire, UK, said planets with retrograde orbits were thought to be rare.

"With everything [in the star system] swirling around the same way and the star spinning the same way, you have to do quite a lot to it to make it go in the opposite direction," he told BBC News.

The direction of orbit is known for roughly a dozen exoplanets (planets outside our solar system). This is the only example with a retrograde orbit. All others are prograde; they orbit in the same direction as the spin of their star.

Close encounters

Professor Hellier said a near-collision was probably responsible for this planet's unusual orbit.

"If you have a near-collision, then you'll have a large gravitational slingshot from that interaction," he explained.

"This is the likeliest explanation. But it might be possible you can do it by gradually perturbing the orbit through the influence of a second planet. So far, we haven't found any evidence of a second planet there."

The new object has been named WASP-17b. It is the 17th exoplanet to have been discovered by the Wide Area Search for Planets (WASP) consortium of UK universities.

The gas giant is about twice the size of Jupiter, but has about half the mass. WASP-17b was detected using an array of cameras set up to monitor hundreds of thousands of stars.

Astronomers were searching for small dips in light from these stars that occur when a planet passes in front of them. When this happens, the planets are said to transit their parent star.

A team from Geneva Observatory in Switzerland then looked for spectral signs that the star was wobbling due to gravitational tugs from an orbiting planet.

"If you look at how the spectrum of the star changes when the planet transits across it, you can work out which way the planet is travelling," Professor Hellier added.

"That allows you to prove that it's in a retrograde orbit."

The size of the dip in light from the star during the transit allowed astronomers to work out the planet's radius.

To work out how massive it was, they recorded the motion of the star as it was tugged on by the orbiting planet.

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