

# Astronomers find evidence for a strange new planetary system

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An artist's impression of the binary UZ For and planet

(PhysOrg.com) -- A team of astronomers, including Dr Gavin Ramsay of the Armagh Observatory, has found evidence that suggests the existence of an extraordinary planetary system. Two giant planets appear to be revolving at some distance around a compact, interacting stellar binary known as UZ For, which comprises two small stars orbiting very closely one about the other.

If confirmed, this would be an example of a very strange new [planetary system](#), given the nature of the stellar pair. The two stars, one a white dwarf and the other a red dwarf, are each smaller than our Sun and are orbiting in such close proximity that they take only a couple of hours to complete one revolution. The stellar pair would actually fit comfortably inside our Sun! By chance, the system is oriented in such a way that the

stars pass in front of one another every orbit as seen from Earth, producing mutual eclipses that allow the properties of the system to be very well determined.

But the researchers noticed that the eclipses were not occurring precisely on time. Instead, they were sometimes too early and sometimes too late. This led them to suggest the presence of two [giant planets](#), whose gravitational tugs would cause the orbits of the stars to "wobble" in space and so slightly change the measured time between eclipses. According to their calculations, the masses of the two planets would have to be at least eight and six times that of Jupiter, and they would have to take respectively five and sixteen years to orbit the two central stars. The system is too far away for these planets to be directly imaged.

The interacting system, which is called UZ For because of its location in the southern constellation of Fornax, produces an extremely inhospitable environment for planets. Due to their close proximity, the gravity of the more massive, but much more compact white dwarf star is constantly "stealing" material from the surface of the red dwarf in a continuous stream. This stream of material collides with the surface of the white dwarf, where it is heated to millions of degrees Kelvin, flooding the entire planetary system with enormous amounts of deadly X-rays.

The discovery was made using new observations from the Southern African Large Telescope (SALT) together with archival data spanning 27 years gathered from multiple observatories and Earth-orbiting satellites. The Armagh Observatory has access to SALT through its membership of the UK SALT Consortium. Astronomy at Armagh is supported by core funding from the Northern Ireland Department of Culture, Arts and Leisure.

**More information:** The research has been accepted for publication in the journal *Monthly Notices of the Royal Astronomical Society*, under the

title "Possible detection of two giant extrasolar planets orbiting the eclipsing polar UZ Fornacis". The authors are: Steve Potter, Encarni Romero Colmenero (South African Astronomical Observatory), Gavin Ramsay (Armagh Observatory) and a number of others. A pre-print can be seen [here](#).

Provided by Armagh Observatory

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