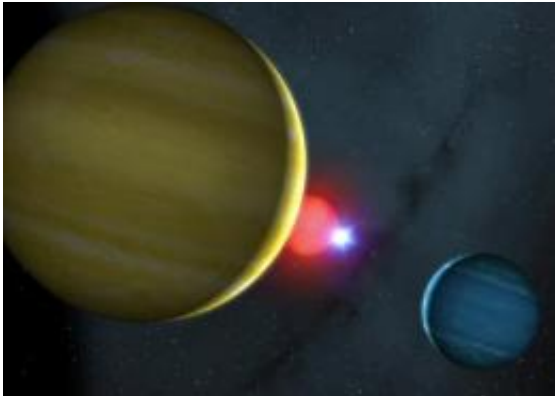


Astronomers find 'snooker star system'

November 9 2010



This is an artist's impression of the star system NN Serpentis which looks like, and may even once have behaved like, a game of snooker. Credit: University of Warwick and Mark A. Garlick

Astronomers at The University of Warwick and the University of Sheffield have helped discover an unusual star system which looks like, and may even once have behaved like, a game of snooker.

The University of Warwick and Sheffield astronomers played a key role in an international team that used two decades of observations from many telescopes around the world. The UK astronomers helped discover this "snooker like" star system through observations and analysis of data from an astronomical camera known as ULTRACAM designed by the British researchers on the team.

They looked at a binary star system called which is 1670 light years away

from Earth. NN Serpentis is actually a binary star system consisting of two stars, a red dwarf and a white dwarf, which orbit each other in an incredibly close, tight orbit. By lucky chance Earth sits in the same plane as this [binary star system](#), so we can see the larger red dwarf eclipse the white dwarf every 3 hours and 7 minutes.

It was already thought that there may be at least one planet orbiting these two stars. However the University Warwick and Sheffield astronomers were able to use these incredibly frequent eclipses to spot a pattern of small but significant irregularities in the orbit of stars and were able to help demonstrate that that pattern must be due to the presence and [gravitational influence](#) of two massive gas giant planets. The more massive gas giant is about 6 times the mass of Jupiter and orbits the binary star every 15.5 years, the other orbits every 7.75 years and is about 1.6 times the mass of Jupiter.

Given the overall shape of the system, and how that this star system came to exist, it was hard for the British members of the research team not to think of the game of snooker.

One of the UK researchers on the project, Professor Tom Marsh from the University of Warwick's Department of Physics, said:

"The two gas giants have different masses but they may actually be roughly the same size as each other, and in fact will also be roughly the same size as the [red dwarf](#) star they orbit. If they follow the patterns we see in our own star system of gas giants with a dominant yellow or blue colours, then it's hard to escape the image of this system as being like a giant snooker frame with a red ball, two coloured balls, and dwarf white cue ball."

This star system will also have seen dramatic changes in what is relatively recent times in astronomical terms the what is now the White

Dwarf "cue ball" of the system may have suffered, and caused, violent changes to its own orbit and the orbit of all the planets and stars in the system.

Professor Vik Dhillon, from the University of Sheffield, said "If these planets were born along with their parent stars they would have had to survive a dramatic event a million years ago: when the original primary star bloated itself into a red giant, causing the secondary star to plunge down into the present very tight orbit, thereby casting off most of the original mass of the primary. Planetary orbits would have seen vast disturbances. Alternatively, the planets may have formed very recently from the cast off material. Either way, in relatively recent times in astronomical terms this system will have seen a vast shock to the orbits of the stars and planets, all initiated by what is now the white dwarf at the heart of the system."

More information: The full research paper is published in the journal "*Astronomy and Astrophysics*" and is entitled "Two planets orbiting the recently formed post-common envelope binary NN Serpentis" by K. Beuermann, F. V. Hessman, S. Dreizler, T. R. Marsh, S. G. Parsons, D. E. Winget, G. F. Miller, M. R. Schreiber, W. Kley, V. S. Dhillon, S. P. Littlefair, C. M. Copperwheat and J. J. Hermes *Astronomy and Astrophysics* A&A 521 L60 (2010)

[DOI:10.1051/0004-6361/201015472](https://doi.org/10.1051/0004-6361/201015472) or arxiv.org/abs/1010.3608

Provided by University of Warwick

Citation: Astronomers find 'snooker star system' (2010, November 9) retrieved 19 April 2024 from <https://phys.org/news/2010-11-astronomers-snooker-star.html>

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