

On the trail of new planets

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Artist's impression of an eclipsing binary star system using original material from NASA/ESA/Bacon.

(PhysOrg.com) -- A project in which volunteers hunt online for new planets NASA may have missed is publishing its first results which show some remarkable finds.

Planethunters.org, which was set up by Oxford University physicists, working with colleagues at Yale University and the Adler Planetarium, has enabled over 45,000 armchair astronomers to find candidates for new [alien worlds](#) by searching data from the [Kepler mission](#).

Reporting on just the first month of the project, which was launched in December 2010, researchers believe there is a '95% chance or greater' that [volunteers](#) have already [spotted two new exoplanets](#) NASA originally discarded: other finds include a previously unknown eclipsing

binary star system.

‘Kepler's mission is to work out what kind of worlds might be out there - that's why it's so important we rescue those that have slipped through the net,’ Chris Lintott of Oxford University’s Department of Physics, one of the scientists leading planethunters.org, told me.

The Kepler telescopes detect [new planets](#) by recording tiny changes in the brightness of [stars](#). This dimming is caused by planets crossing in front of them. Volunteers visiting planethunters.org sort through thousands of images of stars searching for examples of these dimming events (known as 'transits') which [NASA](#)’s small team of experts may have missed.

The project builds on a series of highly successful Oxford-led citizen science projects, such as [Galaxy Zoo](#), [Old Weather](#), and most recently [Ancient Lives](#), which have shown that ordinary web users can beat computer algorithms at spotting patterns and interesting phenomena.

Carolyn Bol, from Helensburgh in Scotland, is one of the planethunters.org volunteers who has made a discovery that will soon see her name appear on a scientific paper.

‘The fact that all that data is readily available to everyone makes the ‘hunting’ a bit of a game thanks to all of those connected remotely from the comfort of their home,’ she explains. ‘I have a full time job as an optometrist so I really enjoy having this hobby where I spend time hunting for planets when I have some spare time.’

It was while sorting through images of stars that Carolyn made her discovery:

‘The moment I saw the pattern I screamed “A PLANET !” just because

all the light curves I was classifying were very similar, some pulsating etc but there were no distinctive transits until that pattern appeared and I was sure I was watching a planet. I marked the transits, I favourite it and went to discuss it.’

It led to some interesting discussions with her work colleagues, such as whether you should name a planet when it might have been named already by an alien civilisation.

In fact Carolyn’s planetary candidate would later be found to be not an alien world passing in front of a star but something almost as exotic: an eclipsing binary system containing two stars in which one star’s orbit sees it pass in front of its companion.

It just goes to show that when you unleash an army of citizen scientists part of the fun is not knowing what they will turn up.

‘I think it's incredible that only 16 years after the first [planets](#) were discovered around other stars, it's now possible to find candidates using nothing but a web browser,’ Chris tells me.

‘With new data being released just last week, there are plenty more surprises hidden in the data for planet hunters to find.’

Provided by Oxford University

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