

UF astronomers pioneer new planet-observing technique

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(PhysOrg.com) -- Using the world's largest optical telescope, a team of University of Florida astronomers has pioneered a new method of observing planets outside our solar system. The method suggests that large Earth-based telescopes could play a leading role in rapidly accelerating research on "extrasolar" planets.

The results obtained from the Gran Telescopio Canarias, a telescope in Spain's Canary Islands partially owned by the University of Florida, are of such high precision that the astronomers are already planning to use the technique to learn more about "super-Earth-sized" planets - larger than Earth but smaller than Neptune - that have already been identified by space-based observatories.

The astronomers used the technique to study two giant, previously discovered planets passing in front of their parent stars. It minimized the atmosphere's distortion of starlight by measuring the light received within a small range of colors. The tunable filters of the Spanish-built instrument OSIRIS, the first instrument to be mounted on the Gran Telescopio Canarias, or GTC, allowed the spectrum to be "dissected" precisely.

"We want to explore the unique features of OSIRIS on the world's biggest telescope, so we're developing new ways to observe with its filters," said Eric Ford, a UF assistant professor of astronomy and co-author of an article on the research that appeared online Wednesday and will be published in the [Monthly Notices of the Royal Astronomical](#)

[Society](#).

Even though observing a restricted range of colors limits the amount of light available, Ford said, “the GTC is big enough and its instrumentation is so advanced that we can still collect sufficient light from the stars and measure their brightness precisely.”

The results show that the precision obtained was “excellent,” in Ford’s words, and was hardly affected by the atmosphere. The [extrasolar planets](#), called TrES-2b and TrES-3b, were observed in June and August of last year.

Ford said the new technique does not replace existing methods to search for planets, but rather provides new information about planets that pass in front of their parent stars, and have already been discovered by other observatories such as NASA’s Kepler space telescope. Its main virtue is that it provides better measurements of the planets’ orbits and the chemical composition of their atmospheres.

Given the growing number of [extrasolar planets](#) being detected, the researchers are confident this new technique will be a powerful new tool for learning about distant planets and how they differ from Earth.

Knicole Colón, lead author of the article and a UF graduate student in astronomy, said she is “optimistic that these techniques will become much more common in the future as astronomers seek ways of improving the precision of observations when studying Neptune-like and super-Earth sized [planets](#) discovered by space missions.”

The GTC began scientific observations in 2009 after nine years under construction. UF, which owns a 5 percent share, is the only U.S. institution with part ownership of the telescope.

More information: www.gtc.iac.es/en/

Provided by University of Florida

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