New discovery could be a Thorne-Zytkow object

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A neutron star. Image: NASA

(Phys.org) —Speaking at this year's American Astronomical Society meeting, Hubble Fellow, Emily Levesque reported that she and her colleagues at the University of Colorado have discovered a star that just might qualify as a Thorne-Zytkow object. The object has not been named as yet, however, as the team has not yet published its results.

A Thorne-Zytkow object, Kip Throne and Anna Zytkow theorized back in 1975, could come to exist when a dying red giant star swallows an orbiting neutron star. The result would be, the researchers suggested, a star with another smaller star embedded in its core and which would overall resemble other known types of stars but would emit a different and unique chemical signature. Since that time, many space scientists have scoured the heavens looking for such an object—many candidates

have been found, but thus far none have been confirmed. In this latest effort, the found object appears to closely resemble what Thorne and Zytkow predicted.

The object is was found in the Small Magellanic Cloud—Levesque reported that thus far, the research team has confirmed that it emits molybdenum, lithium and rubidium—all elements predicted by theory to exist in abundant amounts in the theoretical object. The original researchers suggested such elements would have to forge unusual pathways to burn their way through the dying stars outer parts due to an interruption of the fusion process in the red giant. The object was found, Levesque also reported, as part of a survey the team was conducting on 22 objects in the cloud using one of the Magellan telescopes (and its 21 foot diameter mirror) located in Chile's Atacama Desert.

Space scientists have speculated that if theory holds, there should be several Thorne-Zytkow objects in the Milky Way, though no one has found evidence yet. Commenting on the find, co-theorist Thorne suggested that the new discovery is the most promising yet found.

More work will have to be done before it will become known if the newly discovered specimen is truly a Thorne-Zytkow object. Specifically, scientists will focus on the elements found in the object as thus far there appears to be a little less of it than theory suggests.

More information: via Nature