

Einstein @ Home Discovery of Two Spiders Pulsars

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Fermi gamma-ray source lists have led to the discovery of many “spider” pulsars, tight binary systems in which the pulsars are evaporating their companions. Most of these have been found in radio searches targeting the Fermi sources, because the computational effort to find the pulsations by directly searching the gamma-ray data is tremendous. Using novel search methods, optical observations of the companion and the volunteer computing project Einstein@Home, this challenge has been overcome with the discovery of two spider pulsars, PSR J1653-0158 and PSR J2039-5617. In this talk, I will describe the properties of these remarkable pulsars and their companions, which were found in a multiwavelength effort. One of these is in an extremely tight orbit with a low-mass companion and remains undetected in radio despite extensive searches. The other experiences strong variations in the orbital period and the radio pulsations, discovered in a follow-up search, are eclipsed for large parts of the orbit.

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