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Unmasking strange dwarfs with gravitational-wave observations

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The advent of space-based gravitational-wave detectors like the Laser Interferometer Space Antenna will allow to observe signals most of which are expected to be emitted by white-dwarf binaries. Among these systems could be hidden another kind of compact objects, postulated by Glendenning, Kettner and Weber in 1995, containing a small core made of strange quark matter surrounded by layers of hadronic matter reaching densities much higher than in white dwarfs. These so called strange dwarfs cannot be easily distinguished from white dwarfs through electromagnetic observations alone: their outermost envelopes are expected to have the same composition and their radii are quite similar (except for low masses). However, future measurements of the tidal deformability through gravitational-wave observations could provide a new way to reveal their existence.

Primary author: PEROT, Loïc

Co-author: Prof. CHAMEL, Nicolas (Université Libre de Bruxelles)

Presenter: PEROT, Loïc

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