

Unstable r-modes and gravitational waves

Tuesday, 26 June 2018 09:00 (45)

Gravitational waves may drive the oscillations of a rotating neutron star unstable. In turn, the angular momentum carried away by the waves would spin the star down. This mechanism may determine the spin evolution of newly born neutron stars. It may also set a speed limit for neutron stars that accrete matter (and gain angular momentum) from a binary companion. In this talk I will provide an overview of the most “promising” manifestation of this scenario - the instability of the so-called r-modes. I will discuss how the supranuclear equation of state (and a range of transport properties) enter the problem, provide a status update on related gravitational-wave search and summarise indirect constraints from a range of astrophysical observations.

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Session Classification : Plenary