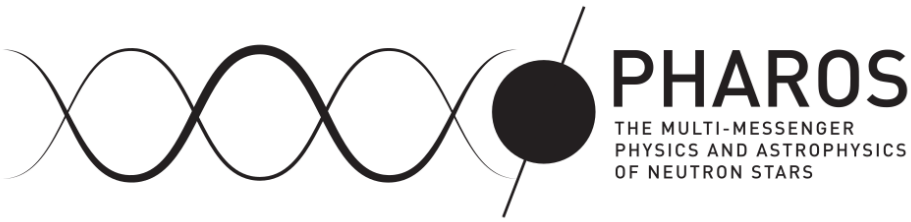

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Glitches as an indirect probe for the internal physics of pulsars

Thursday 27 September 2018 09:30 (20 minutes)

Issues involving nuclear superfluidity are thought to play key roles for neutron star phenomenology. Pulsar glitches (sudden jumps in the period of otherwise steadily spinning down pulsars) offer a glimpse into the superfluid interior of a neutron star: within the currently accepted scenario these timing irregularities are explained in terms of an expulsion of the quantized vortex lines that permeate the superfluid region. Vortex pinning to ions in the crust can provide the mechanism for storing the angular momentum which can be eventually released during a glitch. A consistent model for the angular momentum reservoir of pinned vorticity gives a general and quantitative inverse relation between size of the maximum glitch and the pulsar mass, allowing to put some limits on the mass of a pulsar.

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