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Pulsar Timing Irregularities using Indian Radio Telescopes (uGMRT and ORT)

Pulsars are rotating neutron stars emitting a beam of radio light from the magnetic axis. They are known to have extreme stable periods. However, two types of rotational irregularities are seen in pulsars: glitches and timing noise. Glitches are the sudden jumps in the rotational frequency whereas timing noise is the slow wander of the rotational period of the pulsar. Both of these phenomena are indirect probes to the neutron star interior composition and dynamics. This talk will present a brief overview of the various observational and theoretical aspects of pulsar timing irregularities and the major results from the investigations of these phenomena using Indian radio telescopes: the upgraded Giant Metrewave Radio Telescope (uGMRT) and Ooty Radio Telescope(ORT). The talk will also highlight the possible contributions of Indian astronomers and astrophysicists in such programs with the future telescope like the Square Kilometer Array (SKA).

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