

PID:PT2022_0200

Abstract:

Radio millisecond pulsars (MSPs) are very stable rotators which are characterised by short spin periods ($P < 20 \text{ ms}$). MSPs are believed to be formed in binary systems in which the pulsars gain mass and angular momentum from the companion during the accretion process. They are thus recycled and spun-up to milliseconds, and exhibit high rotational stability, manifesting as Galactic precise clocks. Moreover, as most MSPs reside in binary systems, they have been proved to be outstanding cosmic laboratories for fundamental physics. Our targets are ten pulsars, PSR J0740+41 is an isolated pulsar, nine of these are in binary systems. Even these sources are being monitored by other dishes, the investigations with unprecedented precision provided by FAST are worthy of conducting. The aims of the observations are: 1) to measure their spin-down rates. 2) to detect keplerian parameters even post-Keplerian parameters with higher precision, which provide the best test of General Relativity. 3) to investigate masses for both pulsars and their companions with the sensitivity provided by FAST. The discovery of massive NSs will constraint on the equation of state. 4) to understand binary stellar evolution, interactions of binary, the nature of neutron star formation.