

Proposal Abstract:

We propose the Five-hundred-meter Aperture Spherical radio Telescope (FAST) observations to determine the orbital parameters of PSR J1810-0622, a newly discovered millisecond pulsar (MSP) with a 4.55ms spin period. MSPs, as evolved neutron stars spun up by accretion in binary systems, hold immense scientific value. Having initially confirmed this MSP candidate with FAST, subsequent observations at Parkes suggest that PSR J1810-0622 may be potentially in an eclipse binary system. Specifically, it likely belongs to the "redback" subclass with a hot bloated companion, displaying irregular radio eclipses. Due to the limited sensitivity of the Parkes telescope, we request FAST observation time to accurately determine the orbital parameters of this unique MSP.