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Abstract:

PSR J1831-40 is a new pulsar discovered in the High Time Resolution Universe South Low Latitude (HTRU-S LowLat) pulsar survey. The initial discovery observation infers that this pulsar belongs to a rare class of long-spin-period binary pulsars, which might provide tests of strong-field gravitation theories. Apart from the rotational period and dispersion measure, however, most of the basic physical parameters of the pulsar are unknown yet. Timing its radio pulses, we can determine its spin period, spin-down rate, position and orbit period with spectacular accuracy. We hence propose to carry out high-sensitivity FAST follow-up timing observations at 1.4 GHz for this pulsar aiming at accurately obtaining its spin, astrometric and binary parameters. PSR J1831-40 is suggested to be a nulling pulsar. The proposed observation will also help us to understand the emission variations and polarization properties for this pulsar.