

Proposal Abstract:

This proposal continues the proposal (PT2022_0006) ranked A in the last round. We request 34~hours' FAST observations for two pulsars: PSR~J1946+2052 and PSR~B1913+16. PSR~J1946+2052 is the most compact known double neutron star system. In previous observations, we find significant profile evolution and polarization for the first time. The previous observations enable us to model the relativistic spin precession of the pulsar (Meng et al., 2023 to be submitted soon). We simulate and predict that a few more years of profile observations and precision pulsar timing will enable a stringent test of general relativity. For PSR~B1913+16, our observation reveals unprecedentedly well-measured pulsar polarization profiles that may enable the detection of the aberration effect. However, we need to improve orbital coverage and increase the span of our observations to reveal more relativistic spin precession. With the planned observations, we can combine aberration and spin precession to perform a test on general relativity.