Proposal Abstract:

Our proposal is to use FAST to observe PSR J2321+6024. Pulsar J2321+6024(B2319+60) is a representative old and slow radio pulsar with a rotational period (P1) of 2.256 s and a spin-down age (τc)of 5 Myr. In previous studies, Jian-Ling Chen observed two different drifting modes (A and ABN) and a phase-stationary non-drift emission mode (B) for J2321+6024 using the 25-meter radio telescope at Nanshan, in addition to the presence of quasi-periodic nulling. But, Rahaman used the Giant Metrewave Radio Telescope to discovered that the monopulse sequence of J2321+6024 reveal the presence of three distinct emission modes, with modes A, B, and ABN exhibiting sub-pulse drifting. The discrepancy in the manifestation of mode B between the two studies may be attributed to the relatively lower sensitivity of the telescopes used in both. Currently, there is no recorded data for J2321+6024 in the FAST database, and given the extremely high sen-sitivity of the FAST telescope, we are requesting to use FAST for observations of J2321+6024. At the same time, J2321+6024 also exhibits the presence of orthogonal polarization modes(Rahaman et al. 2021), and we can conduct further in-depth research on the orthogonal polarization modes and other related issues of J2321+6024.