

Proposal Abstract:

The Five-hundred-meter Aperture Spherical Radio Telescope (FAST) marks a major leap forward in the search for extraterrestrial intelligence (SETI). Since its construction, SETI has been one of FAST's five primary objectives. With its large aperture and a 19-beam cryogenically-cooled L-band receiver, FAST significantly boosts sensitivity and broadens target coverage. Innovative observation techniques, such as the Multi-Beam Coincidence Matching (MBCM) introduced in 2022 and the Multibeam Point-Source Scanning (MBPS) developed in 2023, address radio frequency interference (RFI) challenges and enhance the detection of narrowband and broadband periodic signals. In 2024, the Far Neighbour Project (FNP) aims to study 80 nearby stars and 14 globular clusters using these advanced methods to increase the chances of finding extraterrestrial signals. Our strategy also includes using polarization criteria to better differentiate between RFI and potential extraterrestrial signals in re-observation. Additional scientific goals involve searching for stellar radio bursts across different star types. With our proposed comprehensive signal detection and RFI discrimination pipeline, FAST's exceptional sensitivity and cutting-edge techniques establish it as a leading instrument in the global SETI initiative, ready to make substantial contributions to the field.