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Abstract:

The search for extraterrestrial intelligence (SETI) is one of the five key science goals of FAST. We aim to search for two types of signals at L-band from 96 nearby stars with a total 61 hours of observations. Along with commonly explored narrowband signals, we will explore signals with periodic spectral modulation which is unprecedented in a comprehensive SETI survey. A narrow-band search can be conducted by turboSETI developed by the Breakthrough Listen group. The Fast Folding Algorithm (FFA) provides one of the best possible ways to search for periodic spectral modulation. In order to conduct most sensitive survey towards the most nearby Gaia stars, we selected 96 stars within distance of 10 parsec from Gaia DR2. We will use multi-beam coincidence matching (MBCM) instead of On-Off observations to discriminate radio frequency interference (RFI). With the largest single aperture and the newly cryogenically-cooled L-band Array of 19-beams, our survey will be able to detect transmitter with EIRP of 1.2×10^9 W, which is similar to output power of long-range aircraft radars here on Earth. Thus, our survey greatly increases chances of detection of leakage radiation from ETIs.