

Proposal Abstract:

Rotating radio transients, also known as RRATs, are an enigmatic class of neutron star which occasionally emits bright flashes of pulse. RRATs has numerous potential and conflicting explanations in the literature. Recent observations indicated a potential link between FRBs and RRATs. With the world's largest radio telescope, FAST, this project will harness the power of the high sensitivity in order to study how pulses from these mysterious dead stars changes. Using data from previous FAST observations, we have identified intriguing emission properties from RRAT J2355+1523. These include higher burst rates and significant variations in the source's emission profile. Of particular interest is the abrupt cessation phenomenon observed in the profile. Additionally, we have detected several pulses that appear brighter at higher frequencies (1400-1500 MHz) but dimmer or even absent at lower frequencies. This finding suggests a possible correlation with the radiation mechanisms of Fast Radio Bursts (FRBs). To comprehensively investigate the burst activity and related characteristics of RRAT J2355+1523, we propose further observations using the FAST telescope.