

Proposal Abstract:

The profiles of some pulsars have the interpulse (IP) component, which is separated from the main pulse (MP) by approximately a half of the pulsar period. The origin of IP is unclear. In theory, the IP is emitted from the magnetic pole opposite or same to that of the MP, which could be determined by polarization observations. The IP is typically much weaker than MP, which makes it is hard to analyze the polarization. We propose observations with FAST to carry out a study of the IPs on a large sample. FAST enable us to obtain high quality polarization profile of IP and MP. Using RVM fitting, we will obtain the precise magnetic inclination angle and the impact angle for the MP and IP, then constrain the emission geometry and study how the radio beams filled in the longitudinal direction. We will divide the pulsars with IP emissions into two classes according to the magnetic poles of the MP and IP emissions, and compare the differences between these two classes. We will also measure the emission heights of MP and IP to study whether the emissions of MP and IP occur at the same height in pulsar magnetosphere or not.