

Proposal Abstract:

Pulsar TeV halos are currently believed to surround middle-age pulsars with spin-down luminosity \dot{E} larger than $1E34$ erg/s. These spatially-extended sources have become the most dominant TeV-PeV gamma-ray sources. So far, no TeV halo powered by millisecond pulsars (MSPs) has been found, while studies suggest that MSPs produce diffused TeV gamma-ray emission with a similar efficiency to that observed from known pulsar TeV halos. KM2A J1918+1557 is a newly-discovered source detected by LHAASO/KM2A with no clear origin, and indeed, the source region includes two MSPs and one farther normal pulsar discovered by FAST Galactic Plane Pulsar Snapshot (GPPS) survey, while no other nearby power sources such as supernova remnants are found. Hence, KM2A J1918+1557 is a promising candidate for a MSP-powered TeV halo. Our group have performed several FAST timing observations for these three pulsars last year to investigate if their \dot{E} is sufficient to power KM2A J1918+1557. However, two MSPs exhibited the orbital modulation effect for the first time in our observations, requiring more observations to determine five additional Keplerian orbital parameters. A total of 13.3 hours of follow-up timing observations is requested in this cycle to obtain a more precise \dot{P} or \dot{E} .