

Proposal Abstract:

This is a target of opportunity request: We propose to observe the transitional millisecond pulsar PSR J1023+0038 after it transitions to the low-luminosity (radio) state. This proposal continues our research on this system with FAST: we have already been granted an observation (2021, June 4th) for searching the pulsations in the current disk state (also referred to as sub-luminous or LMXB state) of the system simultaneously with XMM-Newton observations. We got interesting results and have one publication. Observing the system after it transitions back (in case it does so) to the rotation-powered state would allow us to gather insight into the nature of the transition itself and the impact of the LMXB onto the recovery of the period and spin-down rate.