

Title

Monitoring T CrB expected eruption with MeerKAT

Abstract

The MeerKAT telescope has monitored two recurrent novae (RNe), V3890 Sgr and RS Oph, which experienced outbursts in 2019 and 2021, respectively. Recurrent novae are thermonuclear eruptions occurring on the surface of white dwarf stars after the accumulation of material from a close binary companion. The gas is accreted via Roche-lobe overflow or stellar winds, creating a dense environment around the binary system. Radio observations probe the shocks produced when the ejected material interacts with the dense circumstellar material, providing valuable information about the surrounding medium and accretion processes. We propose to observe the nova T CrB with MeerKAT (1.3 GHz) in combination with LOFAR (100 MHz), AMI (15 GHz) and e-MERLIN (5/22 GHz). Since the second re-brightening in this system is unique, we have obtained OPTICON-RadioNet PILOT (ORP) multi-facility telescope time for coordinated observations to probe the underlying emission mechanism behind this behavior. The previous two eruptions of T CrB were separated by 80 years, and a third is imminent as the nova is currently undergoing a pre-eruption dip. The next eruption presents a unique opportunity to study the system.