

Title

**The Intriguing Case of YY Gem: Auroral Radio/X-ray Emission Triggered by Magnetospheric Interaction?**

Abstract

There exists extensive studies in search of coherent radio emission triggered by binarity in the case of star-planet interaction, in the form of auroral emissions. However, observational limitations have limited us to obtain conclusive evidence of such interaction in star-planet, or star-star binaries. In this proposal, we present the unique case of the doubly-magnetic M-dwarf system YY Gem, where we found evidence of persistent X-ray and radio enhancements at specific orbital phases. Furthermore, the detection of non-thermal X-ray from this system makes it an ideal target to search for auroral emission triggered by binarity. We plan to observe this intriguing target with the MeerKAT L-band in search for auroral radio emission (ARE). Other than ARE, we also plan to find possible mechanisms at play which might be a consequence of magnetospheric interaction by investigating the radio light curve at all polarizations.