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(RETCO-V): Theory and Observation



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Spectro-temporal studies of GX 9+1 using AstroSat

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GX 9+1, an atoll type neutron star low-mass X-ray binary (NS-LMXB), was observed by the Soft X-ray Telescope and the Large Area X-ray Proportional Counters on-board AstroSat during May 2 - 4, 2019. The hardness-intensity-diagram (HID) of the source showed it to be in the soft spectral state during the observation. Flux-resolved spectra of the source could be adequately modelled with an absorbed multi-temperature disk blackbody model 'diskbb' and a Comptonization model 'thcomp'. The photon index (Γ) and covering fraction decreased monotonically; whereas the inner disk kT_{in} and the mass accretion rate exhibited a gradual increase along the banana branch. The ratio of the disk flux to total flux > 0.93 revealed the source to be disk dominated. The true inner disk radius $R_{in} \sim 11.9$ km pointed that the accretion disk was truncated at the Alfvén radius. The upper limit of the magnetic dipole moment and the magnetic field strength at the poles of the neutron star in the source were calculated. Temporal analysis in the 0.02 - 100 Hz range revealed the presence of noise components, which could be characterized by broad Lorentzian components. These results will be presented during the conference.

Presentation Type

Oral

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