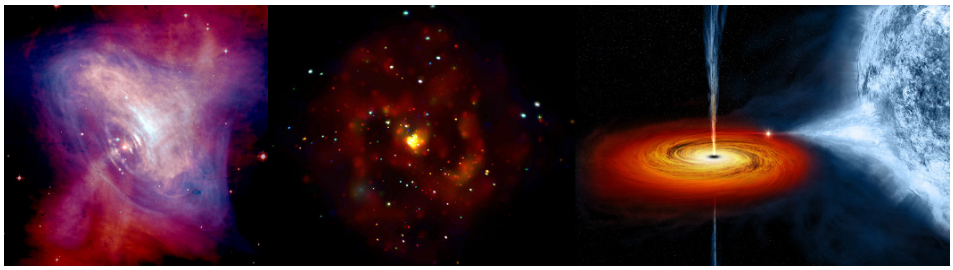

Contribution ID: **94** Type: **not specified**

Spectro-timing properties of GX 13+1 using AstroSat

Low mass X-ray binaries hosting a neutron star (NS-LMXBs) have been classified as 'Z'and 'atoll'sources based on the tracks they trace out in the hardness-intensity-diagram (HID) and their correlated X-ray spectral and X-ray fast-variability characteristics. Atoll sources have lower mass accretion rates and host a neutron star having lower magnetic field (< 10^9 G). The exact physical parameters that drive the changes in the source state that are responsible for these two classifications are yet to be substantiated. GX 13+1, is a NS-LMXB which is classified as an atoll source. However, the pattern that it traces in HID resembles that of Z source. In addition, it has high mass accretion rate (L ~ 0.5×LEdd) and Fridriksson et al. have hinted the presence of a 22-29 Hz quasi periodic oscillation (QPO) with 9 - 10% fractional rms value, which are the properties similar to Z sources. In order to investigate the spectro-temporal properties of this peculiar source, we conducted spectral and temporal analysis in 0.7 - 30.0 keV using data from the Soft X-ray Telescope (SXT) and the Large Area X-ray Proportional Counters (LAXPC) instruments onboard AstorSat. The spectra of the source could be adequately modeled with a disk blackbody model with the addition of three edge components. Through spectral analysis, we infer the physical properties of the source such as radius of inner accretion disk, mass accretion rate, magnetic dipole moment of neutron star in the system. The temporal analysis of the source yielded the detection of QPOs at ~60 Hz. These results will be presented in the conference.

Presentation Type

Poster

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