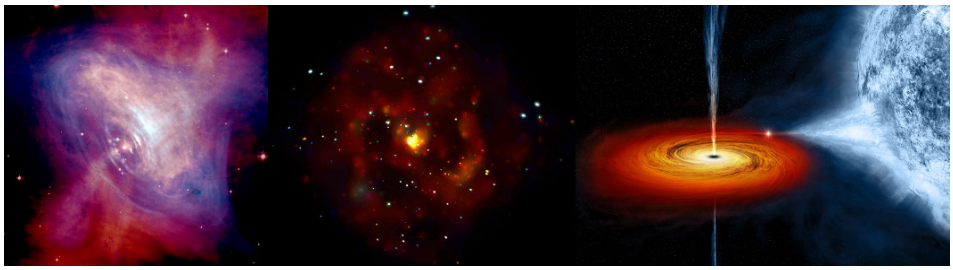

Contribution ID: **96** Type: **not specified**

Probing thermonuclear bursts from millisecond pulsar MAXI J1816-195 using simultaneous NuSTAR and NICER observation

Tuesday, April 4, 2023 3:50 PM (15 minutes)

In May 2022, MAXI made the discovery of the millisecond pulsar MAXI J1816−195. The unstable burning of accreted material on the surface of neutron stars results in thermonuclear (Type-I) bursts. During the 2022 outburst, MAXI J1816−195 generated a number of thermonuclear bursts. An exponential decay function and a sharp linear rise are used to model the burst profiles. The faster decay of the burst in a higher energy range implies that the temperature will decrease as the burst evolves. The NuSTAR measured the peak-to-persistent count rate ratio to be 26 and the duration of each burst to be roughly 30 s. The time-resolved spectra are successfully modelled with a combination of an absorbed blackbody along with a non-thermal component to account for the persistent emission. The spectral analysis does not show that the photospheric radius is expanding. The blackbody temperature and radius during the peak of the burst were 2.1 keV and 12.5 km, respectively. The empirical Eddington limit is assumed, and an upper limit of 8.7 kpc for the source distance is obtained. The alpha factor and mass accretion rate suggest the stable burning of hydrogen via the hot CNO cycle.

Presentation Type

Oral

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