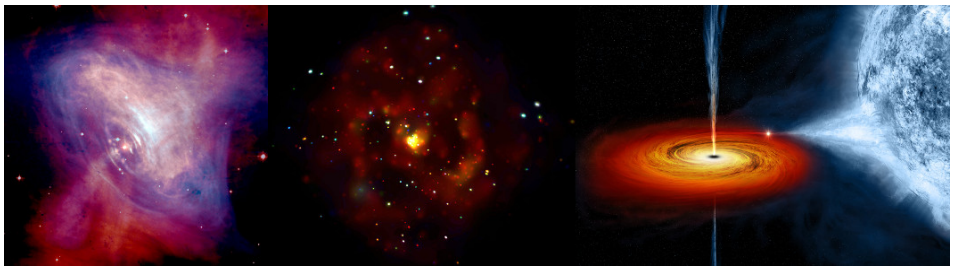

Contribution ID: **63** Type: **not specified**

Study of the spectral and temporal properties of EXO 1846-031 during the rising phase of its 2019 outburst

Monday, April 3, 2023 5:20 PM (15 minutes)

We study the recent outburst of the black hole candidate EXO 1846-031 which went into an outburst in 2019 after almost 34 years in quiescence. We use archival data from Swift/XRT, MAXI/GSC, NICER/XTI and NuSTAR/FPMA satellites/instruments to study the evolution of the spectral and temporal properties of the source during the initial rising phase of the outburst. Evolving type-C quasi-periodic oscillations (QPOs) are observed in the NICER data in the hard, and intermediate spectral states. We use the physical Two Component Advective Flow (TCAF) model to analyze the combined spectra. From the evolution of the spectral model fitted parameters, we find the source to evolve through four spectral states. According to the TCAF model, accreting matter is distinguished into Keplerian and sub-Keplerian parts, and the variation in the observed spectra in different spectral states arise out of the variable contribution of these two types of accreting matter in the total accretion rate. We also determine the probable mass of the black hole to be $\sim 10 M_{\odot}$ from the spectral analysis with the TCAF model.

Presentation Type

Oral

Primary author: NATH, Sujoy Kumar (Indian Centre for Space Physics)

Co-authors: Dr DEBNATH, Dipak (Institute of Astronomy Space and Earth Science); Dr CHATTERJEE, Kaushik (Institute of Astronomy Space and Earth Science); Ms BHOWMICK, Riya (Indian Centre for Space Physics); Prof. CHANG, Hsiang-Kuang (National Tsing Hua University); Prof. CHAKRABARTI, Sandip K. (Indian Centre for Space Physics)

Presenter: NATH, Sujoy Kumar (Indian Centre for Space Physics)

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