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## **Fast X-ray variability of a new high-mass X-ray binary MAXI J0709-159 / LY CMa observed by MAXI and NICER**

*Monday, 11 December 2023 16:15 (12 minutes)*

MAXI J0709-159 is a new X-ray transient discovered by the MAXI all-sky survey on 2022 January 25 near the Galactic plane at  $(l, b) = (229.3, -2.3^\circ)$ . The follow-up observations with NICER and NuSTAR identified it with a new X-ray object located at a position consistent with a Be star, LY CMa, which has also been identified as B supergiant. From the transient X-ray behavior characterized by short (a few hours) activity duration, rapid (a few seconds) variability accompanied with spectral change, and large luminosity swing from  $10^{32}$  erg  $s^{-1}$  in quiescence to  $10^{37}$  erg  $s^{-1}$  at the outburst peak, the object was considered likely to be a Supergiant Fast X-ray Transient (SFXT), a subclass of supergiant X-ray binaries (Sugizaki et al. 2022). We analyzed the MAXI and NICER data in detail. The combined light curve reveals that the short outburst consists of several flare-up events, each lasting only a few minutes and rapidly changing in intensity. The variability power spectrum shows significant features suggesting quasi-periodic variations at 0.1-1 Hz. We discuss the origin of the quasi periodicity in terms of the mass accretion via interaction between the neutron-star magnetosphere and the stellar winds.

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