

Stellar flare of a close binary system monitored by the Hisaki satellite during the NICER-Hisaki Observing Campaign 2018-2019

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Dynamics of stellar flare is still not well understood compared to that of the sun because of lack of continuous monitoring of distant stars in multiple wavelengths. Here we present a flare event at a close binary system, UX Arietis, monitored with the planetary extreme ultraviolet (EUV) space telescope Hisaki during the coordinated observing campaign with the NICER X-ray Telescope from late 2018 to early 2019. Time variability in the EUV spectrum of the binary was successfully monitored from the beginning to the end of flare. Emission power at the EUV wavelengths peaked at $\sim 6 \times 10^{24}$ W, which is comparable with that measured in the previous X-ray observations by e.g., the Advanced Satellite for Cosmology and Astrophysics (ASCA) (Gudel et al., 1999). The EUV spectrum showed emission lines of carbon, nitrogen, oxygen, and silicon ions. Electron temperature and density, emission measure, and ion balance were reduced from the emission lines by EUV spectral diagnostics. Dynamics of the stellar flare will be discussed based on comparison of the reduced plasma parameters with the X-ray spectrum measured with NICER.

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