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Effects of the Dust Scattering Halo of 1E 1740.7-2942 on it's timing properties during the hard state

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We investigated the effects of dust scattering halo (DSH) of the high NH source (~10^23 cm^-2) 1E 1740.7-2942 on it's timing properties during the hard state. We observed the source simultaneously using XMM-Newton and RXTE for ~20 ks. Our results show that the observed fractional rms amplitude of variability is low compared to the typical values for the GBH sources in the hard state. Imaging analysis showed that the DSH is still present even in the EPIC-PN's "Small Window Mode". We also report that there is a molecular cloud with VLSR=-152.4 km . s-1 in the line-of-sight of the source. Finally, we employed an empirical correction method to obtain the "intrinsic"power spectra and rms amplitude of variability using XMM-Newton and RXTE data together.

Topic

Compact and diffuse sources in galaxies and in the Galactic Center

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