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IGR J17361-4441: a possible planetary tidal disruption event in NGC 6388

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In 2011 a new hard X-ray source, IGR J17361-4441, was discovered by INTEGRAL close the centre of the globular cluster NGC 6388.

Based on its peak luminosity, it was classified as very faint X-ray transient.

A Swift/XRT monitoring campaign showed an evident $t^{-5/3}$ trend in the light curve, and a thermal emission of ~ 0.08 keV that did not evolve significantly with time.

We investigated whether this source could be a tidal disruption event, and for certain assumptions, we found an accretion efficiency consistent with a massive white dwarf and a disrupted minor body mass $\sim 2 \times 10^{27}$ M/M_{Ch} in the terrestrial-icy planet regime.

Although the density of white dwarfs and the number of free-floating planets are uncertain, we estimated the rate of planetary tidal disruptions in NGC 6388 to be

in the range 3×10^{-6} up to 3×10^{-4} yr⁻¹. Averaged over the 150 globular clusters in the Milky Way, the upper limit value corresponds to 0.05 yr⁻¹, consistent with the life-time of INTEGRAL and Swift.

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