

Abstract Submitted
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NICER's Nicer Responses to Alerts of Giant Stellar Flares KENJI HAMAGUCHI, NASA/GSFC UMBC — The Sun occasionally erupts magnetic reconnection X-ray flares, the largest ones of which can cause geomagnetic storms. The Sun is believed to have produced much stronger flares in early ages, which could have affected formation of pre-organic molecules and/or early life on Earth. Such giant X-ray flares, or superflares, have been spotted occasionally from active stars in the solar neighborhood such as dMe and RS CVn stars with the all-sky X-ray monitor MAXI onboard the International Space Station (ISS). However, MAXI can provide only limited X-ray information owing to its small photon collecting power and high background.

The NICER observatory onboard ISS has large photon collecting power as well as rapid repointing capability, enabling detailed follow-up of these X-ray flares within a fraction of a day of the MAXI triggers. Since its launch in June 2017, NICER has observed four giant X-ray flares on the active binary systems, GT Muscae, UX Ari, sigma Gem and HR 1099 in response to their detections by MAXI. It collected 300-900 X-ray photons per second from each flare, arguably the highest signal-to-noise X-ray data for stellar flares obtained to date. Their light curves are smooth on both short and long timescales, while their spectra clearly show emission lines from multiple elements.

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