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### NICER detection of Type-B QPOs in follow-up observations of MAXI J1803-298

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## NICER detection of Type-B QPOs in follow-up observations of MAXI J1803-298

ATel #14660; **S. Ubach (SAO/CfA), J. Steiner (SAO/CfA), J. Homan (Eureka Scientific and SRON), K. C. Gendreau (NASA/GSFC), Z. Arzoumanian (NASA/GSFC), D. Altamirano (University of Southampton), P. Uttley (Amsterdam), D. Pasham (MIT)**

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Referred to by ATel #: [14706](#), [14994](#)

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Following the MAXI/GSC alert of the newly discovered X-ray transient MAXI J1803-298 (ATel #1458; see also ATels #14588, #14591, #14594, #14597, #14598, #14601, #14602) and subsequent to the observations reported in ATel #14606, the Neutron Star Interior Composition Explorer (NICER) has continued observing the outburst.

Since the last NICER report (ATel #14606), NICER has monitored MAXI J1803-298 for an additional 57 ks over the time period May 18 17:58 UTC to May 25 11:24 UTC. No further X-ray dips have been seen. Midway through this recent interval, from May 21 onward, we detect the presence of a low-frequency Type-B QPO at ~6 Hz along with a broad sub-harmonic at ~3 Hz.

As an example, in the linked Figure, we present one representative 1.4 ks NICER observation. The 0.3-12 keV PDS continuum follows a broken power law and the QPO and its sub-harmonic have been fitted as two Lorentzian components. The fractional rms amplitude of the QPO and sub-harmonic in the example shown are, respectively,  $1.8\pm 0.3\%$  and  $1.5\pm 0.3\%$  at 90% confidence. The corresponding Q-factors are ~10 and ~2, respectively. Over the several days of monitoring, the fundamental frequency is variable, observed to move between ~6.5 Hz and ~5 Hz. The final few observations on May 24-25 show only intermittent presence of the QPO, perhaps indicating evolution in the source. This recent detection of a Type-B QPO reveals that the source has remained in an intermediate "Steep Power Law" (SPL) state for an extended period of time. We confirm this spectroscopically.

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The associated energy spectrum of the system has been fitted from 0.25-12 keV with an absorbed Comptonized disk-blackbody model (tbabs \* simpl x diskbb), with  $N_h = 3.3e21/cm^2$ . During the May 21-24 period with the prominent QPO, the spectrum of MAXI J1803-298 is generally consistent with the properties of the SPL state, i.e., the photon index is high,  $\Gamma \sim 2.7-2.9$ , and the disk component is prominent and hot ( $kT \sim 0.5-0.6$  keV), but the scattering fraction is somewhat larger than typical,  $f_{sc} \sim 0.6-0.8$ . Data obtained on May 25 show a hotter disk component ( $kT \sim 0.8$  keV) and somewhat steeper power-law  $\Gamma > \sim 3$ .

*MAXI J1803-298 Power Density Spectrum on May 22*

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