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The INTEGRAL detection of pulsed soft gamma-rays from SGR/AXP 1E1547.0-5408 during its JAN-2009 outburst

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The INTEGRAL detection of pulsed soft gamma-rays from SGR/AXP 1E1547.0-5408 during its JAN-2009 outburst

ATel #1921; [L. Kuiper, P.R. den Hartog \(SRON\), W. Hermsen \(SRON,UvA\)](#)
on 30 Jan 2009; 13:56 UT

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The INTEGRAL detection of pulsed soft gamma-rays from SGR/AXP 1E1547.0-5408 during its JAN-2009 outburst

Monitoring observations of 1E1547.0-5408 during its current outburst (GCN #[8833](#)) with the SWIFT XRT in windowed time mode have been used to construct a phase-coherent timing solution for the rotation behaviour of this magnetar over the period MJD 54855.057-54860.78 (2009 Jan 23, 17:18:04 - 2009 Jan 29 21:14:45). An arrival-time analysis using burst-cleaned and barycentered timing data from the SWIFT XRT (20.85 ks total exposure) yielded the following pulse frequency and frequency time derivative at epoch MJD 54855.0 (TDB timescale): $\nu = 0.4825964(3)$ Hz and $d\nu/dt = -(8.4 \pm 1.5)E-12$ Hz/s. The pulse period evaluated at MJD 54856.7 from this ephemeris is consistent with, but more accurate than, the pulse period reported by Burgay et al. in ATEL #[1913](#) based on Parkes radio data.

INTEGRAL has observed 1E1547.0-5408 for about 100 ks (public ToO) from 2009 Jan 24, 15:30:59 to 2009 Jan 25, 22:14:36 (INTEGRAL Revolution-767; see ATEL #[1908](#)), and is currently observing the source for about 300 ks (begin of observation at 2009 Jan 28, 14:21:35; INTEGRAL Revolutions involved 768,769 and 770) as part of an approved ToO program (PI. P.R. den Hartog). Folding the burst-cleaned barycentered INTEGRAL Soft Gamma-Ray Imager (ISGRI) timing data from Rev-767 and 768 (about 146 ks exposure) on the above timing model yielded a 4.0 sigma sinusoidal pulse profile for the 20-150 keV energy band. This is the first time that pulsed emission has been detected from this source in the soft gamma-ray band (> 20 keV). Further analysis is ongoing.

We thank the staff at ISOC for promptly implementing the INTEGRAL ToO observations and ISDC scientists for making the near real time data directly available. We acknowledge the use of public (quick-look) data from the Swift data archive.

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