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A large spin-up glitch detected in the 70.5 ms pulsar AX J1838.0-0655 associated with HESS J1837-069

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A large spin-up glitch detected in the 70.5 ms pulsar AX J1838.0-0655 associated with HESS J1837-069

ATel #2446; [L. Kuiper \(SRON\), W. Hermsen \(SRON, UvA\)](#)
 on *18 Feb 2010; 15:41 UT*
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Subjects: X-ray, Gamma Ray, >GeV, Neutron Star, Pulsar

Monitoring observations of AX J1838.0-0655 with the PCA instrument (2-60 keV) aboard the Rossi X-ray timing Explorer performed since its discovery (see ATEL #[1392](#)) as fast rotation-powered pulsar on 2008, February 17 up to and including 2010, January 26, have been used to study its rotation characteristics (see e.g. ATEL #[1405](#)). The timing analysis revealed the presence of a large spin-up glitch, occurring somewhere between MJD 55002 and MJD 55018 (2009, June 20 - July 6), with a fractional frequency jump size of 1.55(7)E-6. The size of this value is near the upper end of the histogram showing the distribution of the fractional frequency glitch sizes of both rotation-powered pulsars and anomalous X-ray pulsars (see e.g. Fig. 15a of Dib et al. 2008, ApJ 673, 1044). The pre-glitch ephemeris, covering the range MJD 54513-55002, is specified by a frequency of 14.184758189(1) Hz, a first order time derivative of -9.9295(1)E-12 Hz/s and a second order time derivative of 1.95(6)E-22 Hz/s², all evaluated at epoch 54513.0 MJD (TDB; DE200). The post-glitch ephemeris, covering the range MJD 55018-55222, is given by a frequency of 14.1842449881(7) Hz, a first order time derivative of -9.9910(1)E-12 Hz/s and a second order time derivative of 1.0(4)E-21 Hz/s², all evaluated at epoch 55136.0 MJD (TDB; DE200). The latter ephemeris can be improved in future once more monitoring observations come available.

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