

ENHANCEMENTS AND OPERATION OF AN ACCRETING PULSAR PROGRAM Over the last 11 years USING GBM DATA

Tuesday 11 October 2022 17:00 (15 minutes)

The Fermi Gamma ray Burst Monitor (GBM) is a unique instrument that offers the largest instantaneous field of view of any hard X-ray instrument currently in operation. This capability along with excellent timing resolution, makes it very successful at detecting rare transient events as well as providing long integration times for pulsed signal extraction. Even though GBM has a relatively modest size, the GBM Accreting Pulsar Program (GAPP) is able to observe a typical accreting pulsar for up to 45,000 seconds each day allowing us to make precise measurements of the source frequency and pulsed flux for sources with a spin frequency between 0.001 and 2 Hz. These frequency measurements along with GBM's excellent timing capabilities have given us the capability to determine/update orbital ephemerides for many sources as well as monitor rare torque reversals in persistent (semi-persistent) sources such as EXO 2030+375. Continuous Time Tagged Event data, available since November 2012, allows GAPP to track the frequency of even higher frequency sources and we plan to make these histories available this year.

The GAPP consists of two parts: A daily blind search which looks for excess power in the Fourier spectrum from 15 equally spaced directions along the Galactic plane plus the directions to the SMC and LMC and a dedicated monitoring program for 43 sources, in which 39 have been detected including SMC X-3. The results of the dedicated monitoring program are available online (<http://gamma-ray.msfc.nasa.gov/gbm/science/pulsars.html>) and updated twice a week.

We will present 11 years of accreting pulsar monitoring with Fermi/GBM and show how GAPP is providing new insight into these sources.

Track

Binaries

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