

RXTE LMC Pulsar Timing Proposal

PSRJ0537-6910 and PSRB0540-69

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Title: The Spin-down Evolution of Two Young Pulsars in the LMC

Abstract

We propose to continue our highly successful timing campaign of two young rotation-powered pulsars located in the LMC. Long-term monitoring has revealed extreme timing glitches from the 16-ms pulsar PSRJ0537-6910, anomalous activity prior to glitches, and a tight correlation between the glitch magnitude and the interval between glitches. The 50-ms pulsar PSRB0540-69, which has an unusually low and varying braking index, is also in the RXTE field of view. With our greatly improved ability to measure the times of glitches, further X-ray observations will provide much better tests of the predictability of glitching activity from PSRJ0537-6910 while extending our study of the braking index and timing noise of PSRB0540-69. Continued RXTE observations are necessary for studying gamma-ray emission from these pulsars with GLAST. Monitoring the long-term spin-down evolution of both pulsars will help further our understanding of emission mechanisms of young pulsars and probe their interior structure.