

Monitoring the Galactic Center with the RXTE PCA

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ABSTRACT

Since 1999, the Rossi X-ray Timing Explorer PCA instrument has monitored the galactic center region. While the original scans covered about 250 sq. deg. of the central galactic bulge region, the monitored region has now grown to more than 700 sq. deg., including the Aquila arm. The principle goals of the program are to detect previously unknown faint X-ray transients, and also renewed outbursts of known transients. In total, close to two hundred sources are monitored, with a limiting flux of between 0.5 mCrab and 2 mCrab (2-10 keV), depending on the density of sources. The program has detected close to 50 previously unknown X-ray sources. Of special note are the handful of newly detected accreting millisecond X-ray pulsars, such as XTE J1751-305, XTE J1814-338 and XTE J1807-294, as well as repeat outbursts of known pulsars such as SAX J1808.4-3658. In addition, the program has detected both new and known black hole candidates and accreting (slow) X-ray pulsars. The main legacy of the RXTE PCA galactic scans is that X-ray transients occur at many fluxes, recurrence timescales, and duty cycles. Intensive monitoring will expand our understanding of these curious sources.