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The Long Term Variability and X-ray Bursts of Cygnus X-2
ALAN SMALE, Code 660.1, Astrophysics Science Division, NASA/GSFC, PATRICIA BOYD, Code 661, Astrophysics Science Division, NASA/GSFC, SHAINA REISMAN, CUNY Brooklyn College, Brooklyn, NY 11210 — The bright, persistent low-mass X-ray binary Cygnus X-2 is composed of a neutron star (NS) in a 9.8-day orbit with its late-type companion, V1341 Cyg. It is one of six bright Galactic sources that traces out a Z-curve on its color-color diagram on timescales of about a day, and one of only two of these Z-sources that also displays Type 1 X-ray bursts (explosive nuclear ignition events on the NS surface). On timescales of weeks to months, Cyg X-2 shows large-amplitude but non-periodic X-ray fluctuations that have been attributed to a warped accretion disk. The extensive archival data from NASA's Rossi X-ray Timing Explorer (1995-2012), including both pointed and all-sky monitor data, allow us to study the long-term variability, spectral behavior, and burst behavior of the source in unprecedented detail. We have investigated 575 PCA datasets totaling over 2.2 Msec of data spread over the lifetime of the RXTE mission, and have detected 61 Type I bursts. Here we present early results of a spectral analysis of these bursts to determine whether properties such as the duration, peak flux level, or spectral parameters of the bursts are correlated with source properties such as time-averaged flux or instantaneous intensity and position on the Z-diagram.

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