Decline of the 2-10 keV Emission from Eta Carinae

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Analysis of Eta Car's X-ray spectrum in the 2-10 keV band using processed data from the X-ray Telescope on Swift reveals a peak flux on July 16, 2014 of 0.046 photons s\(^{-1}\)cm\(^{-2}\) (3.37\(\pm\)0.15 \(\times\) 10\(^{-10}\) ergs s\(^{-1}\)cm\(^{-2}\)). This flux is similar to the previous maximum flux seen by the XRT, 3.53\(\pm\)0.13 \(\times\) 10\(^{-10}\) ergs s\(^{-1}\)cm\(^{-2}\) (0.049 photons s\(^{-1}\)cm\(^{-2}\), ATEL #6298). Since this peak on July 16, the most recent Swift XRT quicklook data show a drop in flux. On July 20, 2014 the XRT flux as seen in the quicklook data was 0.011 photons s\(^{-1}\)cm\(^{-2}\) (8.3\(\pm\)0.5 \(\times\) 10\(^{-11}\) ergs s\(^{-1}\)cm\(^{-2}\)). This most likely indicates that the 2-10 keV flux is in its declining phase as Eta Car approaches its deep X-ray minimum stage (Hamaguchi et al., 2014, ApJ, 784, 125) associated with periastron passage of the 2024-day binary orbit. The column density derived from analysis of the July 20 XRT quicklook data is 7.2\(\times\)10\(^{22}\) cm\(^{-2}\). This is consistent with the column density seen near the same orbital phase in 2003 (7.7\(\times\)10\(^{22}\) cm\(^{-2}\), Hamaguchi et al., 2007, ApJ, 663, 522). Eta Car's deep X-ray minimum phase is expected to begin on July 30, 2014. Weekly Swift/XRT observations of Eta Car in the 2-10 keV band are planned throughout the X-ray minimum.

Recent Swift/XRT fluxes of Eta Carinae, compared to the RXTE/PCA flux from the previous orbital cycle.