K15c Swifts GRB : outlier of the $E^{src}_{peak} - E_\gamma$ and $E_{iso} - E^{src}_{peak} - t^{src}_{jet}$ correlations

Yuji Urata (NCU), Kuiyun Huang(ASIAA), Myungshin Im(SNU), Induk Lee (NCU/SNU), Jinsong Deng (NAOC), WingHuen Ip (NCU), Hans Krimm(GSFC/NASA), Xin Liping (NAOC), Masanori Ohno (ISAS/JAXA), Yulei Qiu(NAOC), Satoshi Sugita (Nagoya U), Makoto Tashiro (Saitama U), Jianyan Wei(NAOC), Kazutaka Yamaoka(NAOC),Weikang Zheng (NAOC)

We present multi-band results for GRB071010B based on Swift, Suzaku, and ground-based optical observations. This burst is an ideal target to evaluate the robustness of the $E^{src}_{peak} - E_{iso}$ and $E^{src}_{peak} - E_\gamma$ relations, whose studies have been in stagnation due to the lack of the combined estimation of E^{src}_{peak} and long term optical monitoring. The joint prompt spectral fitting using Swift/BAT and Suzaku/WAM data yielded the spectral peak energy as E^{src}_{peak} of $86.5^{+6.4}_{-6.3}$ keV and E_{iso} of $2.25^{+0.19}_{-0.16} \times 10^{52}$ erg with $z = 0.947$. The optical afterglow light curve is well fitted by a simple power law with temporal index $\alpha = -0.60 \pm 0.02$. The lower limit of temporal break in the optical light curve is 9.8 days. Our multi-wavelength analysis reveals that GRB071010B follows $E^{src}_{peak} - E_{iso}$ but violates the $E^{src}_{peak} - E_\gamma$ and $E_{iso} - E^{src}_{peak} - t^{src}_{jet}$ at more than the 3σ level.