

Abstract Submitted
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A Characteristic Value for the BAT / XRT- plateau Flux Ratio in GRB? DEMOSTHENES KAZANAS, JUDITH RACUSIN, NASA/GSFC, JOSEPH SULTANA, University of Malta, APOSTOLOS MASTICHIADIS, University of Athens — We present the statistics of the ratio, R , between the prompt and afterglow “plateau” fluxes of GRB. This we define as the ratio between the mean prompt energy flux in *Swift* BAT and the *Swift* XRT one, immediately following the steep transition between these two states and the beginning of the afterglow stage referred to as the “plateau.” Like the distribution of many other GRB observables, the histogram of R is log-normal with maximum at a value $R_m \simeq 2,000$, FWHM of about 2 decades and with the entire distribution spanning about 5 decades in the value of R . We note that the peak of the distribution is close to the proton-to-electron mass ratio ($R_m \simeq m_p/m_e = 1836$), as proposed to be the case in an earlier publication, on the basis of a specific model of the GRB dissipation process. It therefore appears that, in addition to the values of the energy of peak luminosity $E_p \sim m_e c^2$, GRB present us with one more quantity with an apparent characteristic value. The fact that the values of both these quantities (E_p and R) are consistent with the same specific model invoked to account for the efficient conversion of their relativistic proton energies to electrons, argues favorably for its underlying assumptions.

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