



A Statistical Dead-Time Deconvolution Method for *Fermi*/GBM TGF Observations

David Byrne (1), Micheal S. Briggs (2), David Tierney (1), Gerard Fitzpatrick (1), Suzanne Foley (1), Sheila McBreen (1), and the *Fermi*/GBM TGF Collaboration Team

(1) Space Science & Advanced Materials Research Group, University College Dublin, Dublin, Ireland
(david.byrne.2@ucdconnect.ie), (2) CSPAR, NSSTC, 320 Sparkman Drive, Huntsville, AL 35805, USA

Terrestrial Gamma-ray Flashes (TGFs) were first observed by CGRO in 1994 and have continued to be observed by current gamma-ray telescopes such as *Fermi*/GBM. Today, TGFs are an area of continued interest and research although many questions remain despite close to 20 years of active research. One of the main reasons for the lack of understanding is the extremely fast, hard and intense nature of TGFs causing numerous instrumental effects in space based observatories. One such effect is that of dead-time which in *Fermi*/GBM is $2.6\mu\text{s}/\text{count}$ or up to $\sim 1\%$ of the TGF duration per count.

A statistical temporal deconvolution method to recover the dead-time losses has been developed by members of the GBM collaboration¹. Simulations were performed using this method to determine how effective it is at reconstructing TGF time profiles. Presented here is the method and results of the study.

¹Dr. Micheal S. Briggs, *Fermi*/GBM senior scientist