Abstract Submitted
for the APR10 Meeting of
The American Physical Society

Hadronic interpretation of high energy radiation from Fermi LAT GRBs SOEBUR RAZZAQUE, U.S. Naval Research Lab, CHARLES DERMER, JUSTIN FINKE — Data collected with the Fermi large area telescope (LAT) from gamma-ray bursts (GRBs) challenge our understanding of the high energy radiation mechanisms from ultra-relativistic jets. Delayed onsets of 100 MeV radiation, GeV emission extending to well after the decay of keV-MeV emission, large fluences in high energy components and large jet bulk Lorentz factors are common features in Fermi LAT GRBs and require consistent theoretical explanation. GRBs have long been considered as candidates of ultrahigh-energy cosmic rays (UHECRs). We investigate ion acceleration in GRB jets, and the high energy signatures of their hadronic and electromagnetic interactions. We show that accumulation of slowly cooling ions compared to rapidly cooling electrons in the GRB shocks can explain delayed onset of 100 MeV radiation and extended GeV emission.

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Date submitted: 23 Oct 2009 Electronic form version 1.4