



The **G**amma-ray **D**ata-**T**ools (**GDT**)

Suman Bala

on behalf of GDT team

(sbala@usra.edu)



Team



Contributing Orgs:

- USRA
- ADNET
- LSU
- NASA/Goddard
- NASA/Marshall
- Penn State
- UAH

Funding

- Fermi GI
- NASA ADAP
- NASA SMD OSTLF
- NASA/MSFC ISFM



The Gamma-ray Data Tools (GDT)



A Python toolkit for space-based Hard X-ray and Gamma-ray Mission Data

- GDT utilizes **namespace packages**
- Generalized version of the Fermi GBM Data Tools
- Interface to science and auxiliary data files
- Reduce/analyze data (binning, background estimation, etc.)
- Export/conversion of data
- Observing conditions — Source visibility, GTIs, detector angles, etc.
- Spectral analysis
- Duration analysis
- Simulations
- Interface to HEASARC archive and Browse Catalogs
- Wide range of visualizations
- Documentation and notebooks

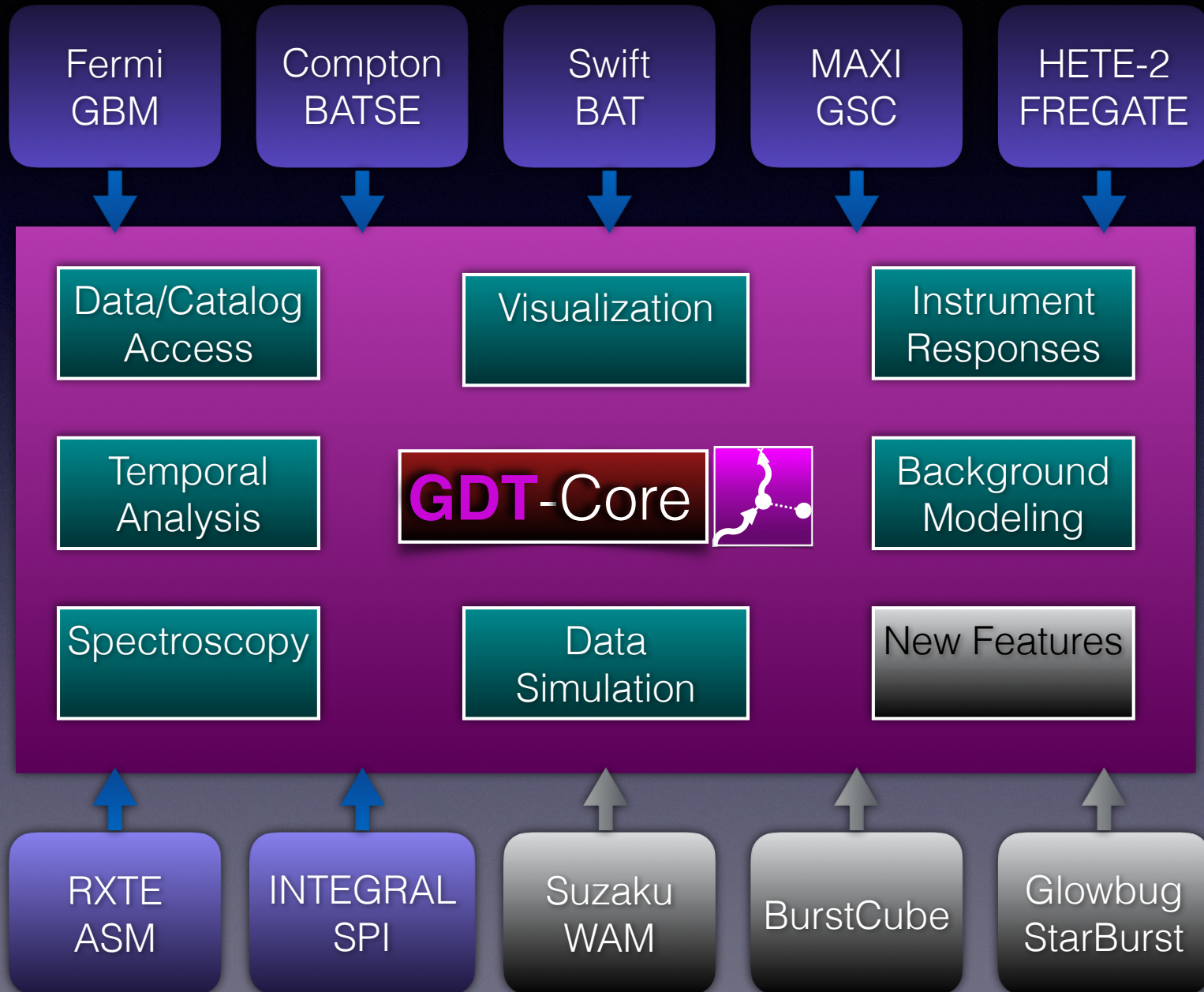


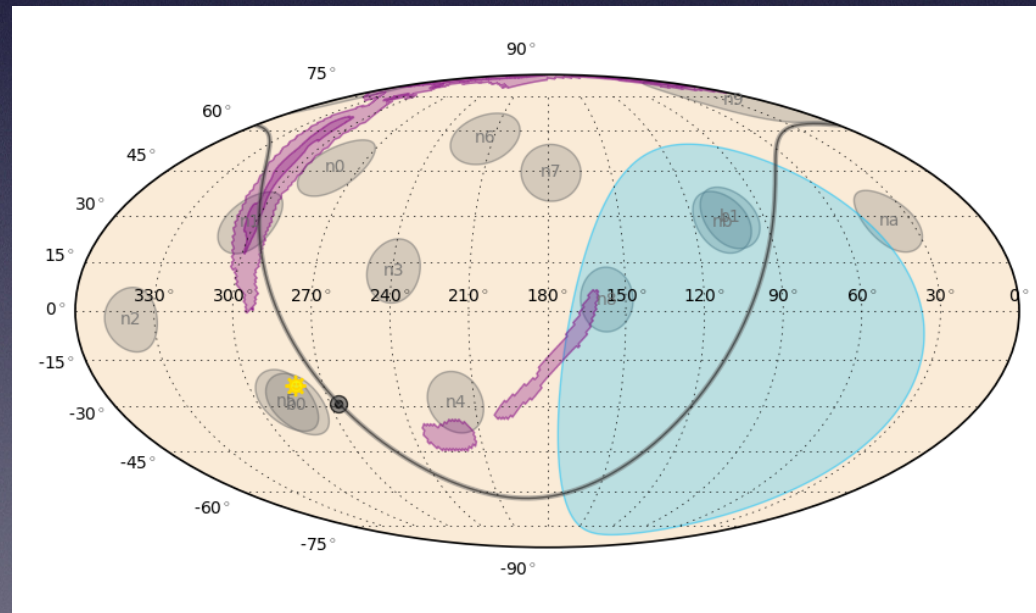
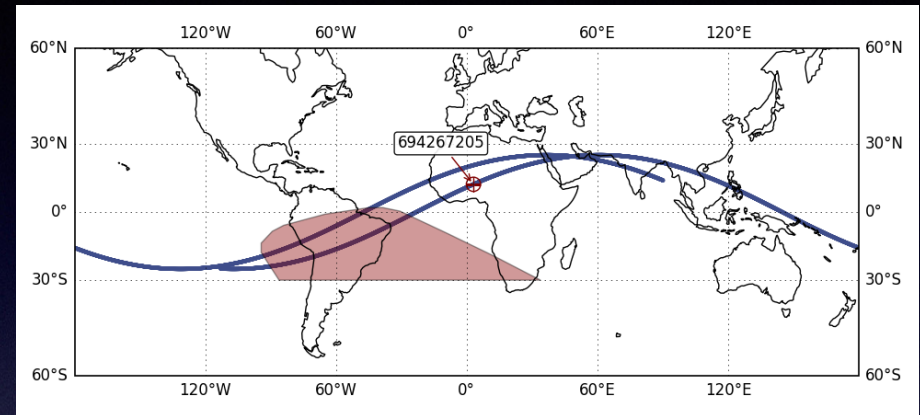
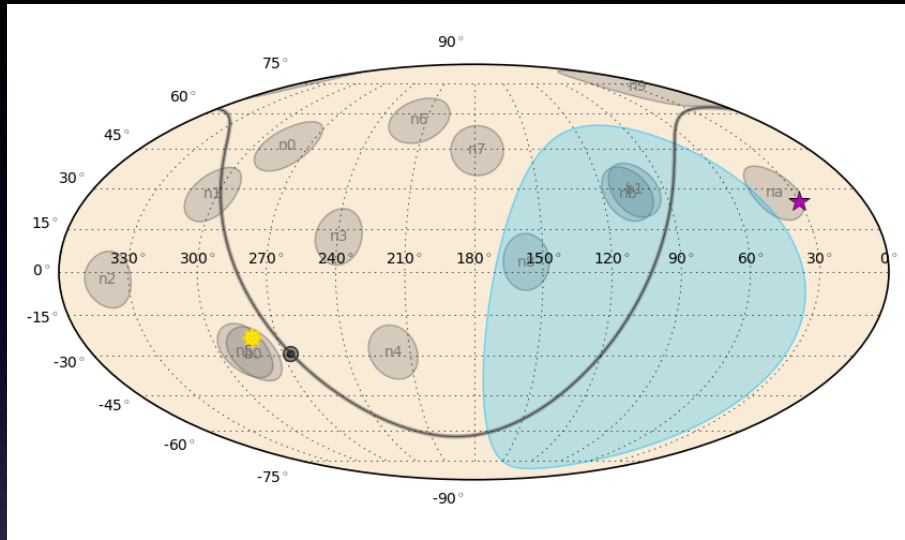
GitHub



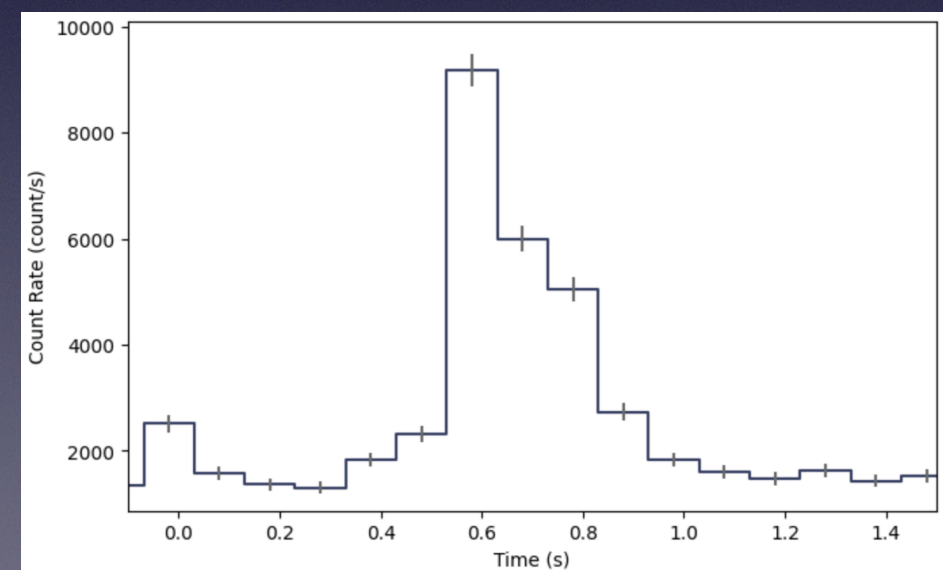
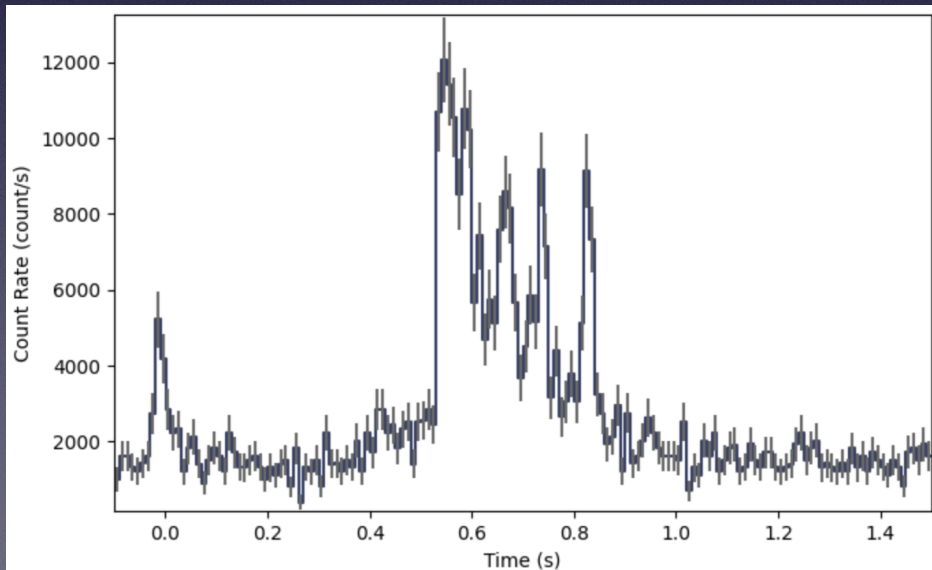
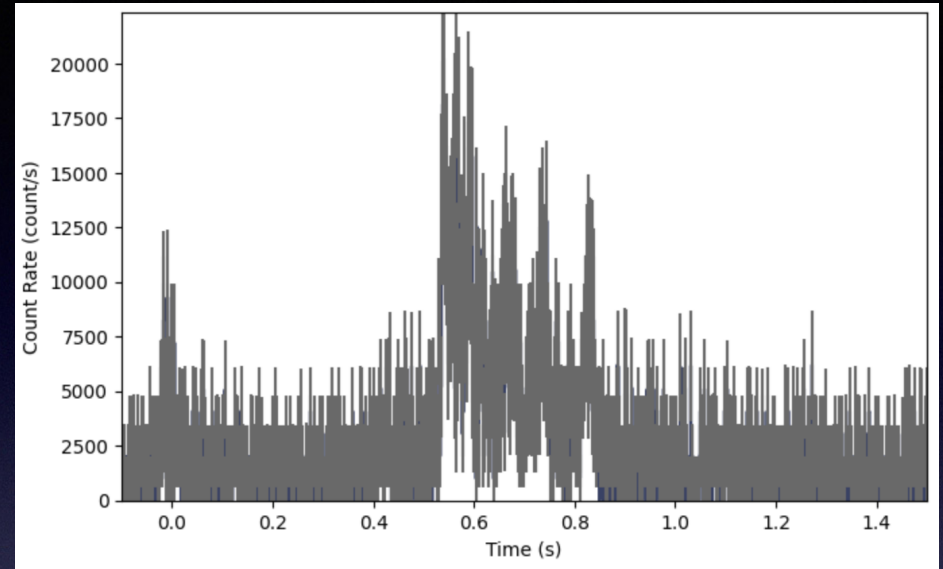
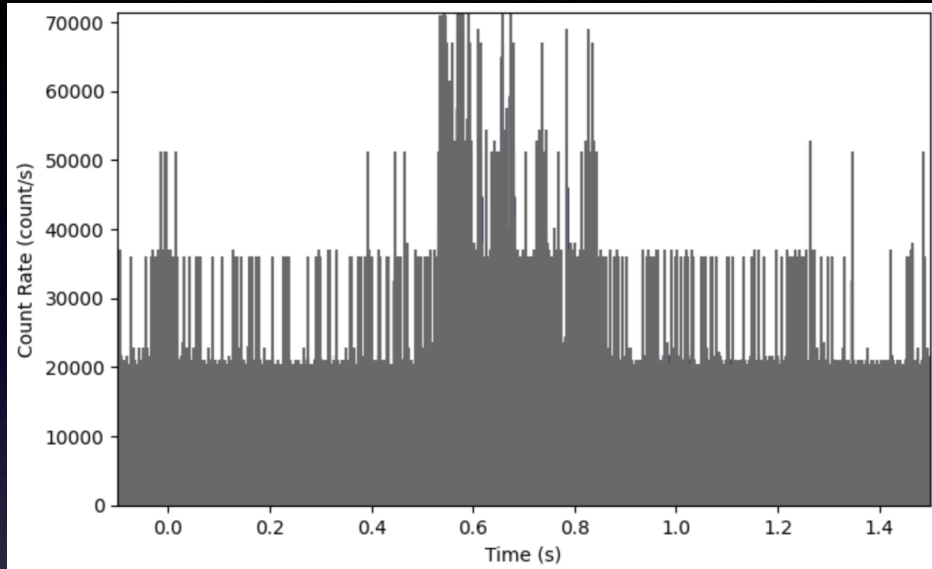
Documentation

GDT Structure

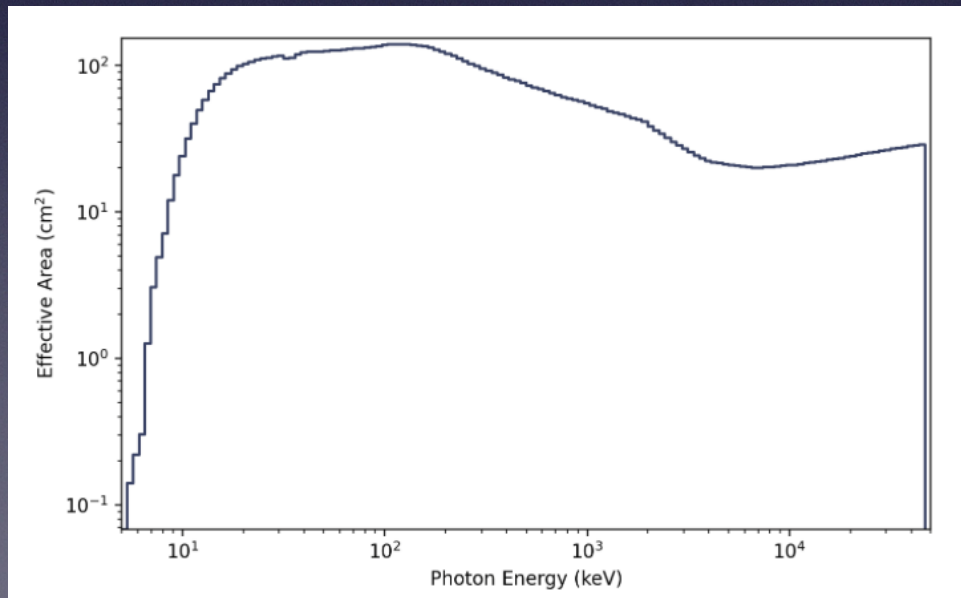
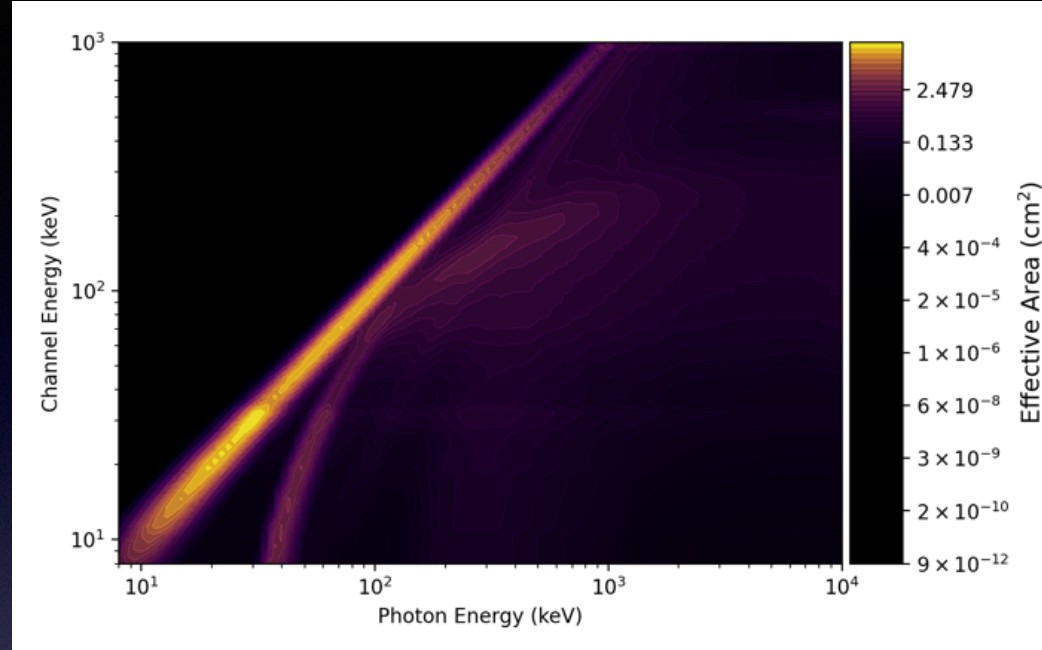




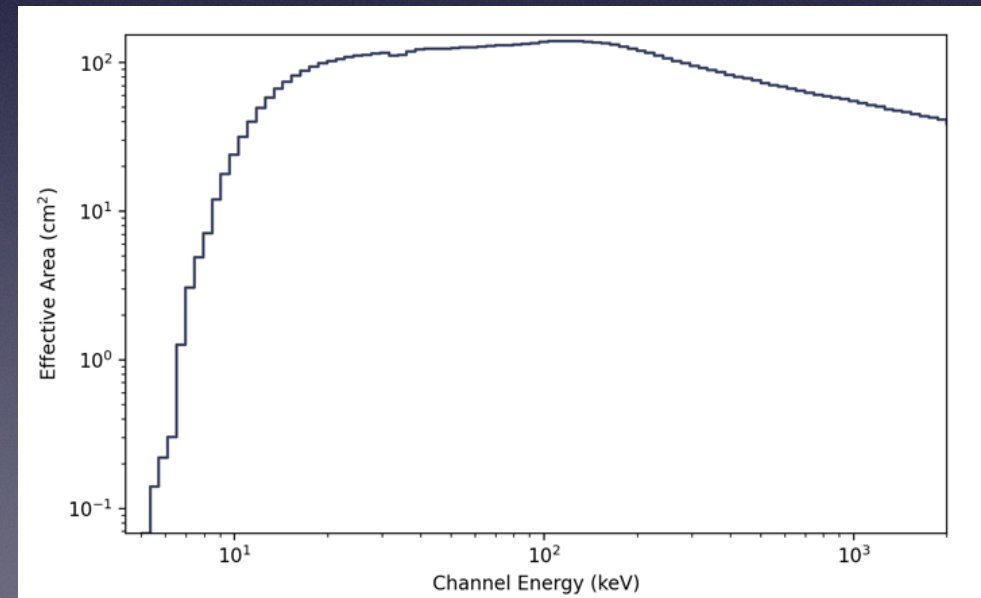
Fermi's visibility for an input multiorder LIGO skymap



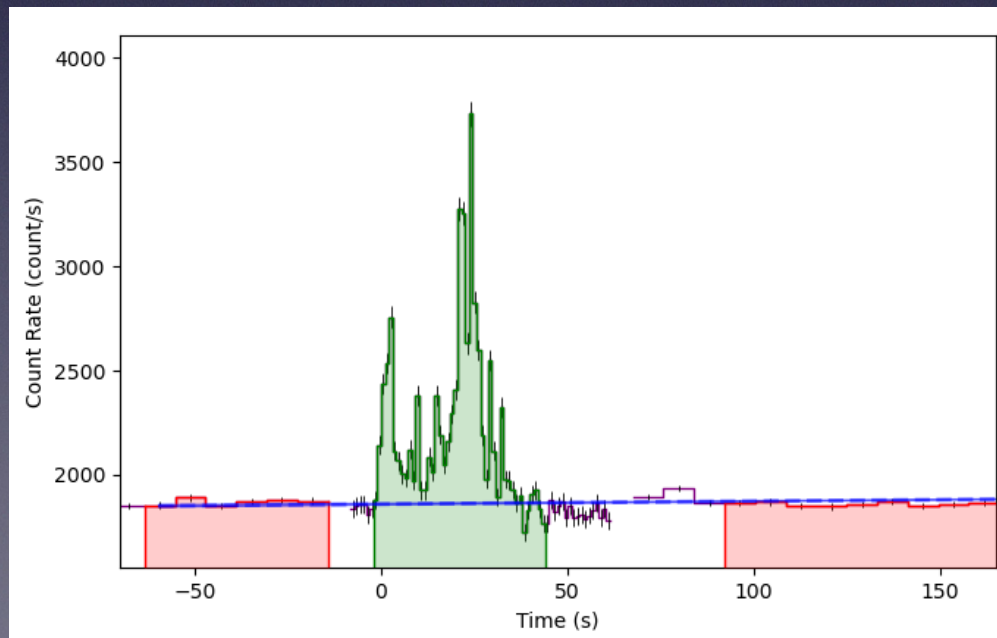
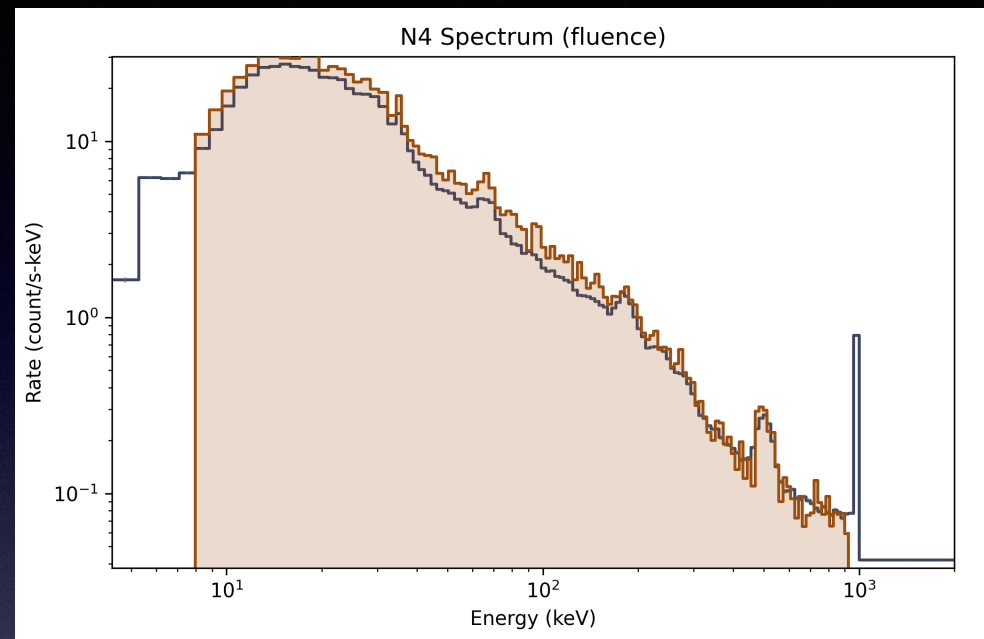
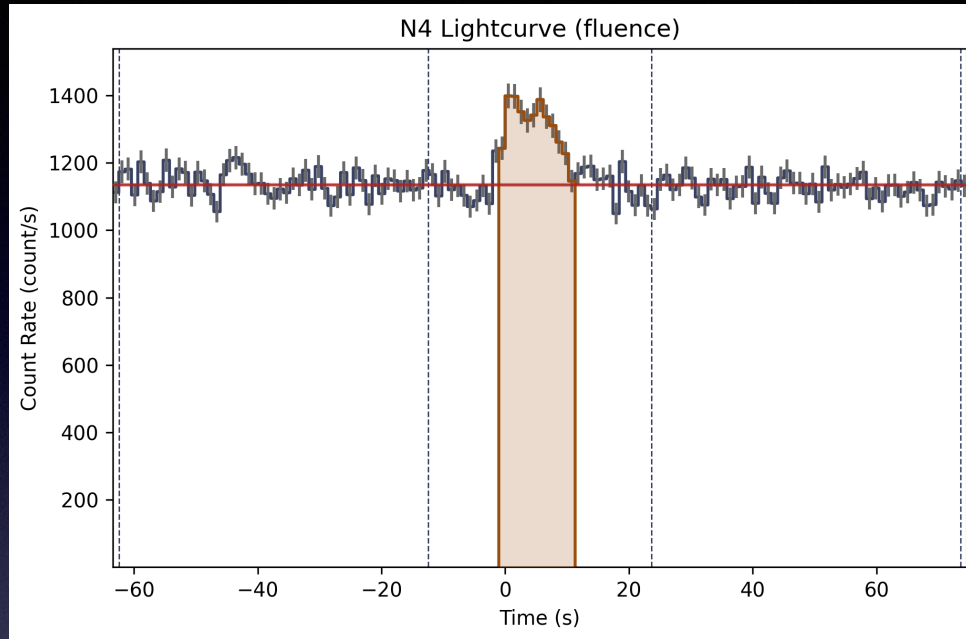
GRB 090510016



Effective area integrated over the energy channel axis

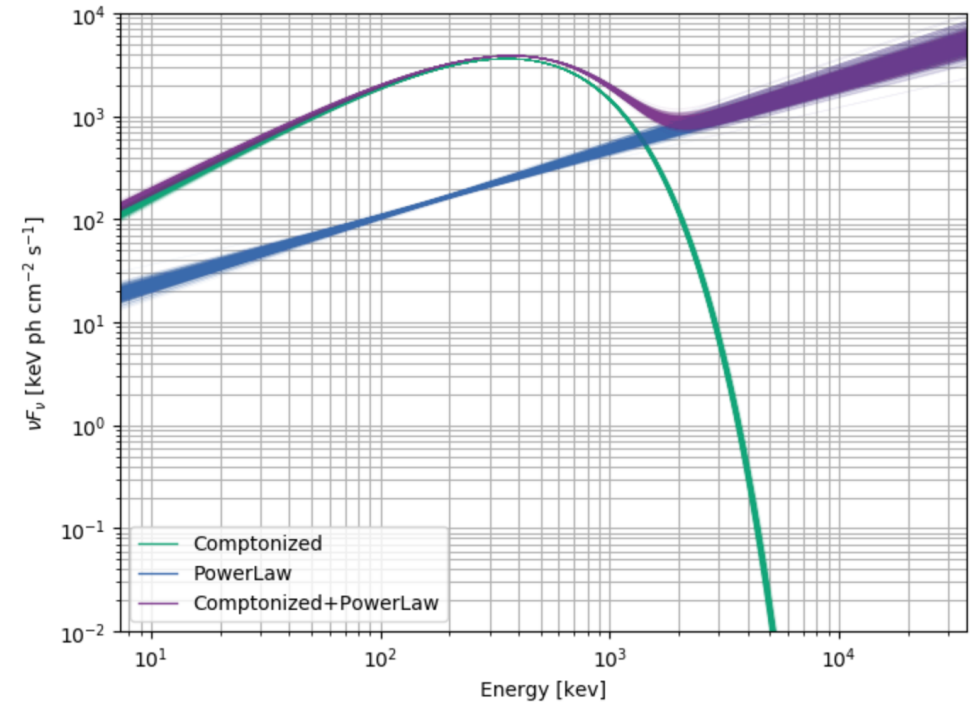
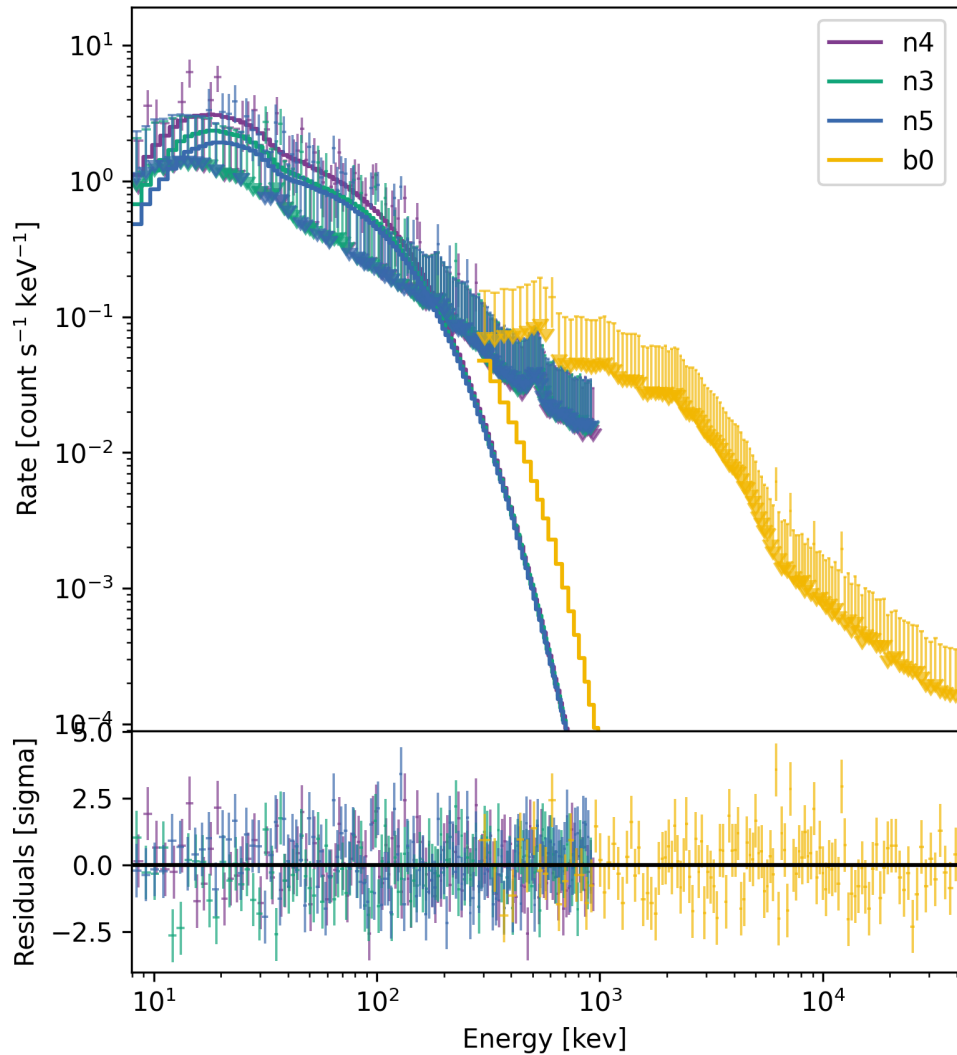


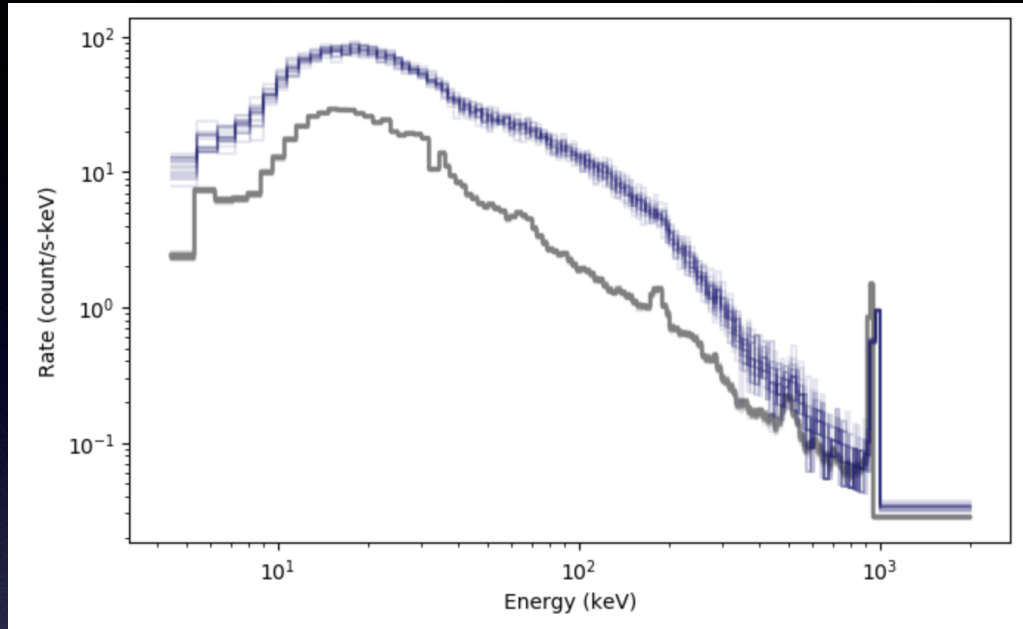
Effective area integrated over incident photon energy





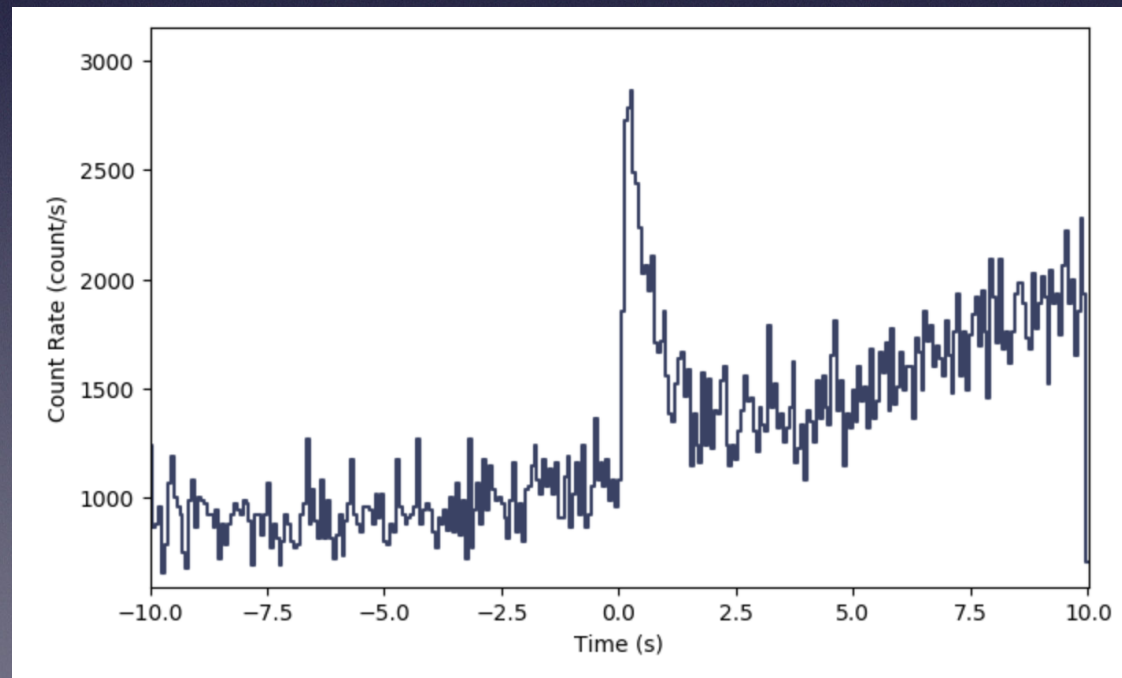
Comptonized Model

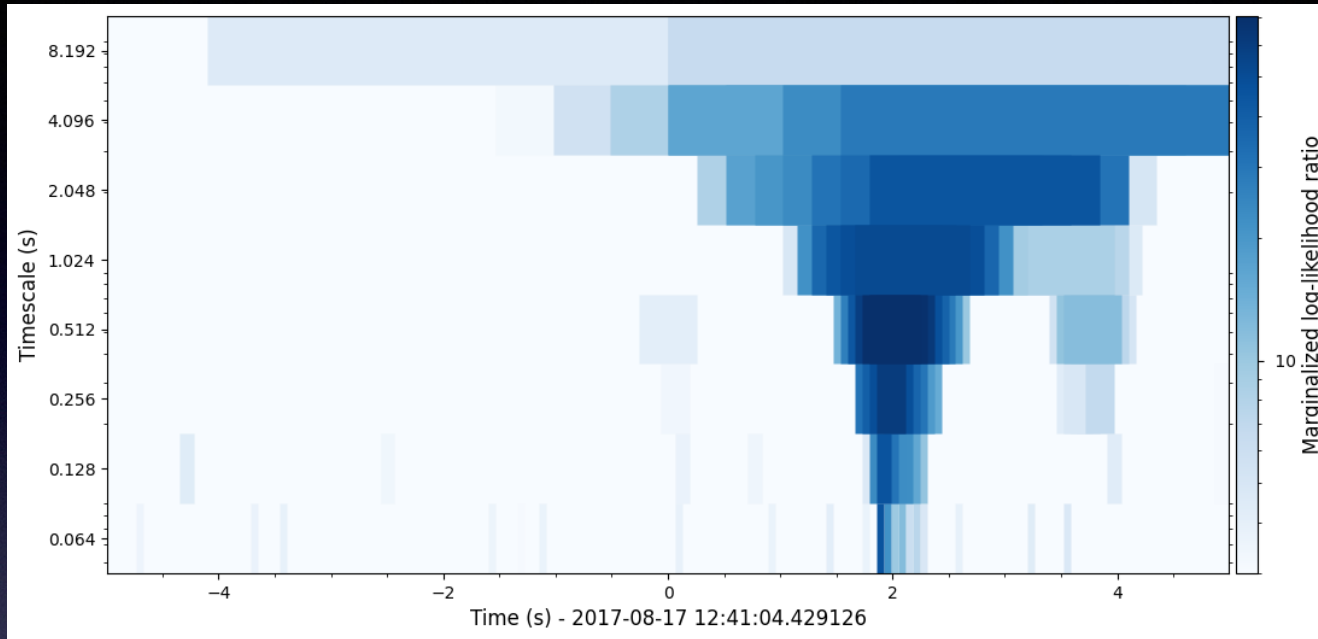




Spectral Simulations

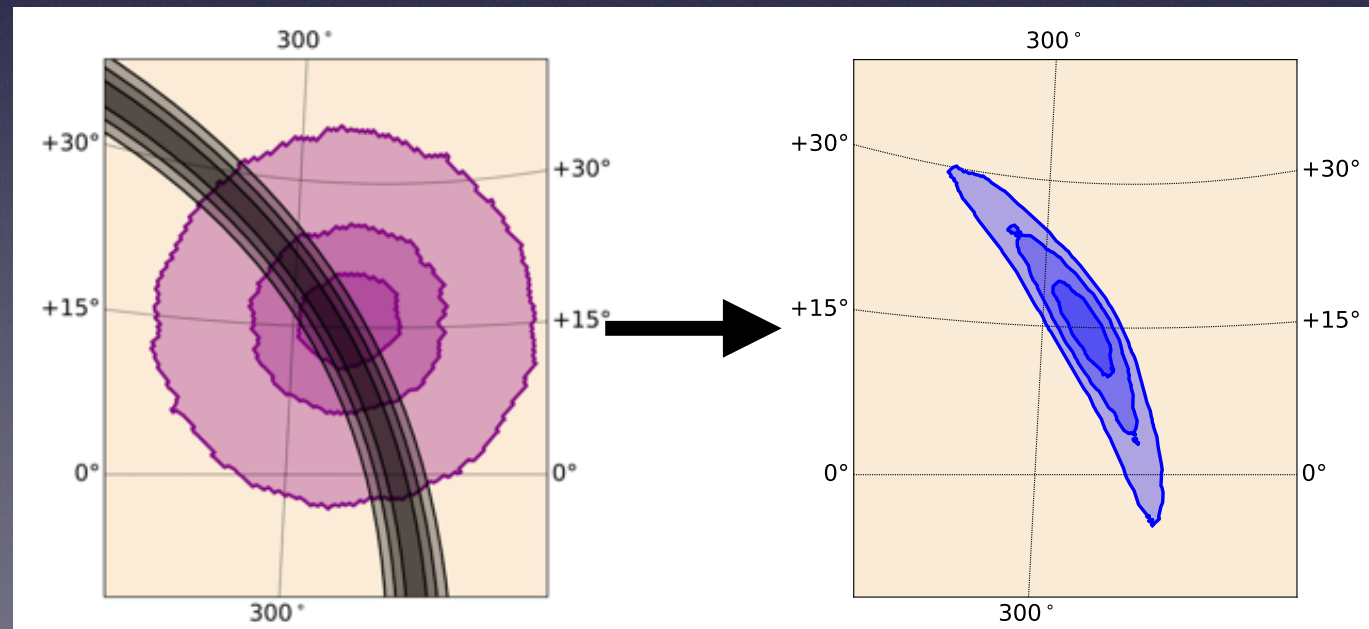
Temporal-Spectral
Simulations





Generalized
Targeted Search

Inter-Planetary
Network (IPN)
Toolkit
(Coming Soon)





Polarization ??

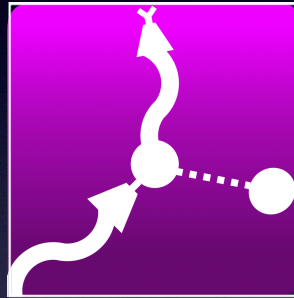


- Standard data structure
- Publicly available data
- Fundings

Thank You !!!



GitHub



GDT

Gamma-ray Data Tools



Documentation