Fermi Cycle-3 Guest Investigator Program

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Synopsis

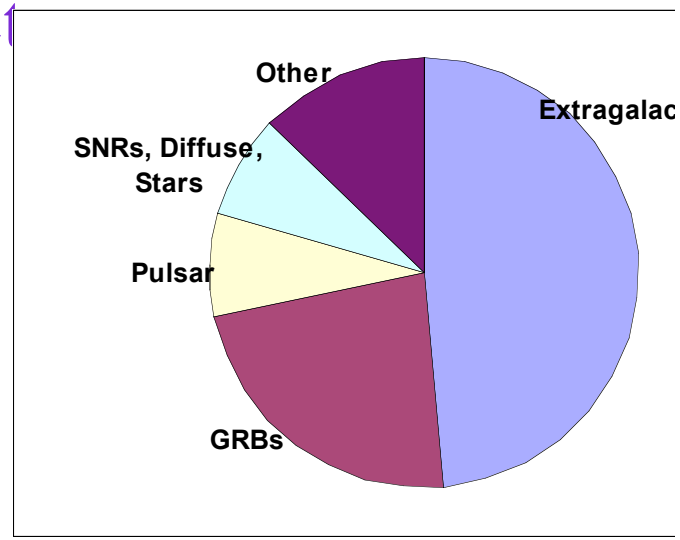
- Description of GI program
- Cycle 1 & 2 Summary
- What's new for Cycle-3
  - Implementation timeline
- Fermi SSC User Support Services
- Tips for proposers
- How to submit a proposal

Program Description

- Unique nature of the Fermi GST defines the Guest Investigator Program
  - Proposals are typically requests for grant support rather than data rights, spacecraft orbits or *ksec*
- Program open to international community
- Data analysis &/or analysis methodologies, coordinated observations, & theory
- NOAO and NRAO joint programs
- Pointed observations (ToO &/or Scheduled)
- Single year, or (~few percent) multi-year

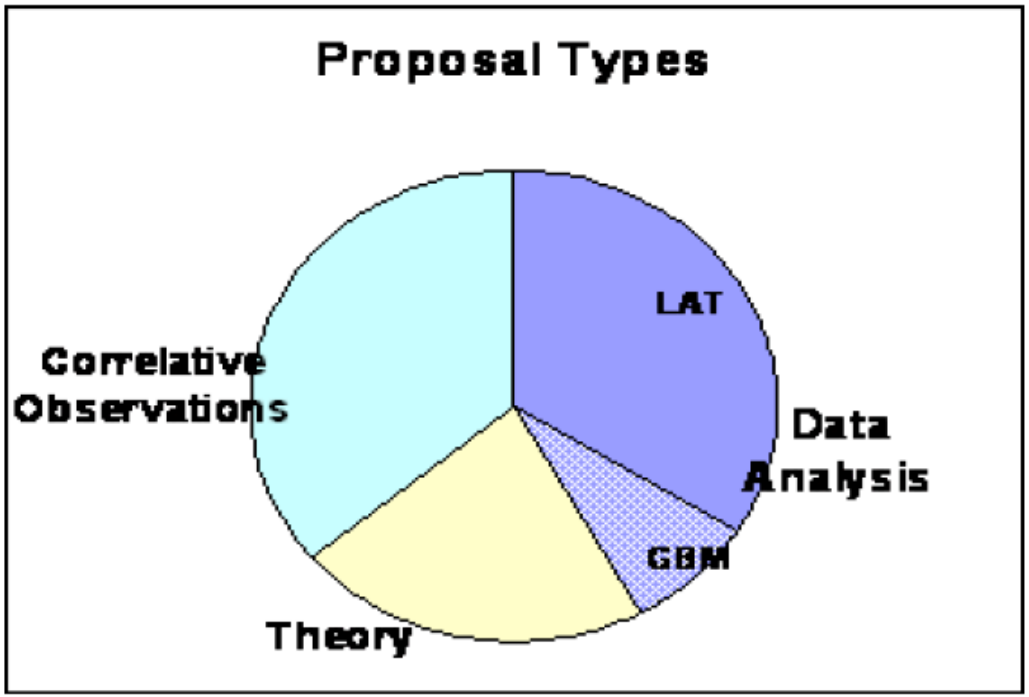
Cycle-1 Summary

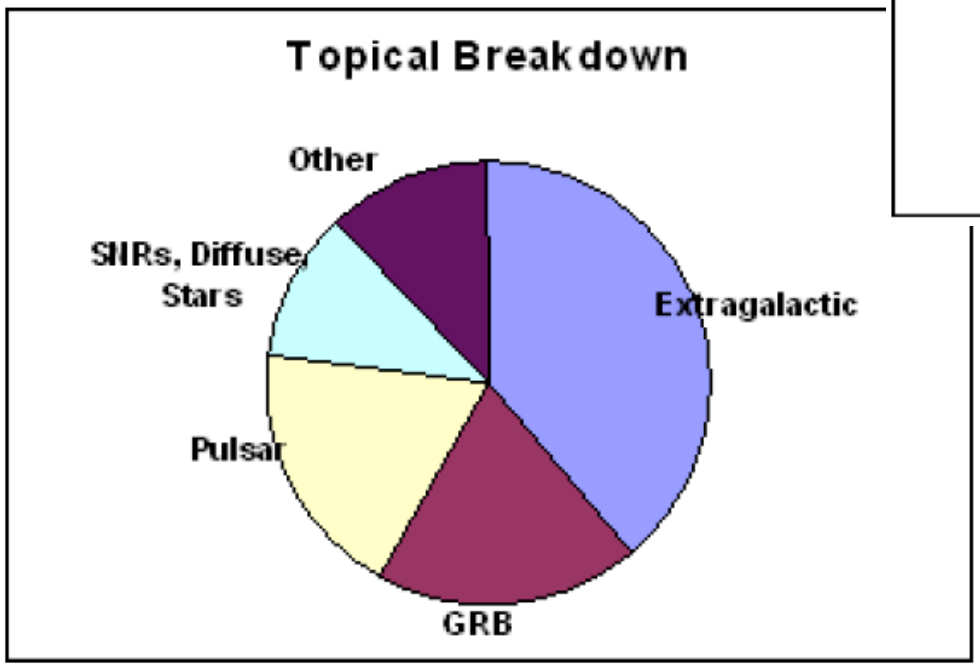
- LAT data was proprietary during year 1
  - Limited high-level product release
  - GBM data analysis, related theory, coordinated observations and analysis methodologies
- No proprietary data after 9/2009
- 167 proposals received, 44 accepted
  - Included 8 large (multi-year) projec
- Average grant $80k (~$4M total)
  - ($170k large)



Cycle-2 Summary

- LAT data became public
- Early mission science →shift in topical breakdown





Cycle-2 Program

- 199 proposals received, 80 selected
  - 79 grants
  - 8 "Progress Reports", all passed
- 3 multi-year "Large Projects" selected
  - Down from 8 selections in Cycle-1
- Average grants: $174k (multi-year) $78k (regular)
- NRAO: ~650 hours awarded
  - ~50% of proposed amount
- NOAO: under-utilized resource
  - 3 requests, 1 award (24 hrs)

Cycle-3 NRA

- Streamlines proposal types
  - Fewer categories, but no loss as far as what can be proposed
    - e.g. don't need separate LAT data analysis, GBM data analysis and data analysis methods categories
- Separate caps for US Co-I budgets
  - Consistent policy with other missions
- Guideline for large project awards reduced 8→3
- More detail in page limit, formatting guidelines
- Schedule still driven by agency budgeting cycle

Cycle-3 Timeline

Announcement (as part of ROSES 2008)	September, 2009
Release online proposal aids & documentation	November 5, 2009
Notices of Intent (optional)	November 16, 2009
Proposals Due	**February 5, 2010**
Proposal Peer Review	Late April, 2010
Stage-II (budget proposal) solicitation	May, 2010
Budget deadline, processing & grants administration	June-July, 2010
Fermi Cycle 3 Begins	Mid August, 2010

User Support: FSSC

- The FSSC is responsible for all areas of User Support:
  - Developing & maintaining a public data archive
    - Coordinated w/HEASARC
  - Maintain public distribution site for the analysis software
    - developed in collaboration with the Instrument Teams.
  - Administer Guest Investigator Program for NASA HQ
  - Providing technical and scientific support to GIs.
  - Providing the science timelines to the MOC
- The FSSC is an organization within the NASA GSFC Astrophysics Science Division
- FSSC staff includes scientists, scientific programmers, and administrative support staff

User Support: FSSC (con.)

- Web services:
  - Mission news & information,
  - NRAs & support materials
  - Online resources & support tools
  - Planning resources (mission timelines, multi-wavelength campaign logging)
- Distribution of & support science analysis SW
- Phone & e-mail technical/scientific support
- Proposal reviews, grant administration
- Reporting to Fermi Users Group

<http://fermi.gsfc.nasa.gov/ssc/>

Basic Data Policy

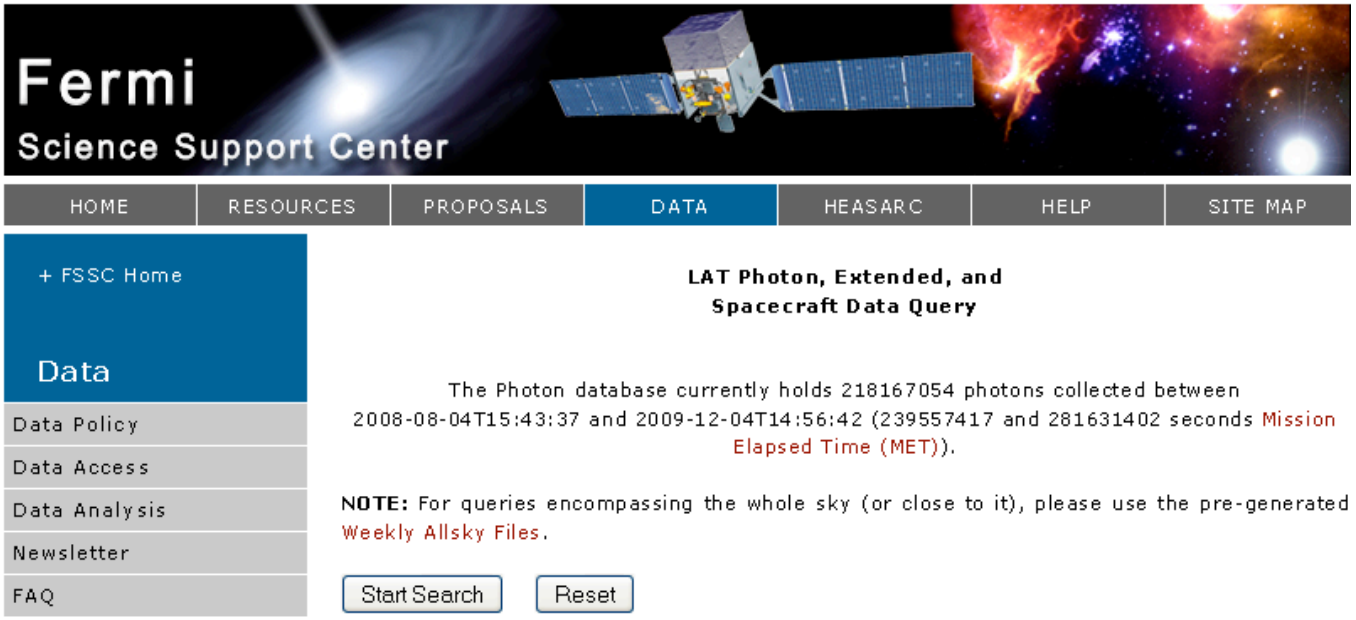
- Mission cycle 2 & beyond:
  - All Science Data Are Public As Soon As Processed
- Automated pipeline, SLAC→ FSSC
  - <2-day latency requirement, but typically <1 day

Public Data Archive

LAT data server fully operational since 8/2009.

Basic products: screened event lists, spacecraft history file.

Please read caveats, basic data selection and exploration threads



Public Data Archive

Rate of data queries:

Archive statistiscs:

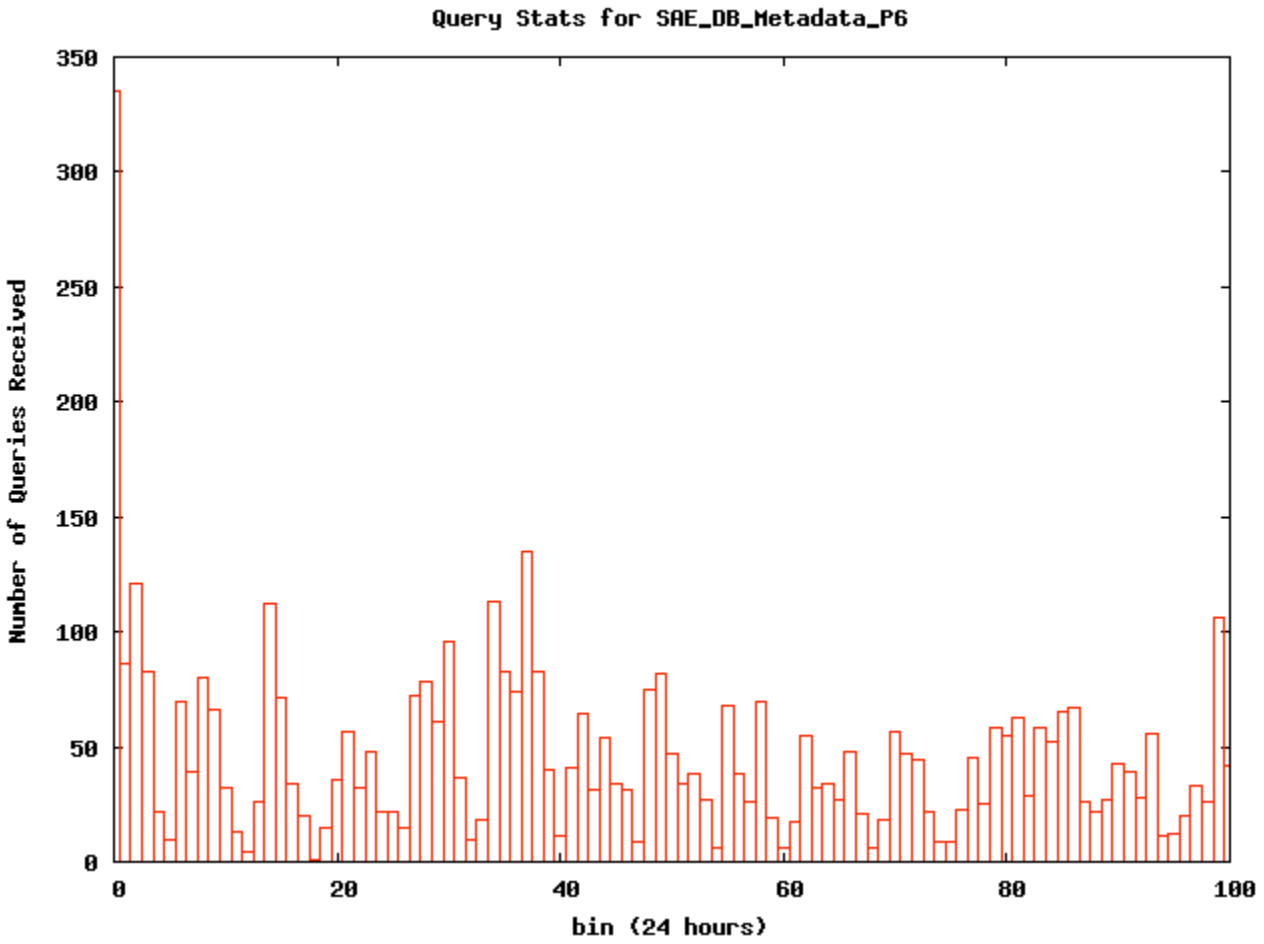
Total photons in database: 217478410 (18.8 Gb)

Total spacecraft positions in database: 1164576 (0.3Gb)

Total photons served: 13230597921 (1141.4 Gb)

Total extended photons served: 540008960 (87.0 Gb)

Total queries: 4831



Public Data Archive

Current databases include LAT lightcurves (~45 objects), GBM trigger, GRB and continuous data + pulsar ephemerides and (soon) 1-yr source catalog.

Archive — Search of FERMI and object Catalog(s)

Main Search Form > **Search Form** > Search Results > Choose Data Products

1. Please select one or more of the tables below.

Sort by a column in order: 1,2,3 Sort by column in reverse order: 3,2,1

Select: All	Description	Catalog	Data	Default Radius (arcmin)	Mission	Table Type
☑	Fermi GBM Burst Catalog	fermigbrst	Y	30	FERMI	Object
☑	Fermi GBM Trigger Catalog	fermigtrig	Y	30	FERMI	Object
☑	Fermi GBM Daily Data	fermigdays	Y	***	FERMI	Observation
☑	Fermi LAT Monitored Source List	fermilasp	N	10	FERMI	Object
☑	Fermi LAT Bright Source List	fermilbsl	N	30	FERMI	Object

2. Do you want to change any of your current query selections?

Databases are implemented under HEASARC Browse. &/or simple www interface.

Public Data Archive: LAT LCs

HOME | RESOURCES | PROPOSALS | DATA | HEASARC | HELP | SI

+ FSSC Home

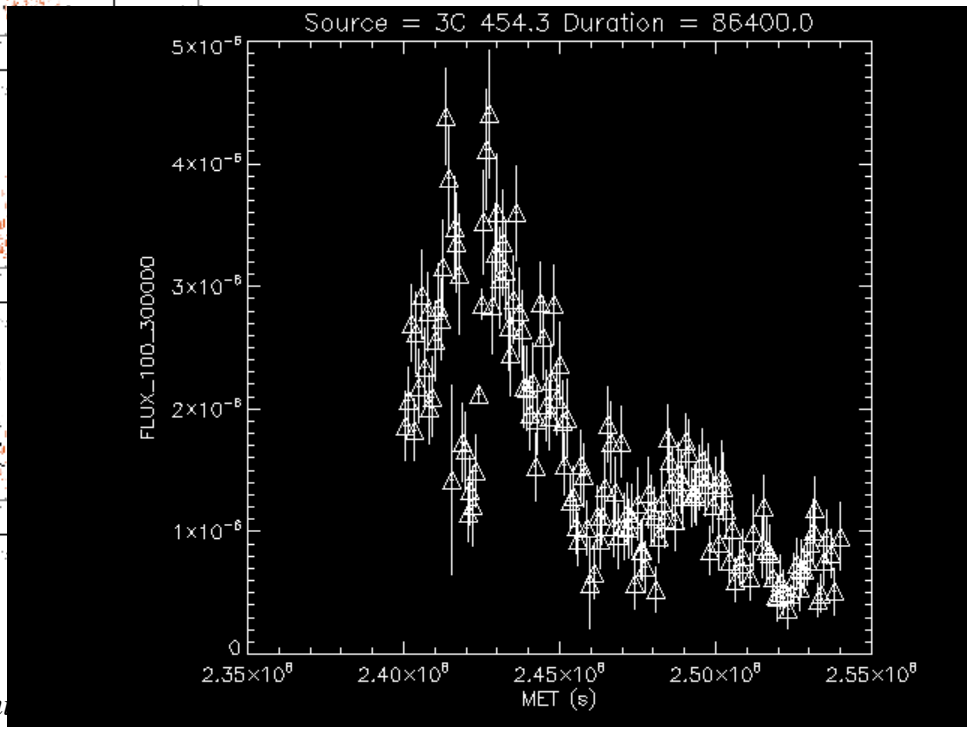
Data

Data Policy
Data Access
+ LAT Data
+ GBM Data
Data Analysis
Newsletter
FAQ

Monitored Source List Light Curves

Source	Daily LC	Weekly
4C 31.03 (RA = 18.2100, Dec = 32.1380) » Daily Light Curve » Daily Light Curve Fits File » Weekly Light Curve » Weekly Light Curve Fits File		
0208-512 (RA = 32.6930, Dec = -51.0170) » Daily Light Curve » Daily Light Curve Fits File » Weekly Light Curve » Weekly Light Curve Fits File		
3C 66A (RA = 35.6650, Dec = 43.0350) » Daily Light Curve » Daily Light Curve Fits File » Weekly Light Curve » Weekly Light Curve Fits File		
0235+164		

WWW interface to LAT lightcurves



GBM: Database Access

GBM Burst catalog: contains ~300 bursts. Also trigger catalog w/solar flares (more to come..), SGR and TGFs

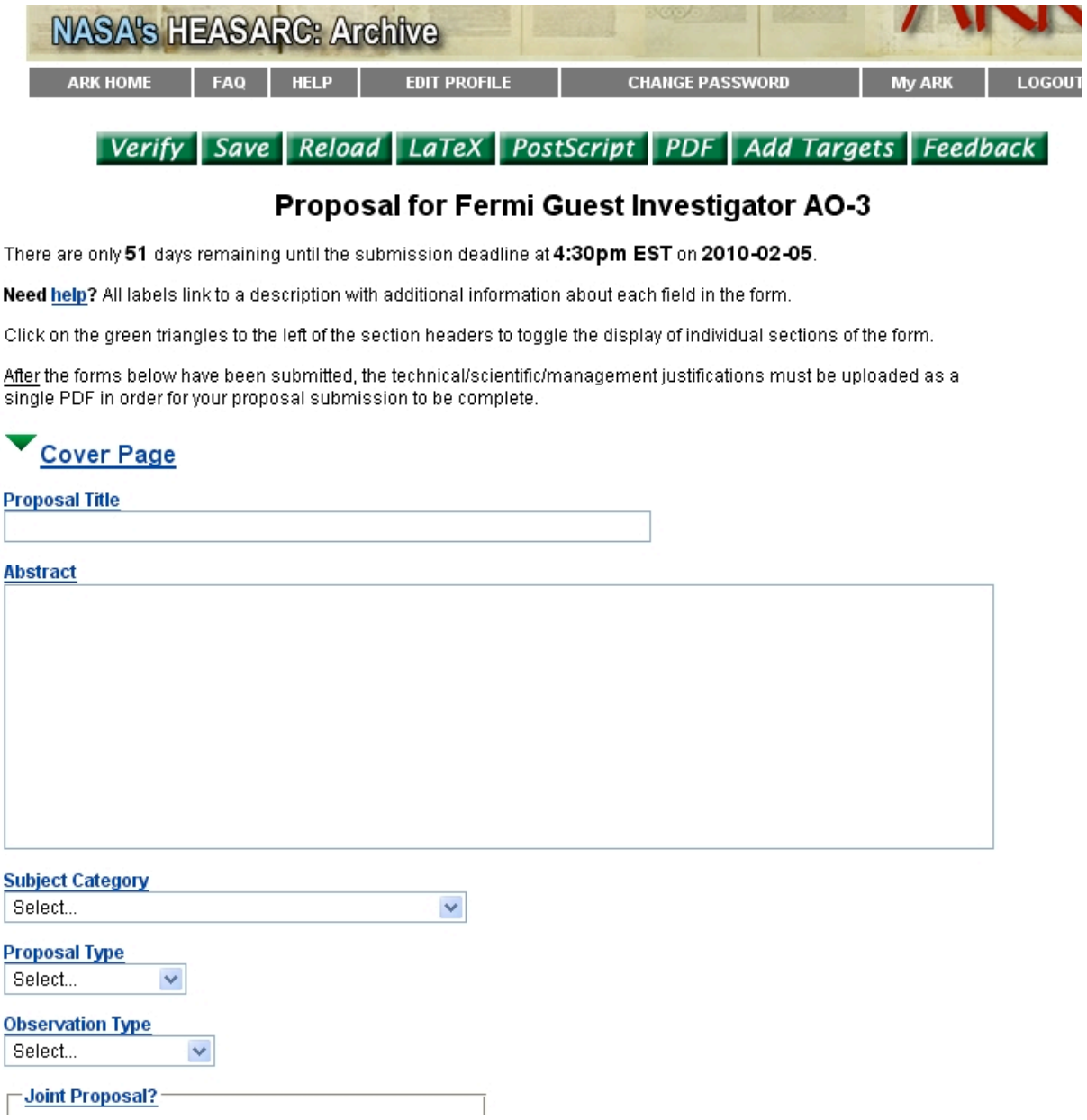
Fermi GBM Burst Catalog (fermigbrst) Bulletin README

Select All	Services	version	trigger name	name	ra	dec	time	end time	trigger time	reliability
	O R N S D H	0	bn080912360	GRB080912360	02 04 04.0	-06 39 00	2008-09-12 08:36:41.01	2008-09-12 08:46:56.01	2008-09-12 08:38:55.02	0.3647
	O R N S D H	0	bn080916009	GRB080916009	07 18 16.0	-57 47 00	2008-09-16 00:10:30.98	2008-09-16 00:20:45.97	2008-09-16 00:12:44.99	0.9373
	O R N S D H	0	bn080916406	GRB080916406	23 05 32.0	-61 51 00	2008-09-16 09:43:03.96	2008-09-16 09:53:18.01	2008-09-16 09:45:17.97	0.4824
	O R N S D H	0	bn080919790	GRB080919790	13 50 28.0	+78 09 00	2008-09-19 18:55:21.99	2008-09-19 19:05:36.99	2008-09-19 18:57:34.96	0.5686
	O R N S D H	0	bn080920268	GRB080920268	08 19 16.0	+00 06 00	2008-09-20 06:23:34.97	2008-09-20 06:33:49.97	2008-09-20 06:25:48.03	0.8353
	O R N S D H	0	bn080924766	GRB080924766	05 17 36.0	+33 58 00	2008-09-24 18:20:24.98	2008-09-24 18:30:30.99	2008-09-24 18:22:35.96	0.3569
	O R N S D H	1	bn080925775	GRB080925775	06 27 04.0	+21 11 00	2008-09-25 18:33:40.98	2008-09-25 18:43:55.03	2008-09-25 18:35:54.99	0.5529
	O R N S D H	0	bn080927480	GRB080927480	03 20 32.0	+38 10 00	2008-09-27 11:28:17.04	2008-09-27 11:38:31.00	2008-09-27 11:30:32.00	0.7098
	O R N S D H	2	bn080928628	GRB080928628	06 54 20.0	-65 01 00	2008-09-28 15:02:43.04	2008-09-28 15:12:58.03	2008-09-28 15:04:56.01	0.4000
	O R N S D H	0	bn081003644	GRB081003644	17 55 44.0	+26 01 00	2008-10-03 15:25:06.04	2008-10-03 15:35:13.00	2008-10-03 15:27:17.02	0.4941
	O R N S D H	1	bn081003779	GRB081003779	14 24 12.0	-72 08 00	2008-10-03 18:39:27.96	2008-10-03 18:49:33.97	2008-10-03 18:41:39.03	0.5216
	O R N S D H	0	bn081006604	GRB081006604	09 32 32.0	-64 50 00	2008-10-06 14:27:18.98	2008-10-06 14:31:57.01	2008-10-06 14:29:34.02	0.9137
	O R N S D H	0	bn081008832	GRB081008832	19 47 36.0	-46 12 00	2008-10-08 19:55:50.02	2008-10-08 20:05:56.03	2008-10-08 19:58:01.00	0.8118
	O R N S D H	1	bn081009140	GRB081009140	16 44 19.2	+17 12 36	2008-10-09 03:18:45.01	2008-10-09 03:29:00.01	2008-10-09 03:20:57.98	0.6902
	O R N S D H	0	bn081009690	GRB081009690	04 45 56.0	+16 22 00	2008-10-09 16:31:18.97	2008-10-09 16:41:33.01	2008-10-09 16:33:37.04	0.5137
	O R N S D H	2	bn081012045	GRB081012045	05 14 45.6	-00 39 36	2008-10-12 01:03:08.04	2008-10-12 01:13:21.99	2008-10-12 01:05:22.04	1.0000

Submitting a proposal

- Stage-1 (scientific) proposal submission is straight forward
  - HEASARC ARK/RPS facility
- No paper submission or institutional signatures required at this stage
- Web-based form, self documented, verification feature
- 4- and 6-page limits for regular/large proposals
  - Science justification as PDF attachment
- 1-page technical appendix for joint NOAO or NRAO programs
- Stage-2 proposal managed by NASA HQ/NRESS
  - Must use NSPIRES facility

Submitting a proposal



ARK/RPS page for Fermi GI program. Straight forward, internally documented web form. Sub-menus for NOAO, NRAO requests. File input accommodated for large target lists. Verification feature & upload function.

A Few Tips

- NOAO, and to a lesser extent, NRAO have been undersubscribed resources
- If you do ask for time on those facilities, be thorough in detailing your observation plans
- Don't propose for a multi-year program unless you can REALLY justify it
- Don't ask for pointed observations unless you REALLY understand the technical issues

A Few Tips (con.)

- Don't cheat on the format guidelines
  - Tiny margins and small print annoy reviewers
- Typically cited peer-review "weakness"
  - Relevance to Fermi not well demonstrated
- Don't promise resources – e.g. supporting observations facilities – that you don't really have
- There is cycle-to-cycle 'institutional' memory
  - If you re-propose unsucessful proposal, show that you addressed criticisms
  - If you propose to continue previously approved program, show that progress was made

Summary

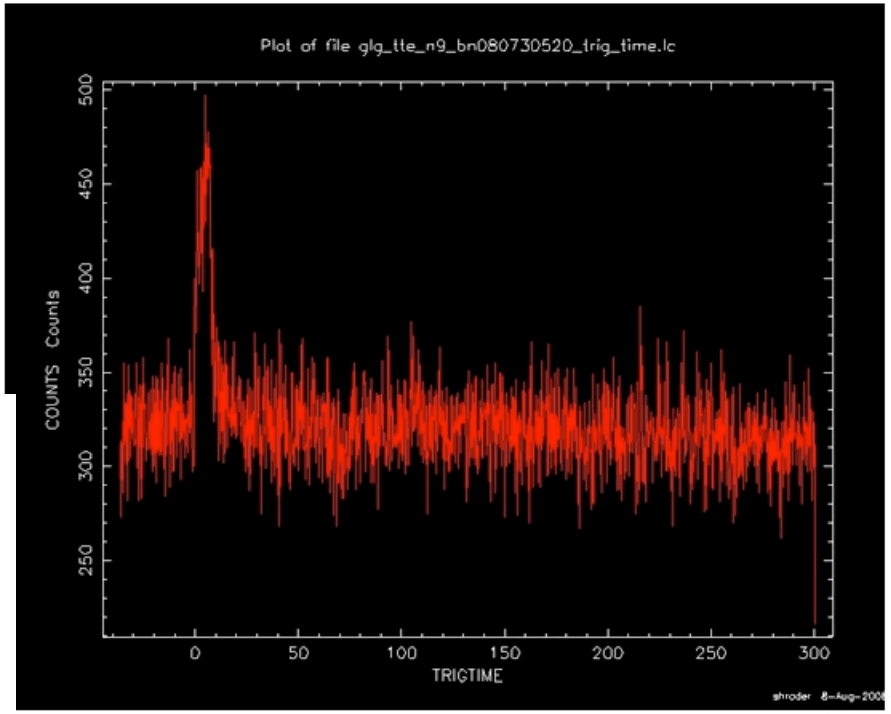
- Cycle-3 deadline is rapidly approaching!
  - February 5, 2010
- Online resources available
  - NRA, detailed proposal instructions
  - Hierarchical documentation set
- Source list, 1-year catalog (soon)
- Science Analysis Tools & Data available
- Expanded opportunities
  - no proprietary data for Cycle-2 & beyond
- We look forward to your participation!

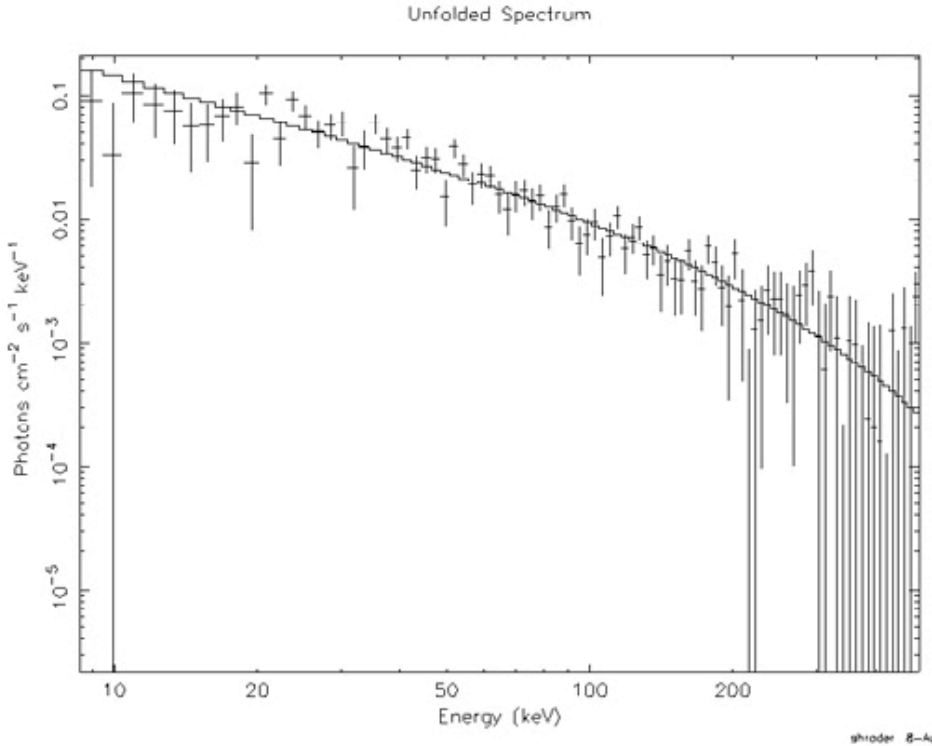
Extra Slides

- Extra slides ….

GBM Analysis

GBM data can be analyzed using a subset of the Fermi Science tools suite + HEASARC *FTOOLS & XSPEC* packages.





Alternative, GBM-specific software to be released from MSFC in near future

Cycle-2: A few Details

- As for Cycle 1, opportunity for joint NOAO and NRAO facility programs
  - Up to ~10% of time on various NRAO facilities
  - ~1-5% on various NOAO telescopes
  - Refer to FSSC web pages for details of agreement
- Two stage proposal process
  - Stage 1 scientific evaluation; ARK/RPS submission
  - Stage 2 budget proposal: NSPIRES
- Stage 1 proposal form requires proposer supplied budget cap, + absolute ceilings ($100k & $200k) imposed by NRA

New for Cycle-2

- Anticipate ~2X increase in participation;
  - ~$8M grant support
- LAT data analysis is likely to be the predominant mode of participation
- Possible to request pointed observation
  - Scheduled &/or ToO (likely to be limited)
- Instrument performance established
- Bright Source List: resource to proposers
  - >10σ significance list, released Feb 9
  - Instrument team generates all-sky catalog after year 1
- Software suite available
  - Simulation capability
  - Assess analysis capabilities

LAT GRB Summary Info

Fermi LAT GRB Table

Fermi SSC Home » LAT GRB Search

- **4** bursts met your search criteria.
- Database last updated: Monday, December 22, 2008, 14:55:19 EST
- Download this table as a tab-delimited text file: grb_table_1233073601.txt

GRB	Time [UT]	Trigger Number	LAT RA (J2000)	LAT Dec (J2000)	LAT Counts	LAT Burst Advocate	GBM RA (J2000)	GBM Dec (J2000)	GBM Fluence [10^{-5} erg/cm^2/s]	G
081215A	18:48:36.85	251059717	TBD 00:00:00.0	TBD 00:00:00.0	TBD	Julie McEnery	135.0 09:00:00.0	53.8 53:48:00.0	5.44	68.9
081024B	21:22:41	246576161	322.9 21:31:36.0	21.204 21:12:14.4	n/a	Nicola Omodei	n/a	n/a	0.034	4.2
080916C	00:12:45	243216766	119.88 07:59:31.2	-56.59 56:35:24.0	n/a		121.8 08:07:12.0	-61.3 61:18:00.0	19	n/a
080825C	14:13:48	241366429	233.96 15:35:50.4	-4.72 04:43:12.0	n/a		232.2 15:28:48.0	-4.9 04:54:00.0	2.4	n/a

* All numbers are preliminary and may be revised as we do reprocessing (s/w improvements, thinking/experience improvements). Users are encouraged to view the ac

Fermi SSC Home » LAT GRB Search

Summary information –trigger time, sky position, net counts, GBM fluence – is available on line to facilitate GRB researchers

Public Data Archive: GBM

Burst Data Products

- Time-Tagged Events (TTE)— counts in 128 energy channels from each detector
- Background Spectra—estimated background spectra for the period of the burst
- Detector Response Matrices (DRMs)—the detector response matrix
- Catalog entry—summary info: duration, fluence, lightcurves , spectral params
- CTIME and CSPEC —series of spectra w/different temporal & spectral resolution
- TRIGDAT—burst alert telemetry, information downlinked after a burst.

Continuous Data Products

- CTIME and CSPEC— series of spectra w/different temporal & spectral resolution
- Calibration and Housekeeping Files