GLAST - TeV Meeting: Collaborative efforts:

- MW campaigns:
  - Summary of planned campaigns, ToO thresholds, ...
  - Blazar monitoring and alerts
- Proposals to be submitted to major observatories
  (are we willing to submit joint proposals for greater chances of success?)

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Some GeV - TeV science questions

– **What are the dominant AGN emission mechanisms, and *where* is the AGN gamma-ray emission originating?**
  - **Temporal behavior TeV:GeV:X: Optical:radio**

– **What is the gamma-ray horizon vs energy (EBL studies)?**
  - **Disentangling EBL effects from blazar evolution effects**

– **what kinds of Galactic sources await us?**
  - **PWN dynamics and populations, binaries & microquasars, TeV UNIDs (!),**
  - **What is the origin of the cosmic rays, finally?**

– **Are there signals of new physics?**
  - **CDM and hunting for clumping**
  - **Lorentz invariance violation effects**
  - **Challenge is to exclude all astrophysics effects first!**

– **What are the energy budget and afterglow profiles of Gamma-Ray Bursts, and what are they telling us?**

– **MOST IMPORTANT: what new questions will the data present?**

…… These could find the answers working together

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GLAST-LAT & Blazars

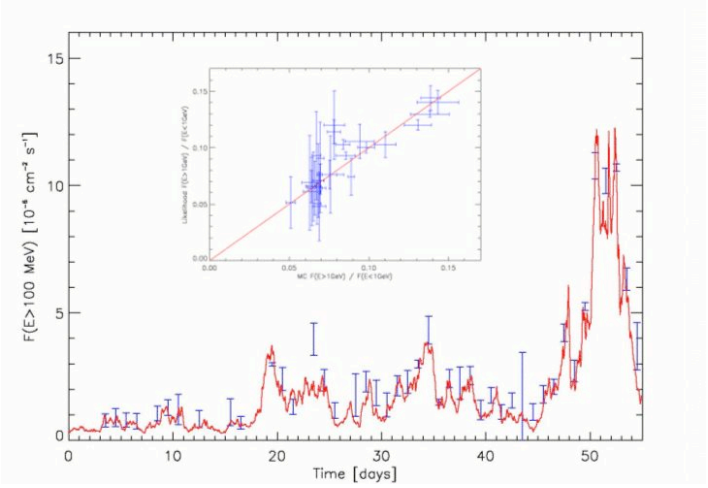
- Coverage of about 20% of the sky at any instant with good sensitivity
- The entire sky will be observed every 3 hours
- Uniform exposure in survey mode
- Broad energy range (20 MeV – 300 GeV)

❑Daily sampled LC can be easily obtained for most of the bright blazars → Variability on timescales >= 1 day can be well investigated.

❑Intra-day (hours) variations can be detected for the brightest gamma-ray blazars.

❑ Detailed spectral variation analysis and intrabands delays studies may be performed

❑ Multiepoch SEDs can be obtained.



Simulation of a daily light curve as will be measured by the LAT for 3C279 . The inset displays the true F(E>1 GeV)/F(E<1 GeV) hardness ratios versus the measured ones.

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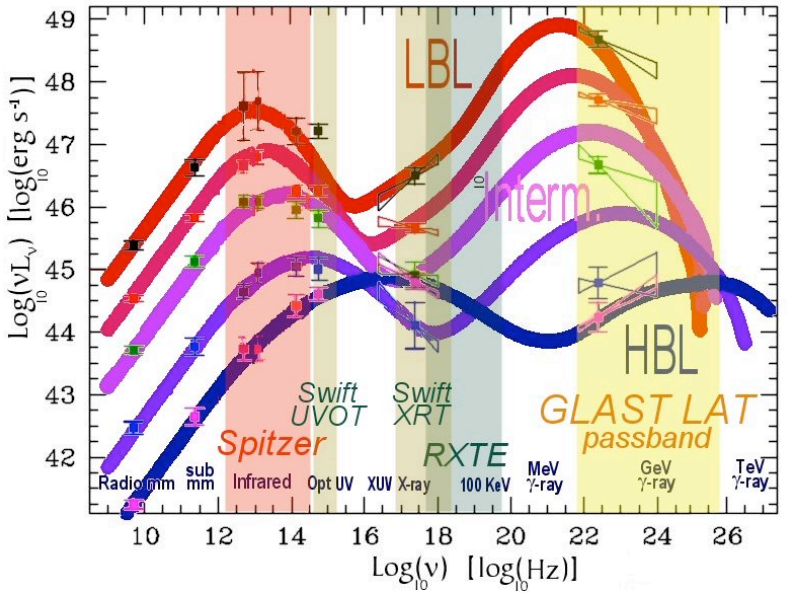
The AGN Science Group MW Plan for the first year

- **Target of Opportunity (ToO)**
  - When a source will be in a bright state in gamma ray
- **Planned Intensive Campaign (PIC, months)**
  - On a few selected sources
- **Planned Long-Term Campaign (PLTC , >=1 year)**
  - On a sample of selected sources
- **Ad-hoc Intensive Campaign: (AIC)**
  - e.g. the ongoing 3C 454.3 MW campaign



Activities based on the AGN SG Science Goals Document in coordination with the LAT MW Group

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ToO Campaigns

http://glast.gsfc.nasa.gov/ssc/data/policy/LAT_Monitored_Sources.html

0208-512	3EGJ0210-5055
0235+164	3EGJ0237+1635
PKS 0528+134	3EGJ0530+1323
PKS 0716+714	3EGJ0721+7120
0827+243	3EGJ0829+2413
OJ 287	3EGJ0853+1941
Mrk 421	3EGJ1104+3809
W Com	3EGJ1222+2841
3C 273	3EGJ1229+0210
3C 279	3EGJ1255-0549
1406-076	3EGJ1409-0745
H 1426+428	NA
1510-089	3EGJ1512-0849
PKS 1622-297	3EGJ1625-2955
1633+383	3EGJ1635+3813
Mrk 501	NA
NRAO 530	3EGJ1733-1313
1ES 1959+650	NA
PKS 2155-304	3EG2158-3023
BL_Lacertae	3EGJ2202+4217
3C 454.3	3EGJ2254+1601
1ES 2344+514	NA

- The Automatic Science Processing (ASP) tool will analize the LAT data on daily and weekly time scales.
- Data will be made public for about 20 of these monitored sources
- For all other sources an alert will issue when a flare over 2×10^{-6} ph cm^{-2} s^{-1} will be observed
- Fast communication of a flaring event (Web, Atel, e-mail)
- Alerts on sources below the DRP theshold will be given on a best effort basis
- In 1 yr of LAT, we expect ~24 sources flaring over 2×10^{-6} in the LAT field of view
- A LAT- AGN Flare Advocate will be available to coordinate LAT activities on a flaring source

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MW – Planned Intensive Campaings (1-3 months)

Source Name	Epoch (mm,yyyy)	Campaign Manager
PKS 0528+134	02/11,2008	B. Lott
3C 279	01,2009	G. Madejski
3C 273	ToO	J. Chiang
Mrk 501	Ongoing	D. Paneque
1ES 1959+650	05-10,2008	
Mrk 421	03-05,2008	
PKS 2155-304	07- 08,2008	B. Giebels
BL Lacertae	08-09,2008	G. Tosti

In coll. with HESS

Other Sources of interest for MW-PIC

PKS 0735+178 , PKS 0537- 441, AO 0235+164, OJ 287, PKS 1510-08
S5 0716+714, W Com (ON 231), 3C 66A, 3C 454.3

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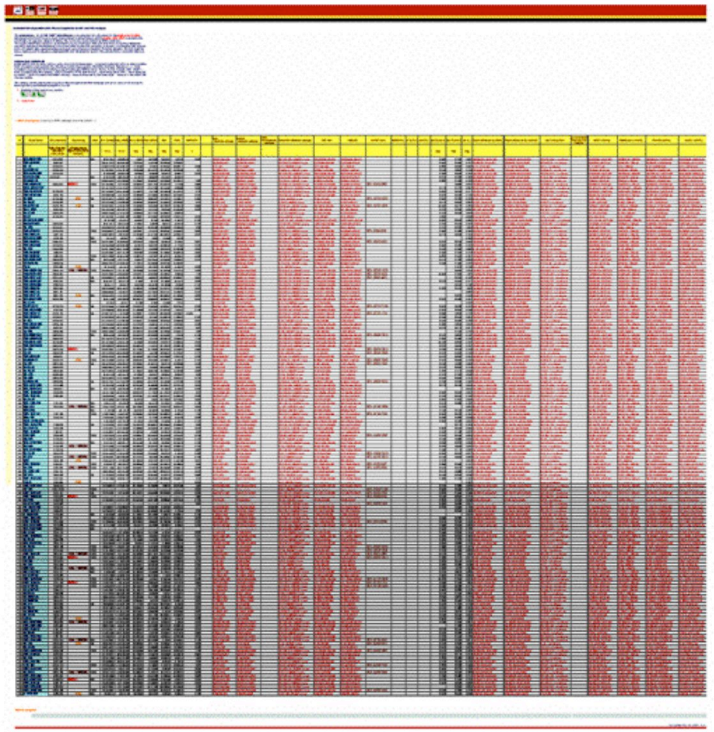
Long-Term MW Campaign: Bright sources

GLAST always observes all blazars in the sky: …..waiting for MW all Sky Monitors

A public web-page with a table of 206 "VIP" AGN/blazar targets for GLAST and MW analysis:
`http://glastweb.pg.infn.it/blazar/`

- Bright AGN/blazars assembled trying to collect basic data with direct links to existing databases (avoiding duplication/obsolescence).
- This web-table can be useful to **plan long term MW campaign**, to select input sources for science **Proposals to MW facilities** (other satellites, ground-based obs.), to perform simultaneous MW analysis joint with the GLAST data, spectral-temporal analysis/comparison based on long-term historical datasets, etc.
- **It is also the starting point of dedicated MW blazars database for GLAST** and for ASP monitoring



of course it will be revised when GLAST will be is in orbit

Please check the list and send us your comment, suggestions, sources

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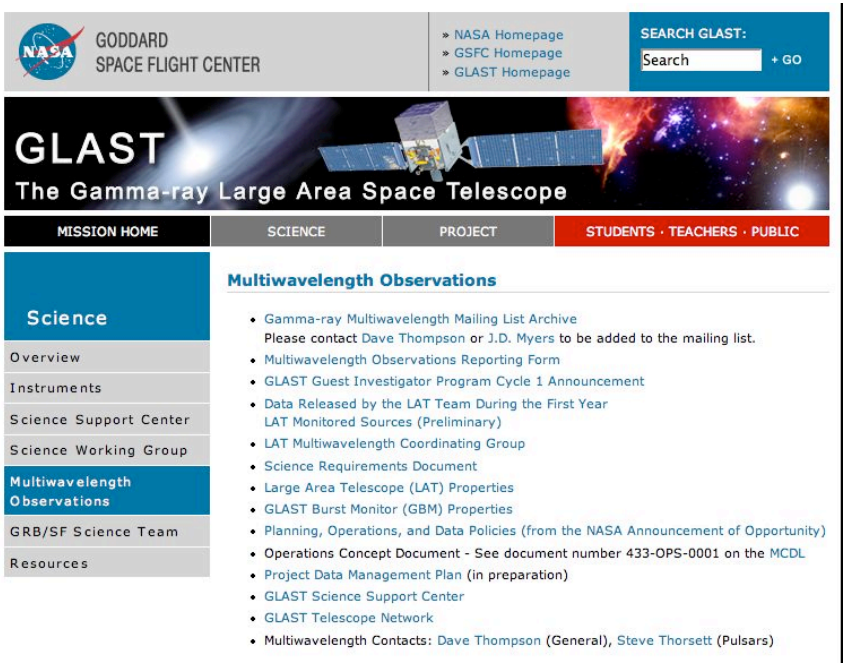
GLAST MW Info and Coordination

- **Multiwavelength observations are key to many science topics for GLAST.**
- **GLAST welcomes collaborative efforts from observers at all wavelengths**
  - **For campaigners' information and coordination, see**
    - ***http://glast.gsfc.nasa.gov/science/multi***
    - ***https://confluence.slac.stanford.edu/display/GLAMCOG***
  - **To be added to the Gamma Ray Multiwavelength Information mailing list, contact Dave Thompson:**
    - ***David.J.Thompson@nasa.gov***
  - **For Information for Multiwavelength Observers about Working with the LAT Team see:**
    - **https://confluence.slac.stanford.edu/display/GLAMCOG/GLAST+LAT+Multiwavelength+Coordinating+Group**



https://confluence.slac.stanford.edu/download/attachments/3169/Guidelines_Outside_Observers5.pdf

Some Personal Suggestions (from Chicago 2007 meeting)

- An International Coordinated Network (ICN) for MW Observations should be established:

  Possible Actions:

  - Definition of the strategies for MW campaigns on a list of sources as part of some Key Projects or ToO
  - Definition of Common policies and guidelines for participation to MW campaigns
  - Sharing of the schedules of the observations
  - Definition of a Common format for high level data
  - A central Web page (with restricted access) where people can have information about the ongoing MW campaigns (http://castor.adlerplanetarium.org/MWL/index.php/Main_Page)
  - Promote the Fast reduction of the Data, using standard procedures, during a Campaign
  - Coordination of proposals to use other facilities for some very important Key Projects
  - Promote the MW approach among young people
  - etc

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