Proposal for LAT Year 1 Data Release Plan

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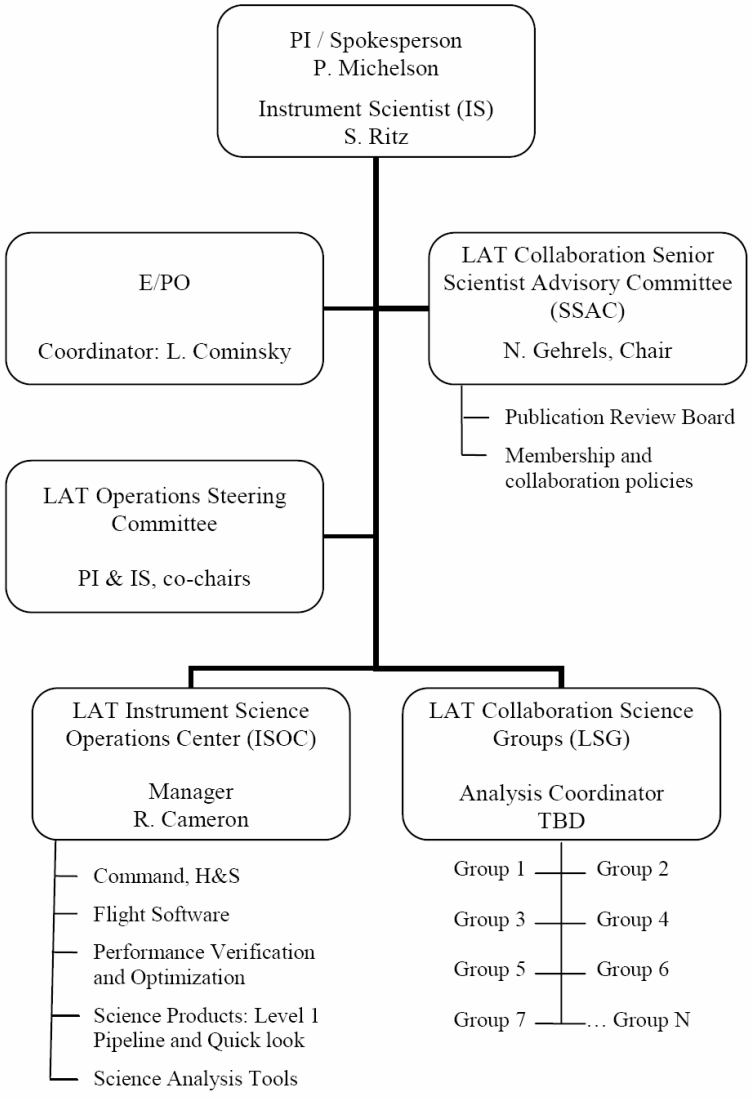
Operations Phase LAT Organization Chart



- LAT Instrument Science Operations Center (ISOC) responsible for operation of instrument (monitoring, configuration management, flight software, etc) and operation of Level 1 Data Pipeline
- LAT Collaboration Science Groups (LSGs) responsible for LAT collaboration's analysis and extraction of science results from LAT data; *including galactic diffuse model and source catalogs*
  - catalog and diffuse groups are formed and working; catalog pipeline under development

catalog and diffuse model are deliverables from the LAT team, along with processed and calibrated level-1 data

LAT Year 1 (Phase 1) Data Release Plan

- Proposed plan consistent with AO 99-OSS-03:
  - *"At all times, including the first twelve months of science operations, the data from transient sources discovered or detected by GLAST will immediately be made publicly available."*
    - operational definition of transient source: any source for which a significant *change* in source flux is detected on a timescale sufficiently short that rapid follow-up multi-wavelength observations are warranted (e.g. GRBs, a significant flare from a blazar, a solar flare, etc.)
  - *"During the first twelve months of science operations, data from specific sources of interest to qualified individual researchers will be made available…"*
    - Data products on specific sources of interest will be released, by the LAT team, periodically via a publicly assessable web site.
  - *"During the first year, IDS investigators will work with the LAT team, will have access to the data, and will assist in the data verification activities."*
    - "expected that the IDS investigators will work with the instrument team and have access to data to carryout their investigations, with the understanding that during the 1st year the data calibration may not be fully verified and could change."

Year 1 data release

- during Phase 1 (sky survey & verification phase), event reconstruction & background rejection cuts will be refined in several stages
  - each modification of algorithms will likely require reprocessing of level-0 to level-1 data;
  - expect frequency of reprocessing to be relatively high and effects on level-1 data base to be more significant in Phase 1 than during subsequent phases;

- Proposal for Data Release during Phase 1:
  - release high-level data on transients and monitored sources consisting of flux (fluence) on various timescales, spectra, source position, and errors (including estimate of systematic errors) for all of these quantities; *no release in phase 1 of individual reconstructed photon events*.

Some specifics

- **GRBs:**
  - on-board detections released “immediately”
  - expect refinement of parameters (e.g. source position, fluence in several energy bands) with subsequent processing on the ground; release information as soon as it is available.
  - for GRBs detected by GBM but not by LAT, a LAT upper limit will be released.
  - Data from LAT for a GRB detected by the GBM which leads to LAT detection after autonomous re-point will be released as soon as practical.

- **Sources of Interest:**
  - monitor and regularly release data, via the web, to the entire community, on list of sources of interest (proposed list follows)
  - update data weekly and include fluxes (daily to weekly averages), estimates of the spectra (weekly averages), position, and errors
  - expected latency between receipt of level-0 data at ISOC and availability of processed high-level data will improve with time. Nominal (best effort) schedule is
    - first month of Phase 1; 2 weeks
    - month 2-6; within 3 days
    - months 6-12; within 1 day
    - months 13-N; within 1 day (goal of 6 hours)

Preliminary list of monitored sources

Source type	Source name	other name	Average or min. flux (10^{-8} γ cm^{-2} s^{-1})	Latitude
Sources from 3rd EGRET Catalog				
Blazar	0208-512	3EGJ0210-5055	85.5 ± 4.5	-61.9
	PKS 0528+134	3EGJ0530+1323	93.5 ± 3.6	-11.1
	0827+243	3EGJ0829+2413	24.9 ± 3.9	31.7
	Mrk 421	3EGJ1104+3809	13.9 ± 1.8	65.0
	3C 273	3EGJ1229+0210	15.4 ± 1.8	64.5
	3C 279	3EGJ1255-0549	74.2 ± 2.8	57.0
	1406-076	3EGJ1409-0745	27.4 ± 2.8	50.3
	PKS 1622-297	3EGJ1625-2955	47.4 ± 3.7	13.4
	1633+383	3EGJ1635+3813	58.4 ± 5.2	42.3

Preliminary list – cont'd

	1730-130 NRAO 530	3EGJ1733-1313	36.1 ± 3.4	10.6
	3C 454.3	3EGJ2254+1601	53.7 ± 4.0	-38.3
HMXB	LSI +61 303/ 2CG135+01	3EGJ0241+6103	69.3 ± 6.1	1.0
any source (except Crab, Vela and Geminga pulsars)			**monitor if flux exceeds 2×10^{-6} cm^{-2} s^{-1} and report flux down to 2×10^{-7} cm^{-2}s^{-1}**	
After confirmed detection by LAT				
Blazar	Mrk 501			
	W Com 1219+285	3EG J1222+2841	11.5 ± 1.8	83.5
	1ES 1959+650	TeV		
	1ES 2344+514	TeV		
	H 1426+428	TeV		
	PKS 2155-304	TeV		

Preliminary Source List (e.g. “Catalog”)

- release (on the web) a preliminary source list that includes sources detected with very high confidence.
- release approximately 6 months after start of Phase 1
- include source position, average source flux, and the peak source flux and estimated spectral index between 100 MeV and 1 GeV.

“Quick-look” data pipeline

- Purpose: rapid (hour–day) production of selected high level data products:
  - refine position determination of GRBs detected on-board
  - search for GRBs not detected on-board
  - fluxes, fluences for transients and selected sources routinely monitored
- Implementation needs involvement of collaboration: duty-scientists to verify & validate data – staffed 24/7