

National Aeronautics and Space Administration



Fermi

Gamma-ray Space Telescope



www.nasa.gov/fermi

Fermi LAT Report

Fermi User Group meeting
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on behalf of the Fermi LAT collaboration

Fermi LAT status

- The LAT continues to operate well with no degradations in science performance.
- The international Fermi LAT Collaboration continues to provide excellent coverage for all LAT instrument operations and data processing/analysis needs
 - good coverage in all areas due to multitasking by many collaboration members
 - collaboration actively engaged in validating Pass8: e.g. Pass 8 is a key focus;
 - key commitments from DOE-SLAC and international partners for extended operations remain firm

LAT catalogs

- In addition to the LAT source catalogs (1FGL, 2FGL..), the LAT team produces several more specialized catalogs:

The Second Catalog of Active Galactic Nuclei Detected by the Fermi Large Area Telescope

ApJ, 743, id. 171, (2011)

The Second Fermi Large Area Telescope Catalog of Gamma-ray Pulsars

ApJ Suppl, 208, 17, (2013)

The First Fermi LAT Gamma-ray Burst Catalog

ApJ Suppl, 209, 11, (2013)

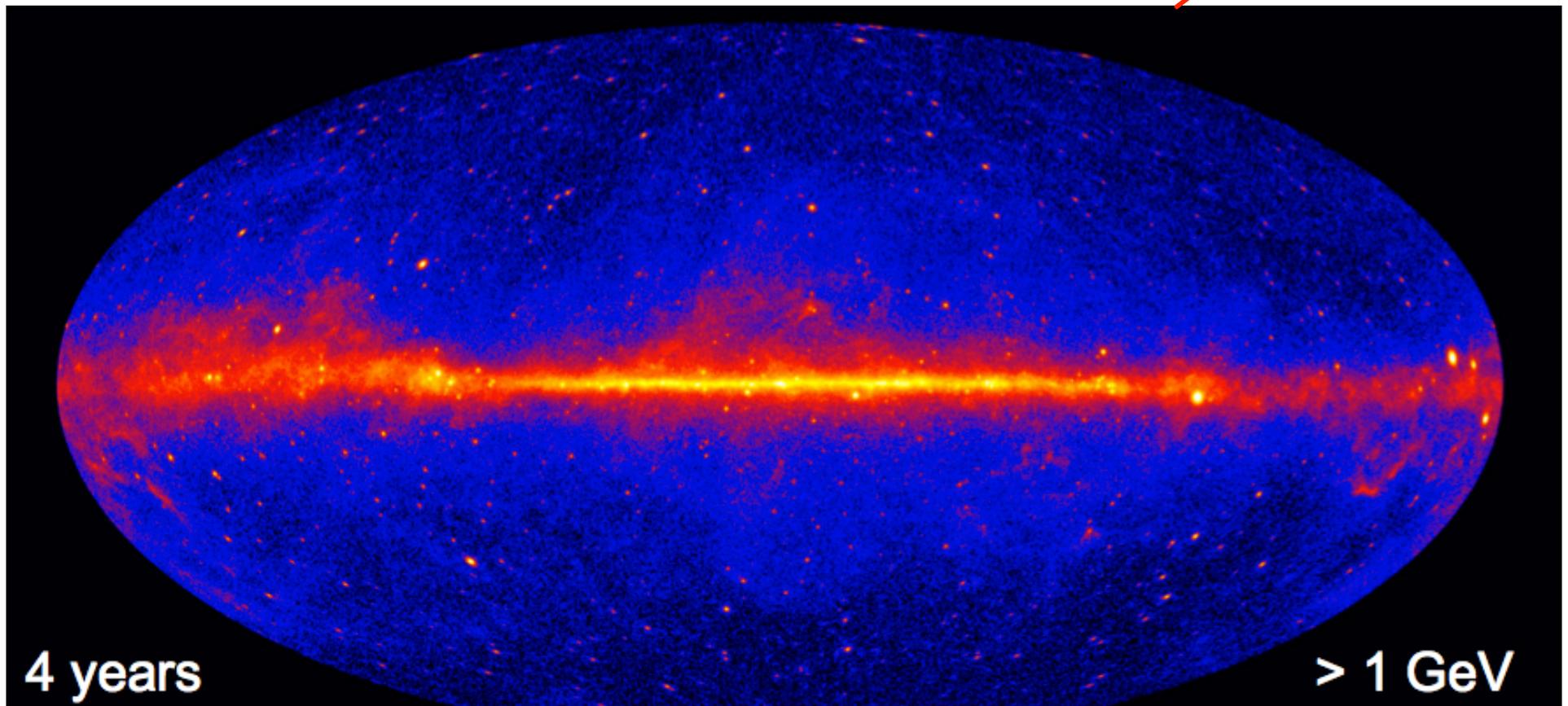
The First Fermi LAT Catalog of Sources above 10 GeV

ApJ Suppl, 209, 34, (2013)

Towards 3rd Fermi Catalog (3FGL)

- 4 years P7REP data, V15 IRFs and associated diffuse models
- Significantly deeper than 2FGL (threshold from 5 to 3 erg/cm²/s)
- More than 2500 sources, ~30% unidentified

10 months ago



3FGL catalog

- 4 years of P7REP data (compared to 2 years of P7 data)
- Delay due to bug-fix in the Galactic diffuse emission
- ~3000 sources

	1FGL	2FGL	3FGL (v9r4)
Total	1451	1873	3054
Unassociated	630 (43%)	575 (30%)	1150? (37%)
AGNs	699 (48%)	1068 (57%)	1713 (56%)
PSRs	63 + 24	83 + 25	151
PWN	5	3	4
SNR	41 (+3 ID)	58 (+10 ID)	99?
GLC	8	11	13
SBG	2	4	
HXB	2	4	5?
Others	1 (MQO)	2 (Nova+uncertain)	
Extended			25
High/Low b 	1043/408	1319/554	2374/679

Preliminary

3LAC: 3rd Catalog of Active Galactic Nuclei

- Based on 3FGL

Table 5. Census of sources

AGN type	Entire 3LAC	3LAC Clean Sample ^a	Low-latitude sample
All	1602	1453	182
FSRQ	466	415	24
... LSP	415	371	16
... ISP	42	37	3
... HSP	3	2	4
... no classification	6	5	1
BL Lac	630	602	30
... LSP	162	150	16
... ISP	173	173	4
... HSP	270	263	9
... no classification	16	16	1
Blazar of Unknown type	475	413	125
... LSP	206	168	58
... ISP	94	84	25
... HSP	122	120	35
... no classification	53	41	7
Other AGN	31	23	3

^aSources with single counterparts and without analysis flags. See Section 5 for the definitions of this sample.

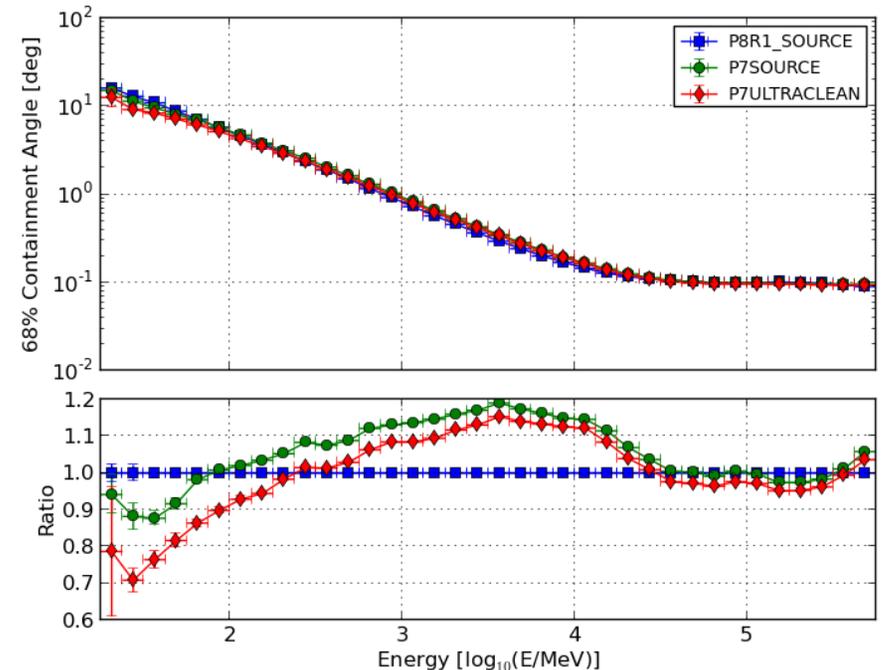
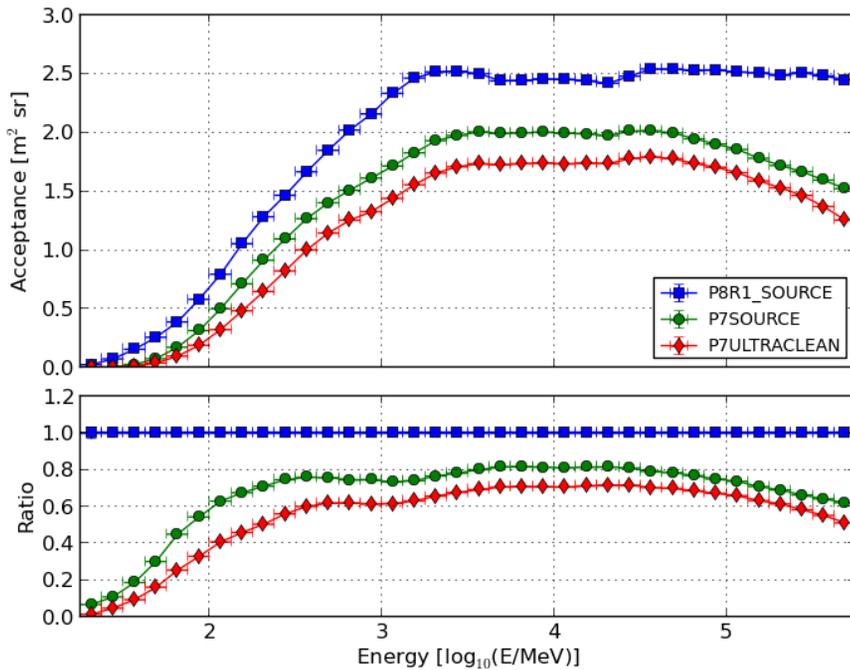
Preliminary

Pass8 Update

- Pass 8
 - New reconstruction
 - New selection
 - Larger energy range (to low and to high energy)
 - Larger field of view
 - Better simulation of the response of the instruments
 - Smaller systematics
- Since last November:
 - Further improvement of the data/simulation agreement
 - P7REP ad-hoc corrections are not needed anymore
 - in-flight PSF, FRONT/BACK effective area
 - Improved selection (residual background reduced at low energy)

Pass8 event reconstruction pipeline functioning and data reprocessing complete

Pass8: acceptance and PSF



Summary

- LAT continues to perform well; science performance upgrades will result from Pass 8 reprocessing;
- Science reach of LAT remains high;
- Key LAT partners (DOE, international) remain committed for extended operations phase