Goals for DC2

1. Blazar catalog, sample definition (procedure still to be defined)
   Source Identification in collaboration with the Catalog Group

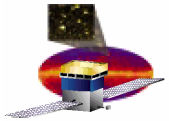
2. Gamma-ray statistical properties of the samples
   - LogN-LogS, redshift distributions, luminosity function
   - population studies: BL Lacs and FSRQs, bright radio galaxies, radio_quiet galaxies

3. General properties of GLAST-detected blazars
   - spectral index
   - spectral cutoffs
   - luminosity and spectral variability (we are on our own here)
   - duty cycle…

4. Specific Properties of Individual Source
   For the brightest sources: spectral evolution with time, flux
   non-simultaneous SEDs

5. Extragalactic Background Light
   Rough estimate of EBL density (if enough bright, high-redshift, high-energy sources…)

This analysis will be very CPU intensive, and definitely requires preparation & coordination.

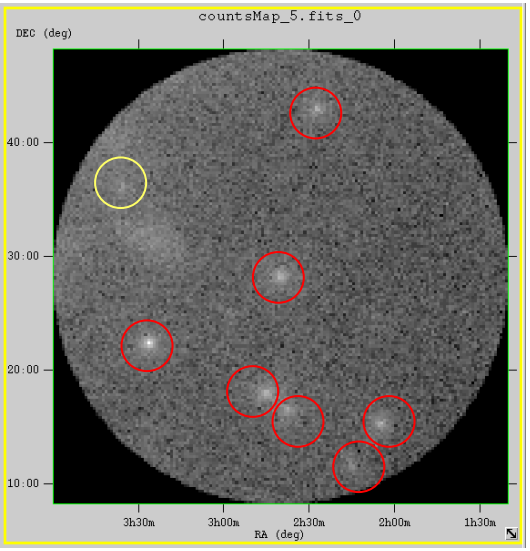


Participants in DC2 looking at Blazars

- SLAC: J. Chiang, E. do Couto e Silva, G. Madejski, R. Cameron, B. Lott
- Perugia: G. Tosti, P. Lubrano, S. Ciprini, A. Cucchiara, L. Furhmann
- ASI: P. Giommi + 2 people
- GSFC: L. Reyes, J. Scargle
- Stockholm Observatory: S. Larsson, F. Ryde
- CENBG: Th. Reposeur, D. Smith

Likelihood analysis of blazars

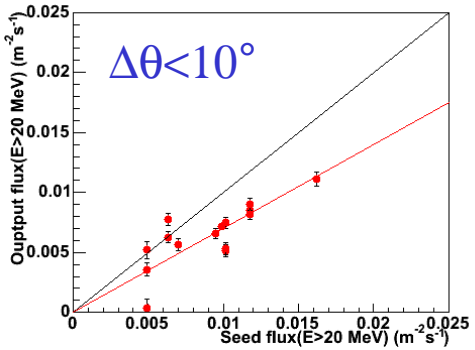
Likelihood analysis of the 105 blazars of “ScienceTool Checkout3”
55 days (1 precession period) worth of data.

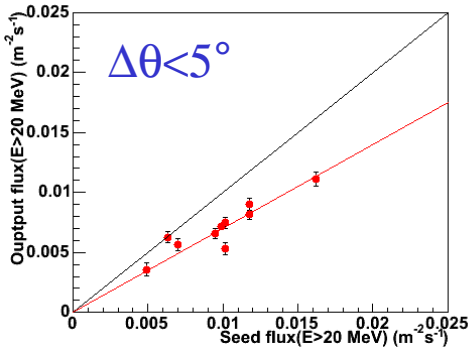


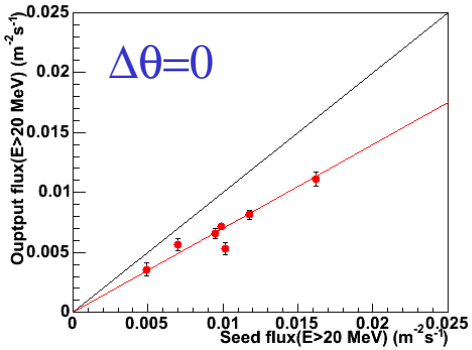
Blazars are circled in red, steady sources in yellow.
Likelihood analysis in which:
- flux and index are fitted for blazars, positions are fixed
- intensity of Extragalactic Diffuse Emission is fitted
- parameters for steady sources and Galactic Diffuse Emission are fixed.

Output Flux is found to be 70% seed flux but FT2 file is probably incorrect….

The bottom line is that this is fairly computing intensive (~4 h for Likelihood only).

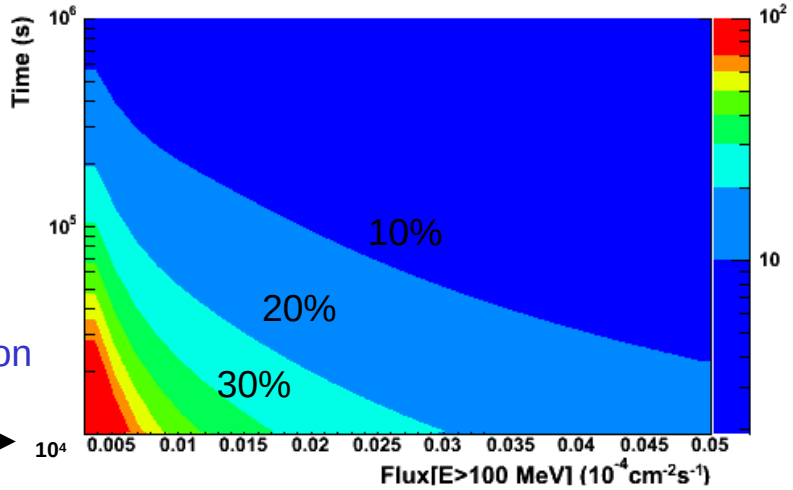




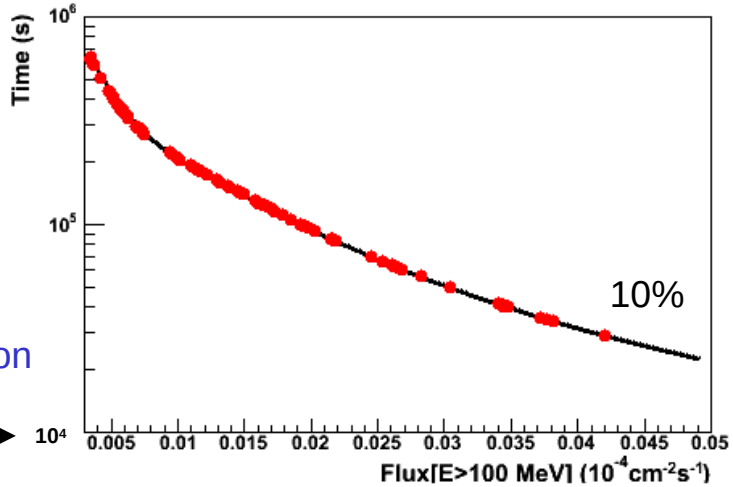


LAT performance with respect to blazars

flux



40 min on source →



40 min on source →

Name	Flux*	z	ra	dec	$T_{10\%}$ (s)
J0118p0248	0.007029	0.63	19.60	2.81	2.895e+05
J0204p1458	0.006299	0.41	31.11	14.97	3.244e+05
J0215p1123	0.004880	0.25	34.00	11.38	4.308e+05
J0222p4253	0.009502	0.02	35.70	42.90	2.181e+05
J0237p1635	0.010171	0.94	39.36	16.59	2.050e+05
J0239p2815	0.016192	1.21	39.99	28.26	1.258e+05
J0245p1758	0.011744	3.59	41.36	17.97	1.792e+05
J0329p2149	0.009876	2.07	52.41	21.82	2.106e+05
J0404p0700	0.015799	0.81	61.15	7.00	1.297e+05
J0423p1707	0.015783	0.91	65.92	17.13	1.298e+05
J0450p1105	0.011505	1.20	72.61	11.09	1.828e+05
J0459p0544	0.005444	0.95	74.93	5.75	3.806e+05
J0459p3352	0.016097	0.15	74.78	33.87	1.267e+05
J1512m0849	0.019176	0.36	228.17	-8.83	1.005e+05
J0510p5545	0.014459	2.19	77.63	55.77	1.440e+05
J0530p1323	0.098018	2.07	82.74	13.38	7.160e+03
J0533p4751	0.016964	1.16	83.32	47.85	1.186e+05
J0542p2610	0.021607	0.62	85.69	26.17	8.456e+04

....

*[E > 100 MeV] (10^{-4} $cm^{-2}s^{-1}$)

The flux below which fluctuations become dominated by background is about 5 10^{-7} $cm^{-2}s^{-1}$ at high latitude.