

Status of Trigger Rate Studies

Analysis Group meeting

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Moving from pdrApp to GlastRelease: Fluxes and Trigger Rates

- Purpose: we want to use GlastRelease for background studies
 - onboard filter development
 - revisit ground-based background rejectionso the first step is to verify the implementation of the background fluxes.
 - => compare with pdrApp
- Look at backgndmaxpdr (orbit max) and backgndavgpdr (orbit average) composite fluxes:
 - Compare Fluxes (GlastRelease vs. pdrApp)
 - Compare L1T rates (GlastRelease vs. pdrApp)
- Tools:
 - Use rootplot (within FluxSvc package) to plot fluxes
 - Use GlastRelease event tuples to get L1T trigger rates

Update from Dec 9 meeting

Dec 9: Most fluxes look good. Tools Useful

Now: Still true

Dec 9: Orbit avg and orbit max CR proton fluxes broken (cremeavg and chimemax)

Now: Chimemax fixed.

Creameavg broken, but problem found. Should be fixed this week

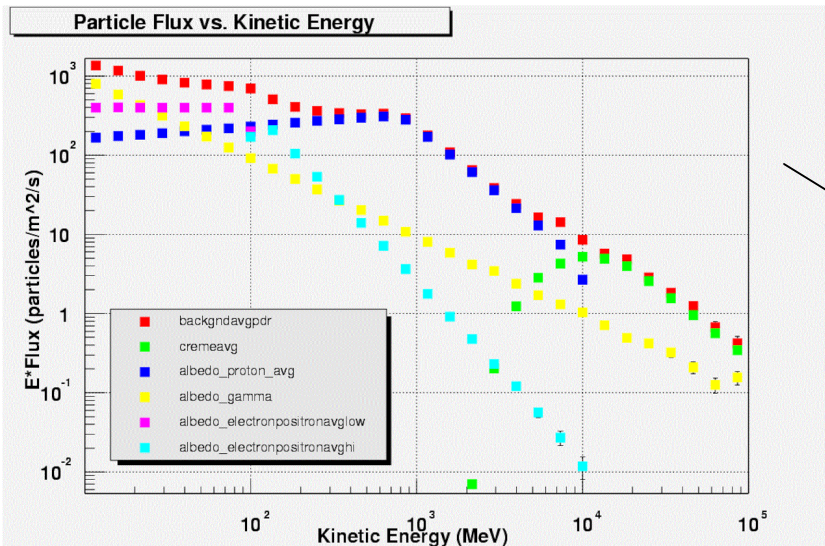
Dec 9: Galactic electrons not implemented

Now: Should be implemented this week

Dec 9: Nested composite sources not working

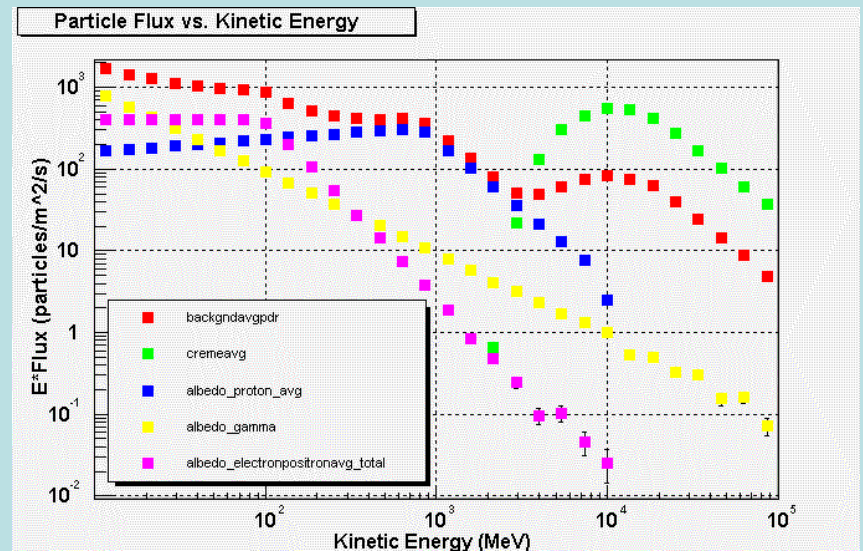
Now: Working

Last meeting we had this (Gleam v4r1)

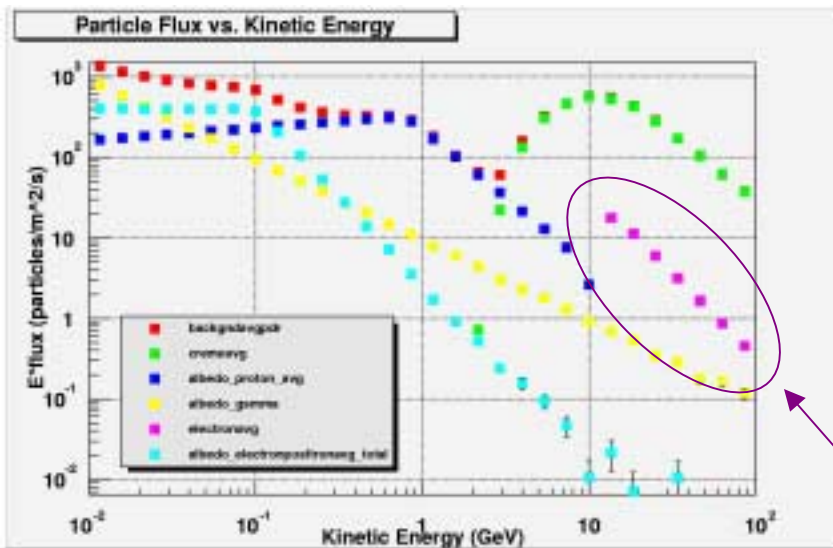


Backgndavgpdr flux plots

Now we have this (GlastRelease v0r3)



We want to see this (pdrApp)



Creameavg (green) *looks* better.

Nested composite sources now working (lavender).

...but backgndavgpdr composite low above .5 GeV (red).

And still need galactic electrons

backgndavgpdr fluxes from rootplot

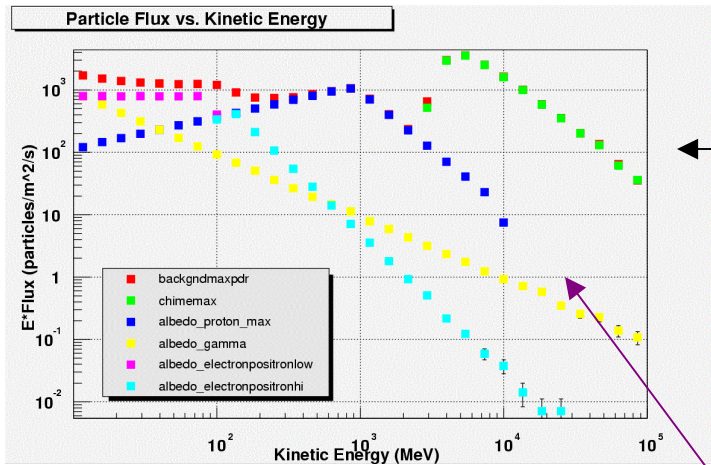
Flux Type	Integrated Flux (kHz/m ²) in GlastRelease	Integrated Flux (kHz/m ²) in pdrApp
backgndavgpdr	4.2	4.2
	Breakdown:	
cremeavg	0.94	
albedo_proton_avg	1.2	
albedo_gamma	0.92	
albedo_electronpositron avg_total	X	
albedo_electronpositron _total	1.1	

Current Backgnd **avg** pdr L1T Rates – **cremeavg** is low

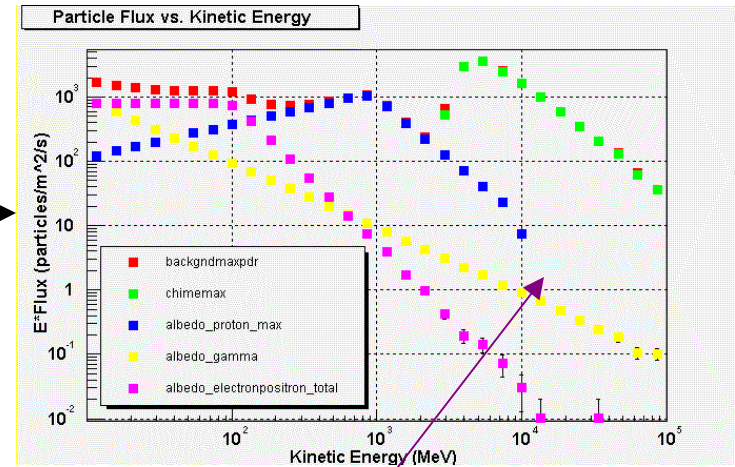
	Total	Cremeavg	albedo_p_avg	albedo_gamma	electronavg	albedo_e+e-avg
GlastRelease						
Flux (kHz/m^2)	4.2	0.94	1.2	0.92	NA	1.1
L1T rate (Hz)	2087	176	929	179	NA	803
L1T (fract)	1	0.08	0.45	.09	NA	0.38
TKR rate (Hz)	1969	160	851	162	NA	797
CAL-LO rate (Hz)	217	67	119	21	NA	10
CAL-LO and NOT TKR	118	16	78	18	NA	6
CAL-HI rate (Hz)	10	9	0	1	NA	0
CAL-HI and NOT TKR	1	0.8	0	0.2	NA	0
pdrApp*						
Flux (kHz/m^2)						
L1T rate (Hz)	4107	1660	1250	262	25	910
L1T (fract)	1	0.40	0.30	0.06	0.01	0.22
TKR rate (Hz)						
CAL-LO rate (Hz)						
CAL-LO and NOT TKR						
CAL-HI rate (Hz)						
CAL-HI and NOT TKR						

*Known to be high due to old CAL-LO trigger

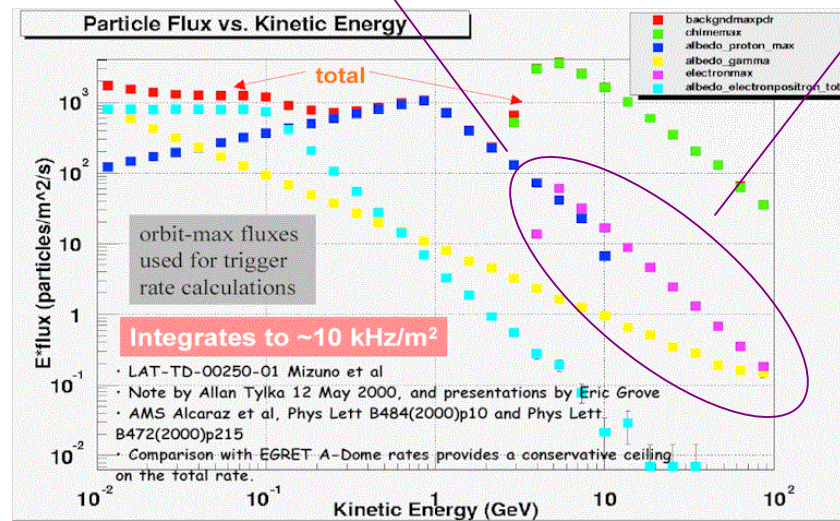
backgndmaxpdr flux plots



Gleam and
GlastRelease
are similar



Galactic electrons not
implemented



Otherwise, good
agreement

backgndmaxpdr fluxes from rootplot

Flux Type	Integrated Flux (kHz/m ²) in GlastRelease/Gleam	Integrated Flux (kHz/m ²) in pdrApp
backgndmaxpdr	9.9	9.9
chimemax	4.2	4.2
albedo_proton_max	2.6	2.6
albedo_gamma	0.92	0.92
electronmax	X	0.043
albedo_electronpositron_total	2.2	2.2

Current Backgnd **maxpdr** L1T Rates – **chimemax** fixed

Last Time (Gleam)	Total	chimemax	albedo_p_max	albedo_gamma	electronmax	albedo_e+e-
Flux (kHz/m ²)	9.87	4.17	2.59	0.92	NA	2.2
L1T rate (Hz)	5070	46	3014	215	NA	1782
Now:						
GlastRelease						
L1T rate (Hz)	11647	7087	2787	174	NA	1598
L1T (fract)	1	0.61	0.24	0.01	NA	0.14
TKR rate (Hz)	10628	6371	2516	153	NA	1588
CAL-LO rate (Hz)	3035	2563	429	26	NA	17
CAL-LO and NOT TKR	1019	716	271	22	NA	10
CAL-HI rate (Hz)	114	113	0	1.2	NA	0
CAL-HI and NOT TKR	16	16	0	0	NA	0
pdrApp						
Flux (kHz/m ²)	9.9	4.2	2.6	0.92	0.043	2.2
L1T rate (Hz)	13134	7419	3501	242	79	1893
L1T (fract)	1	0.56	0.27	0.02	0.01	0.14
TKR rate (Hz)	11221					
CAL-LO rate (Hz)	5297					
CAL-LO and NOT TKR	1913					
CAL-HI rate (Hz)	84					
CAL-HI and NOT TKR	10					

Summary

- Most of the flux components look OK. Tools are very useful. However, do not use GlastRelease for background studies:
 - Still a problem with orbit avg CR proton fluxes (cremeavg), and CR electron fluxes not yet implemented.
- Backgnd`avgpdr` is impossibly low above 0.5 GeV in rootplots flux plot. Related to broken cremeavg? Will see in next few days
- Remaining fluxes to be fixed/implemented within days