

Status of Background Orbit-max Fluxes and Trigger Rates

7 August 2001 S. Ritz

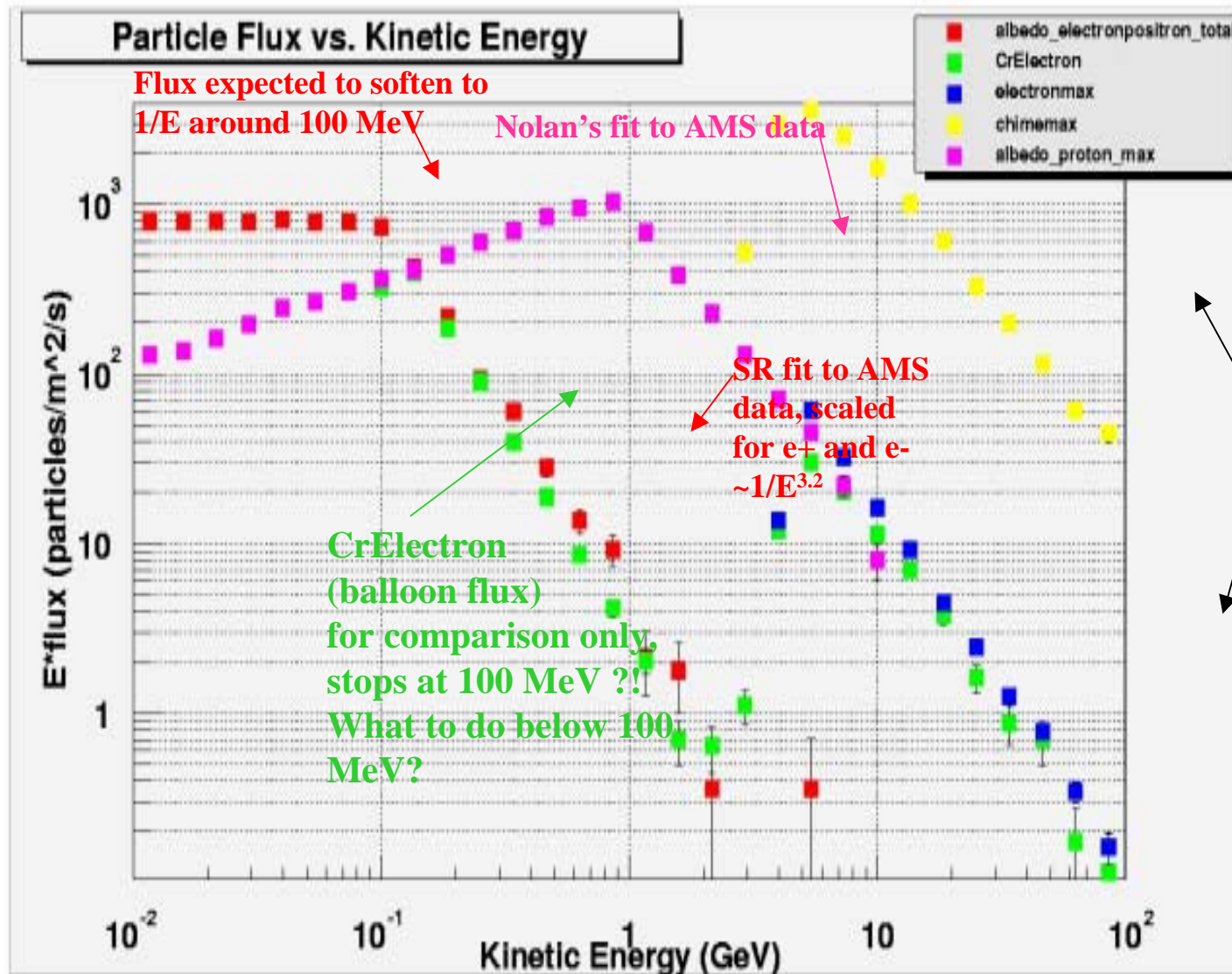
- Implementation by source, comparisons and justifications
- Sanity checking – EGRET A-Dome rates
- L1T rates

see

- LAT-TD-00250-01 Mizuno et al
- Note by Allan Tylka 12 May 2000, and presentations by Eric Grove
- AMS Alcaraz et al, Phys Lett B484(2000)p10 and Phys Lett B472(2000)p215

Proposed Orbit-max Fluxes

(the tools are great!!)

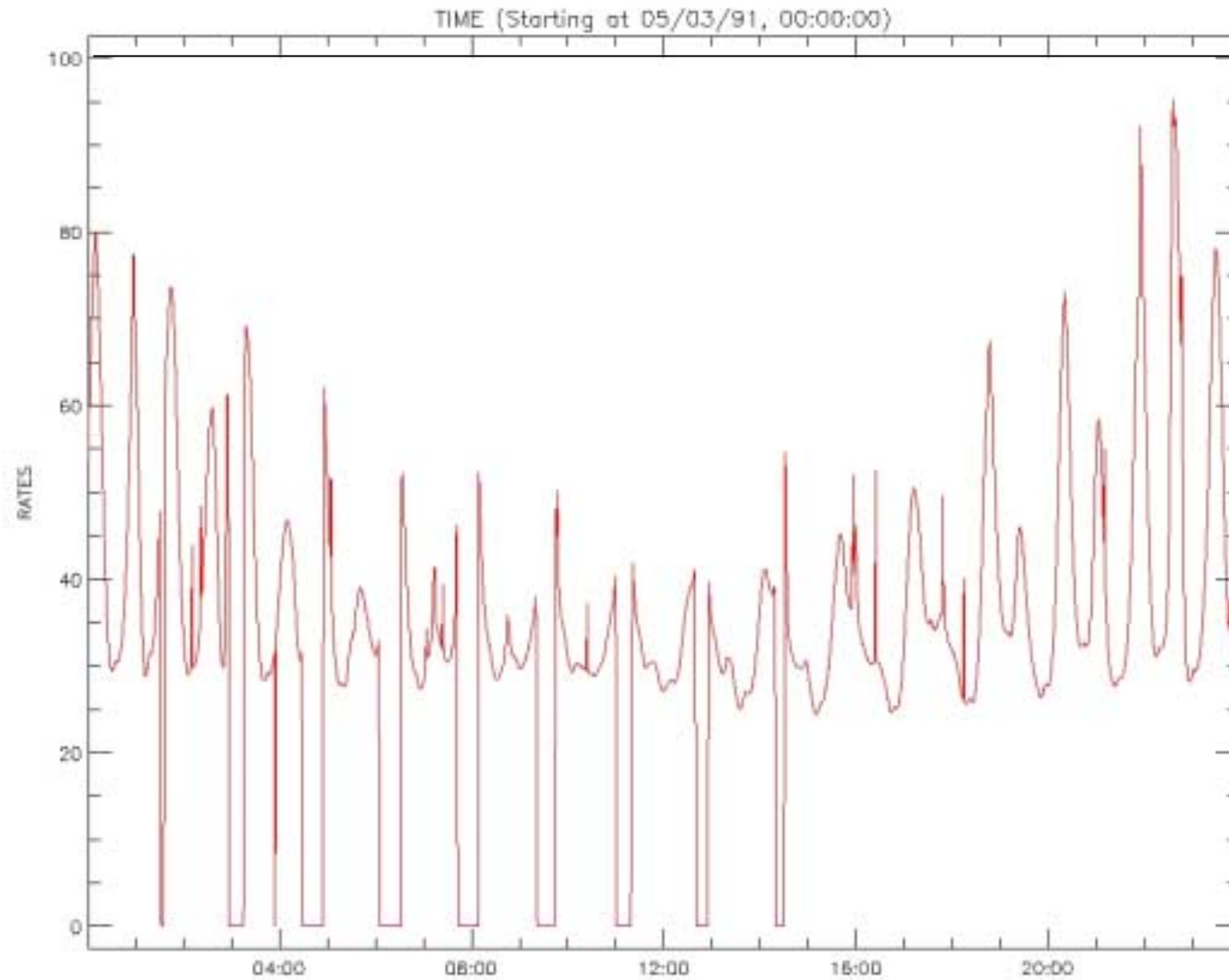


Chime p and GCR(-28.5,110) for orbit max – we need to check our implementation of this: are we on the opposite side of the earth!?!
Geomagnetic cutoff looks reasonable.

Sanity Check

- The measurements of the components may have unsubtracted backgrounds – adding them up could result in double-counting. Also, fluxes below 100 MeV are mostly blind guesses. **Need a unitarity check** – look at EGRET A-dome rates.
- The proposed orbit-max flux amounts to **$\sim 10 \text{ kHz/m}^2$** (don't ask what it was at the time of the DoE proposal!)
- Also sent fluxes to Eric Grove for comments, and discussed them with experts at Goddard.

EGRET A-dome Rates (courtesy of Dave Bertsch)



Average A

A-dome has an area of $\sim 6 \text{ m}^2$, so orbit max rate (outside SAA and no solar flares) corresponds to $\sim 16 \text{ kHz/m}^2$

This represents a conservative upper-limit for us, since the A-dome was sensitive down to 10's of keV.

Note peak rate is at (24.7,260)

Rates - Preliminary!

	all	chimemax	albedo_p_max	albedo_gamma	CR e-	albedo e+e-
flux (kHz/m ²)	9.9	4.2	2.6	0.92	0.043	2.2
L1T (Hz)	13,048	7,408	3,495	259	83	1,803
L1T frac	1	0.57	0.27	0.02	0.01	0.14
L1TV (Hz)	4,914	2,443	1,632	183	27	628
L1TV frac	1	0.50	0.33	0.04	0.01	0.13

Notes:

- as we expected, the unthrottled L1T rate is now > 10 kHz
- with the ACD throttle on the TKR trigger, the total rate is 4.9 kHz. If the max A-dome rate is due entirely to particles that trigger us (and it likely isn't), naïve scaling results in an orbit-max throttled rate of 7.8 kHz. Appears we have some margin.
- rates are getting more realistic, finally. Still needs review.