

Background: rejection factors

2 different backgrounds: **gamma** and **proton**

$$N\gamma = \sum_i \{ t_i / \Delta\Theta_i \bullet \int_{E_{thr}} \langle A(E) \rangle_{\Theta_i} \Phi(E) \Omega(E) dE \}$$

$$N\gamma = \sum_{mag} \sum_i \{ t_i^{mag} / \Delta\Theta_i \bullet \int_{E_{th}} \langle A(E) \rangle_{\Theta_i} \Phi(E) \Omega(E) R(E) dE \}$$

Where: i-index over bins in Θ ,

$\Delta\Theta_i$ – size of the bin in Θ

mag – bins of the geomagnetic latitude

$\langle A(E) \rangle_{\Theta_i} / \Delta\Theta_i$ – acceptance averaged over bin Θ_i

Rejection factor: TRK

- Alcaraz, Nacho: AMS Note ‘Simulation of the Gamma Ray Detection Capabilities of the AMS-02 Silicon Tracker Detecor’
- The overall rejection factor $R > 7 \cdot 10^4$
(weighted by proton spectrum, ie. Contain information about energy resolution for protons)
- Used now in AMSFS 10^5 and no energy dependence
- Near future: include energy dependence

Rejection factor: ECAL

- Paolo Maestro, AMS Note 2003-01-01:
‘A study on background rejection and e+ and gamma detection in AMS 02’
- The rejection factor only from ECAL: about 200
- Combination with cuts on TRD, Tracker, TOF, ANTI and RICH: $R > 10^6$ but $E_{\text{ECAL}} > 8$ GeV
→ analysis at low energy needed (Julien)
- Now in AMSFS $R = 10^5$ and is constant with energy
- Energy dependence (Fig. 13) – will be included soon