The details of the GLAST background flux model are outlined in this poster. Irreducible background will be produced by positrons annihilating in multilayer micrometeorite shield and protons, both galactic and albedo interacting in this same material. Positrons can annihilate in flight. Electrons and positrons can undergo a high fractional loss of energy by bremsstrahlung. Protons can have interactions in which no resultant particle passes through a charge identifying counter (especially the anti-coincidence detector - ACD) while producing a gamma-ray that is detected by the LAT. Also, in some orientations of the spacecraft, Earth Albedo gamma rays may not all be eliminated. The several components of this background are expected to vary along the orbit. The relative importance of each component will be determined by the orbit position and the arrival direction in local zenith pointing coordinates. By studying modulations of the background as a function of orbital parameters and arrival direction, the magnitude of these effects will be understood. The east-west effect will be helpful in separating components caused by particles of the opposite sign.

The background model accurately reflects the measured galactic cosmic ray fluxes from 10 MeV to 100 GeV. East-west asymmetry is observed down to 10 MeV, but the uncertainties are increasingly large as we go below ~200 MeV reaching +/- 50% at 10 MeV. Sensitivity to background falls rapidly below 100 MeV.

• Estimating the uncertainty in the irreducible background depends on knowing the flux of positrons – results from Pamela will be able to improve the model and extend it to higher latitudes.

• The east-west effect is being implemented

• This model is far more detailed than any other available model for satellites in low Earth orbit

The model allows us to estimate the trigger rate under various conditions. The Figure shows the total trigger rate as a function of time for a typical day. The rate drops to zero during SAA passages. The orbital period is 540 s. There are two peaks per orbit from the highest latitudes (north and south).

The Earth albedo gamma-ray spectrum we use in the model is latitude independent. The east-west effect is clearly seen in the image. We have incorporated the east-west effect for this background component. The east-west effect will be implemented soon for charged particles.

The fraction of simulated events that leave a well defined track as a function of particle type and energy. This plot can be thought of as the efficiency for events thrown at the 6 m² sphere to make a trigger.

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