1. Detailed Instrument Simulation

(a) Simulated interaction of 100 MeV photon in the LAT. The primary interaction is in a tracker converter foil. Charged particles are shown in black, neutrals in white. The reconstructed tracks are in blue.

(b) Simulated interaction of 15 GeV cosmic-ray proton in GLAST with primary interaction in the spacecraft. Most of the background remaining after analysis cuts is of this nature.

2. Beam Test Verification

Beam tests of scientific prototypes with electrons and γ-rays.

Tracker

Excellent agreement of the distribution of reconstructed photon direction (PSF) with simulations demonstrate that the silicon-strip technology will meet all requirements.

Reconstructed γ-ray angular distributions for data (red) and Monte Carlo (green).

X-projected angular resolution as a function of energy.

3. Hardware/Sub-system Performance Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Performance Showers and Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tracker</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single-Calorimeter Efficiency</td>
<td>~100%</td>
<td>Trigger rate, data rate, photon rejection, values determined by trigger requirements.</td>
</tr>
<tr>
<td>Long Calorimeter 7b</td>
<td>γ &gt; 1 GeV</td>
<td>Photon rejection for γ rays can be adjusted using software commands, allowing the removal of backgrounds and unwanted events.</td>
</tr>
<tr>
<td>Signal-to-Noise Ratio</td>
<td>5a</td>
<td>Large PSF for photons with energy degradation, including all background.</td>
</tr>
</tbody>
</table>

4. Triggering, Analysis and Background Rejection

(a) Cosmic ray rejection of 2.5x10^5:1 achieved with a succession of cuts using all subsystems.

(b) On-board analysis provides sufficient C.R. rejection and good gamma-ray reconstruction to enable GRB and rapid transient alert.

5. Instrument Performance (including all background and track quality cuts)

- Effective Area
  - GLAST LAT
  - EGRET

- Angular Resolution
  - GLAST LAT
  - EGRET

- Relative Area vs. Angle of Incidence

- Good Energy Resolution
  - GLAST LAT
  - EGRET

- Two Years: 1.6 x 10^-9 ph/cm^2/s (> 100 MeV)