

Strategy for test beam analysis (Help me to descope)

1. **Software tools available** (important milestone)
(~5 weeks – now to June 5)
2. **Production runs and Preliminary analysis**
(5 weeks – June 5 to July 10)
3. **Final results and Draft of paper**
(5 weeks - July 10 to August 14)
4. **Final paper**
(2 weeks – August 14 to September 1).

Main goals

Understand Super GLAST design

Address issues from MC validation left from last test beam

What is it taking to long?

Limited human resources as usual

Using test beam as a testbench for DAQ development

Using test beam as a testbench for software development

Software tools

(5 weeks – now to June 5)

- **ROOT classes**

V1.4 RECON MC, higher level classes and documentation –

Jose, Heather, Sawyer

V1.4 to IDL – Heather

- **TB RECON**

Tracker validation – Jose

Calorimeter completion and validation – Eric, Arache (Jose should only advise)

ROOT tree definition – Masa, Jose, Heather, Richard

Quality flags – Richard, Eduardo (help from Jeff)

Export to Linux/Solaris – Regis, Richard

- **IRF-ROOT**

Completion and documentation (1 ½ weeks)– Sawyer

Validation – Sawyer , Takanobu, volunteers !

Are MC classes adequate ?. Provide a report to software meeting

Production and Preliminary analysis (5 weeks – June 5 to July 10)

- **Production runs**
ROOT files for production – [Eduardo](#), [Berrie](#)
Documentation – [Traudl](#), [Dave](#)
- **Preliminary Analysis**

Tracker

- PSF – [Jose](#), [Masa](#)
- EGGS cut-off energy versus number of hits - [Steve](#)
- Efficiencies versus threshold – [Robert](#), [Wilko](#)
- Number of hits (MC versus data) (started by Marios)– [Takanobu](#)
(started by Marios)
- Alignment – [Ian Dobbs](#)
- TOT : e+ versus photon (started by Marios) – [Eduardo](#)

Calorimeter

- Gain , linearity – [Eric](#)
- Energy profiling and
resolution @ 2, 5 and 20 GeV e+ - [Eric](#) , [Arache](#), [Regis](#)
- Initial mapping and light tapering @ 2 and 5 GeV e+ and
determination of position resolution – [Eric](#)
- Energy resolution @ lower energies – [Berrie](#), [Arache](#), [Eric](#), [Sacha](#)

ACD (**not main driver**)

Johnathan told us that ACD analysis will be done in 3 weeks

Neutron Counters (**not main driver**)

Number of hits versus distance (relates to backplash) – [Gary](#) , [Al](#)

Final Analysis

(minimum required and we think it still takes 10 weeks !)

1. TKR - PSF versus Energy for the FRONT section of the tracker for 3 selected angles : 0, 45 , 80
2. TKR - PSF versus Energy for the BACK section of the tracker for 3 selected angles : 0, 45 , 80
3. TKR - Fraction of photons detected versus Energy of photons (FRONT and BACK)
4. CAL - Energy resolution vs Energy of photons for 3 selected angles: 0, 45 , 80 (for tagger and ECAL)
5. Proton background table (plot?)
6. ACD - Uniformity of response vs. position
7. ACD - secant theta response of tiles
8. ACD - Measure backplash in all tiles not hit by beam and compare with formula obtained from 1997 beam test:

$$P_{backplash} = \left(0.85 \times \frac{0.3}{E_{thr}} + 0.15 \right) \times 10^{-3} \times \frac{A}{144} \times \left(\frac{55}{x+10} \right)^2 \times E^{0.75}$$

Where E is the energy of incident electron/photon in GeV

E_{thr} is the threshold value in units of *mip*

X is the distance from the top of calorimeter

A is area in cm^2

$P_{backplash}$ is the probability that there was an energy deposition above E_{thr} in 1cm scintillator

9. ACD - Explore methods and accuracy of aligning tracks in tracker with hit tiles
10. ACD- Map the cracks and see if there are any "edge effects" in reduced efficiency for particles near the tile edges
11. ACD - Look for pulse-height from "blind" PMT (which does not have a scintillator). If there are some signals (I did not see them) - try to correlate with energy in calorimeter.
12. Neutron counter analysis (neutron hits versus distance)
13. Summary of DAQ and trigger issues (include self-triggering)
14. Comparisons with the Proposal

