Minutes of CAL s/w telecon
J. Eric Grove
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Scale factor for Run 138/177 **Terrier**

Regis has calculated an overall gain scale factor for runs 138 and 177 that will bring the raw calorimeter sum peak in line with the sim calorimeter sum peak. He then reconstructed incident energies of the e+ beam using the correlation method. The final resolution is <4% (neglecting the low-energy tail), and the modes of the recon E peaks are within 4% of 20 GeV. He attributes the remaining error in the mode to several possible factors, the most likely of which I conclude is the residual non-linearity, particularly in layer 7. I'll wager that the correlation results will improve if Regis incorporates the correction factors I describe next. See his results at **http://cdfinfo.in2p3.fr/Experiences/GLAST/Studies/run138.html**

Optimizing correction factors for Run 138 **Grove**

I've nearly completed the layer-by-layer corrections for run 138. I'll distribute a new fC_to_MeV function that has a quadratic model – rather than a single scale factor – to convert the signal at each log end into MeV deposited. There are two remaining items: I haven't finished the corrections in layer 1, which requires both LE and HEX8, and there are two log ends for which the quadratic model has an inflection point within the valid range of the ADC. This is probably not physical.

Proton response **Grove for Giebels**

I reported on work Steve Ritz and Berrie have been doing on proton runs. Two concerns remain. First, the sim data show a distribution of logs hit with a very sharp peak at 8 (i.e. one log per layer for an on-axis beam of non-interacting MIPs) and a broad tail (i.e. the interacting MIPs), while the beam test data show a rather broader peak around 8. Berrie finds 3 or 4 hot log ends (Berrie, I presume this means log ends that frequently show signals several sigma above pedestal, yes? Have you accounted for channel-dependent pedestal noise?), so that might account for the broad peak. Second, the MIP total ΔE peak is different in sim and test beam. I attribute that to both the error in the sim and the "gain-stretching" in the beam test data that we haven't yet accounted for.

Completed Action Items

1. *(Grove) Review CAL beam test paper goals.* ***Done.***
2. *(Giebels) Verify our understanding of trigger logic and timing for muon runs in clean room after ESA with Gary Godfrey.* ***Done.***

3. *(Grove) Fit GSI intlin data.* ***Done.***
4. *(Grove) Generate simple saturation curve from muon, C, and Ni points in a few bars.* ***First pass done, will repeat.***
5. *(Sandora) Complete electronic and source calibrations of Test Box crystals.* ***Done.***
6. *(Grove) Write first version of CAL section of beam test paper.* ***Done.***
7. *(Giebels and Linder) Simulate run 138 with tbsim.* ***Done.***
8. *(dCeS) Distribute list of runs and plots of total energy to calsoftlist so we can all play this game of Name That Total Energy.* ***OBE. We all see the discrepancy.***
9. *(Chekhtman) Implement switch in tbrecon.* ***Done.***
10. *(Eric and Arache) Complete the CAL s/w review.* ***Done.***

Open Action Items

1. *(Giebels and Lindner) Proceed with the two-step gain calibration.*
2. *(Grove) Get more info on upstream material, beam aperture from GSI.*
3. *(Grove) Generate simple saturation curve from muon, C, and Ni points in a few bars.* ***First pass done, will repeat.***
4. *(Tylka) Improve interface to dE/dx and partial cross-section routines from CREME96.*
5. *(Grove) Continue improvement of gain scales in HEX8 for run 138, incorporating expected signal from simulation.* ***In progress.***
6. *(Giebels) Resolve discrepancy in simulations of MIPs.* ***In progress.***
7. *(Grove) Study the LEX4 gain "stretching" as a fcn of time. Derive correction factors and new muon gains.*
8. *(Terrier) Derive overall gain scale correction factor for run 138 and do energy recon.* ***In progress.***
9. *(Terrier?) Create geometry file for simulation of French mechanical design.* ***In progress.***
10. *(Burnett) Create a proposal for tracking energy in passive volumes.*