

# Minutes of the 41st SiD optimization meeting

21-Jul-2015

## Present:

Tim Barklow (TB)  
Marty Breidenbach (MB)  
Ryan Butner (RB)  
Tom Markiewicz (TM)  
Christopher Milke (CM)  
Bruce Schumm (BS)  
Jan Strube (JS)  
Andy White (AW)

## Last week's Work Items:

- Re-make the MIP response plots in units of MIPs to compare with DESY plots. Poisson statistics of how many SiPM pixels fire might still have to be implemented. (JS)
- Contact Tom and Marco regarding the open questions about the engineering design (CM)
- Contact DESY regarding new guineapig files (BS)
- Generate SUSY files according to SLHA records (TB)

## Agenda and points of discussion:

1. Follow-up of Forward Region design discussions
  - a. ECAL clearance needs to be at least 15 mm for the door to open
  - b. LumiCal and BeamCal are centered on the extraction line.  
Support tube is centered on the detector symmetry axis.
  - c. TM to validate the LCD tab in his excel spreadsheet in view of recent changes to the "key parameters" for the new L\*.
2. Single Particles in Trelliscope (RB)
  - a. Single particles of different types and energies viewed in Trelliscope.
  - b. Surprising to see the main path of low momentum pions bend in the B field, similar to muons. This suggests that the pion doesn't really interact.
  - c. Surprising to see the amount of punch-through. With 6 lambda (ECAL+HCAL), one would expect a fraction of 0.0025 to come through. Should be quantified in the simulation. One would expect about 1/e to interact in the ECAL.
  - d. Would be interesting to have contour plots to see what fraction leaves the calorimeters, and how far it leaks out (moliere radius).

- e. Would be interesting to quantify single particles in the transition regions. What needs to change about the detector design / reconstruction to improve the performance?
- f. Add muon chambers to recover shower leakage?

#### New Work Items:

- Re-make the MIP response plots in units of MIPs to compare with DESY plots. Poisson statistics of how many SiPM pixels fire might still have to be implemented. (JS)
- Contact Tom and Marco regarding the open questions about the engineering design (CM)
- Contact DESY regarding new guineapig files (BS)
- Generate SUSY files according to SLHA records (TB)
- Validate values in LCD tab of spreadsheet w/ engineering values. (TM)