

BTEM -> GLEAM?

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Analysis Group Meeting

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We must decide:

- Is it worthwhile to move the BTEM data into the GLEAM environment?
- This will take some work:
 - requires a reformat of the real data, a detector model for the simulation, and work on the recons. See list from Leon on the following slide
- So why do it?
 - one of the key reasons for the CU beam tests is validation of the simulation. We already have data in our hands to start this process one year in advance. The CU beam test period will be an intensive period of work. The BTEM data gives us a first pass at tuning the simulation and testing the analysis infrastructure.
 - there is some risk the CU beam test period will be compressed. Usable BTEM data mitigates this risk.
 - except for the BFEM rough data comparisons, we have little to validate our new tools (unlike the pdrApp/GISMO tools).
- If we agree it might be worthwhile, the details of pain vs gain will be the key for making the decision.

Pain: (list from Leon)

- Geometry
 - New geometry file(s) need to be created
 - TKR structure is more complicated
 - incomplete trays; two sizes of wafer
 - could ignore differences, and pretend trays are uniform
 - bfemApp had the geometry correct, but didn't distinguish between start of track and missing ladders. relied on ACD only.
 - but to do it right, need to modify GlastDetSvc, and recon code
 - insideActiveArea, to track missing ladders
 - new code to count radiation lengths more carefully? (maybe not needed)
 - CAL should be relatively straightforward, since the structure is uniform
 - ACD sounds like work (do we need it?? – see following slide)
 - XTGT doesn't exist in current GLEAM; but I don't think it did in bfemApp either
- Data formats
 - Need code to convert raw data to digis, for all subsystems
 - Can be adapted from bfemApp, tbrecon code?
 - This problem needs to be solved for EM, and soon
- Reconstruction
 - "Geometry" constants:
 - some already there, z position of layers, etc.
 - some will need to come from xml, or new code accessing geometry (radiation lengths of converters, currently hardwired)
 - Other constants *Bill's coefficients, and other hardwired numbers)
 - should come in thru xml, or be otherwise un-hardwired
 - should be re-examined (cuts) or recalculated (coefficients from Miner, etc.)
 - Calibration data
 - recast into the new formats , possibly redo in light of new knowledge

The Gain?

- Here is a first pass at what we could do with BFEM data:
 - check and tune cutoff parameters using distributions of hit multiplicities for positrons and protons
 - check multiple scattering, and other details such as delta ray production, using the positrons and protons
 - what else would be useful?
- Here is what we are unlikely to do:
 - detailed PSF studies, due to uncertainties in the 2-photon rate (anything useful for TKRRecon??)
 - detailed CAL response studies, due to uncertainties in the calibration
 - detailed ACD studies
 - detailed checks of electronics effects, since it is different hardware

Who, When?

- This only makes sense if
 - it can be done without derailing other critical efforts
 - it can be done in a timely manner
- In other words, we need to identify the people to make this work.
- First, however, we need to agree this may be worthwhile. Comments?
- Either way, this issue should be decided deliberately instead of letting it fall off the table.