EngineeringRun2015 Pass7: Preparations

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HPS Software Meeting
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Are we ready?

- A number of issues were raised during the collaboration meeting that need to be resolved before we can proceed with the pass7 reconstruction.
- Should discuss whether we want to start from scratch, again, or whether we can reprocess using the lcio files.

Calorimeter

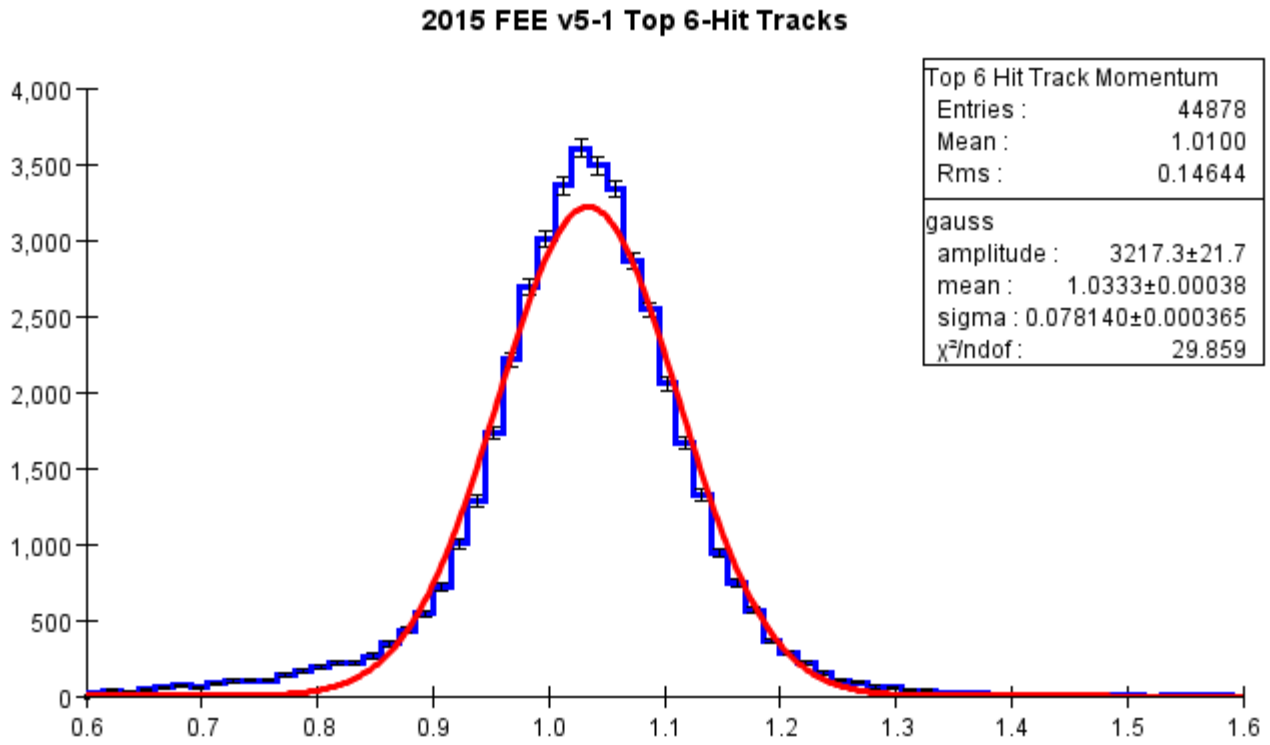
- Are there any issues with the tweakpass6 reconstruction related to calorimeter reconstruction?
- If so, what are they? Can we start from existing EcalCalHits, EcalClusters,…?

Tracking Alignment

- Is alignment done?
- Rereconstructed FEE candidates using the latest detector
  - HPS-EngRun2015-Nominal-v5-1-fieldmap
  - Absolute momentum scale better
  - Top/Bottom agreement better, but slight discrepancy
- Møller candidates, unconstrained
  - Mean: .0333 GeV, sigma: 1.84 E-3
  - Previously Mean: .0325 GeV, sigma: 1.99 E-3
- Field-Off
  - In progress

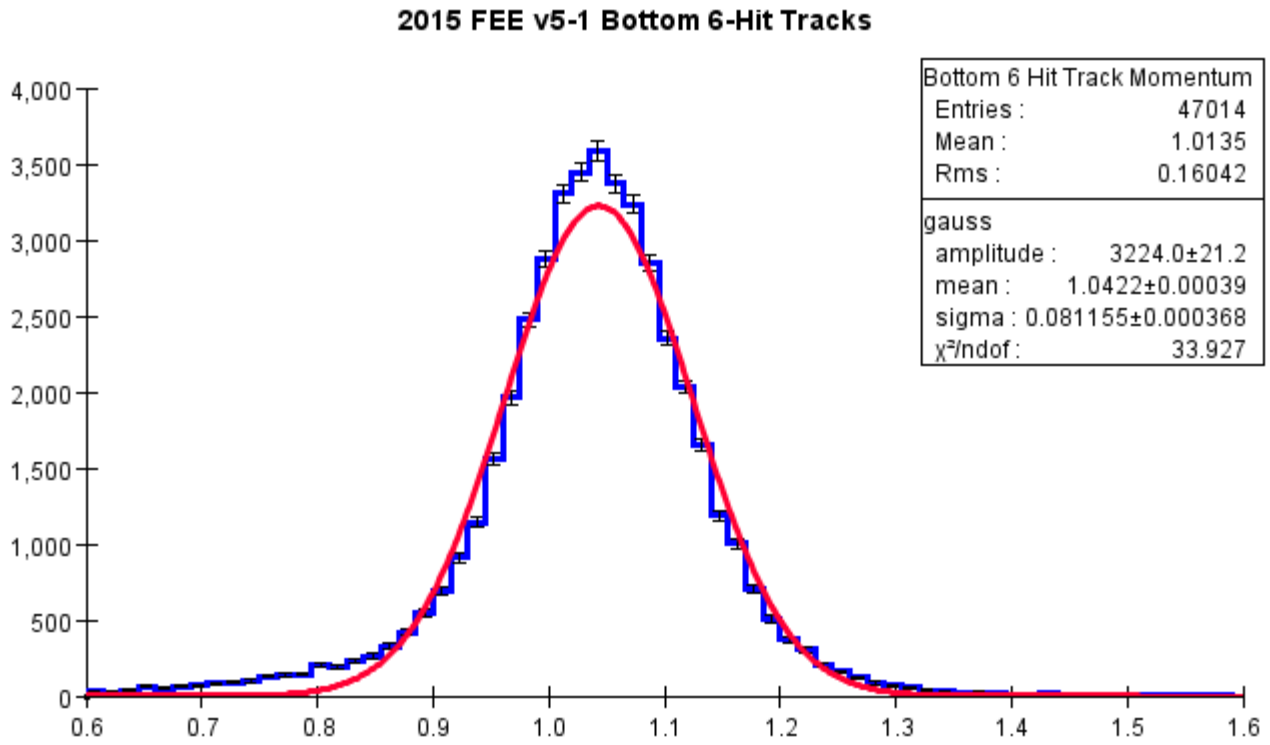
Top FEE using latest aligned detector

- Mean: 1.033 GeV (n.b. not the greatest fit)

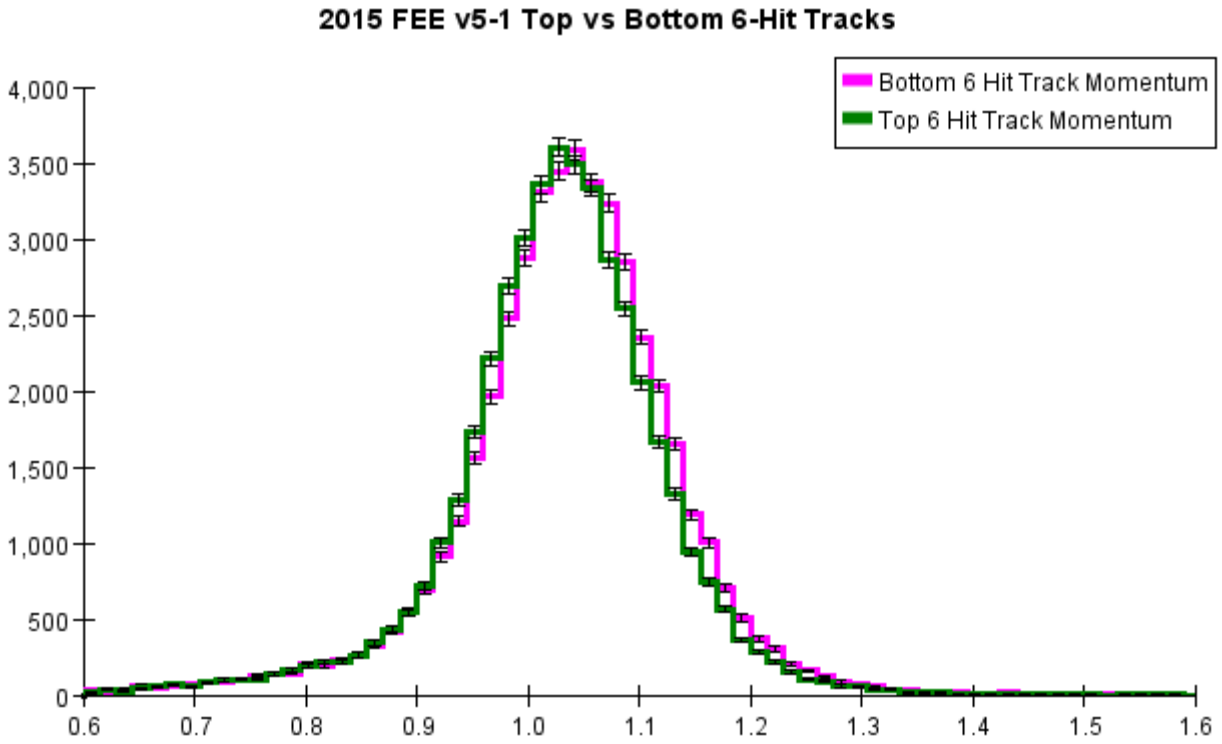


Bottom FEE using latest aligned detector

- Mean: 1.042 GeV (n.b. not the greatest fit)

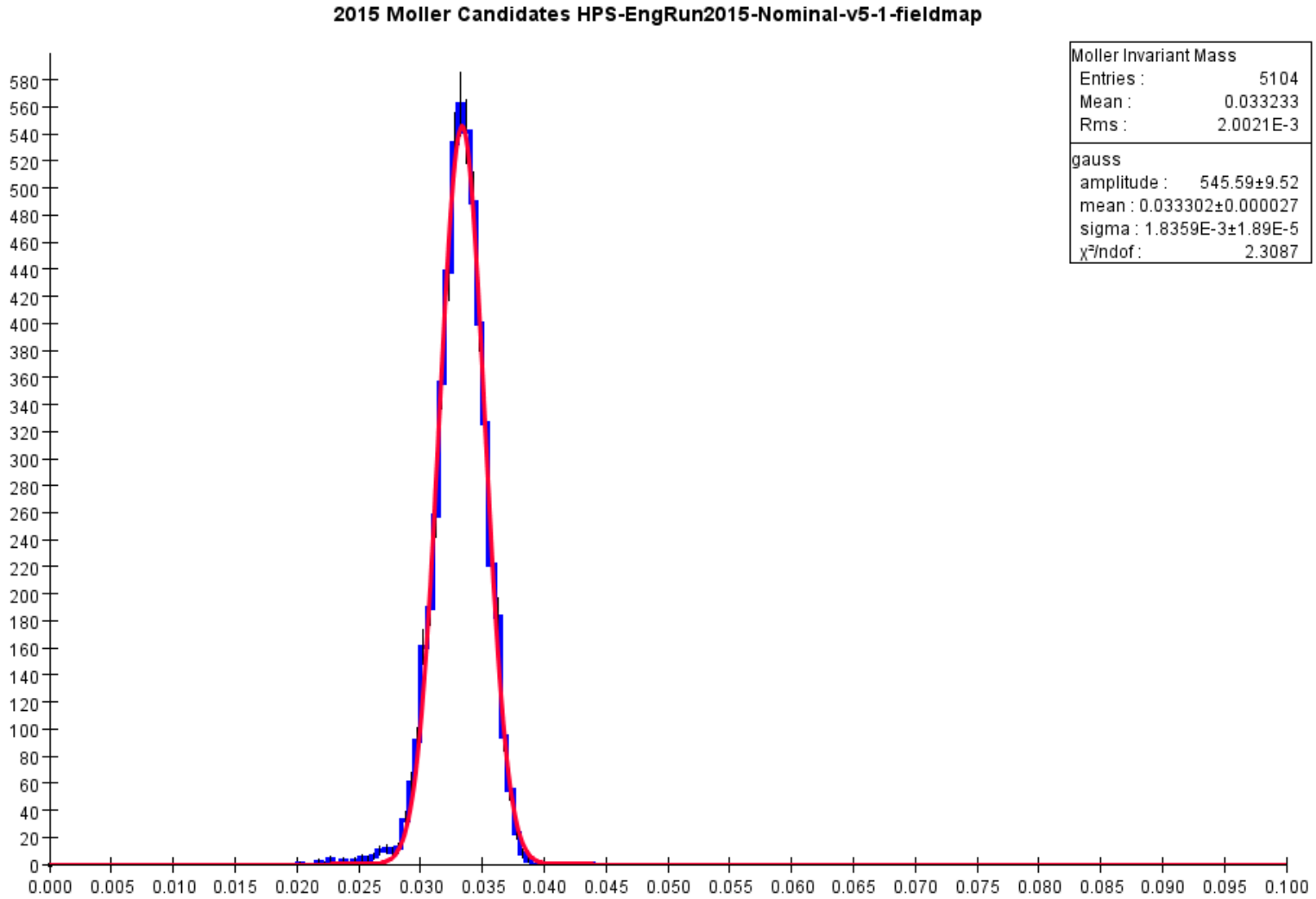


Top/Bottom using latest aligned detector



Møller Candidates Unconstrained

- Mean: 33.3 MeV



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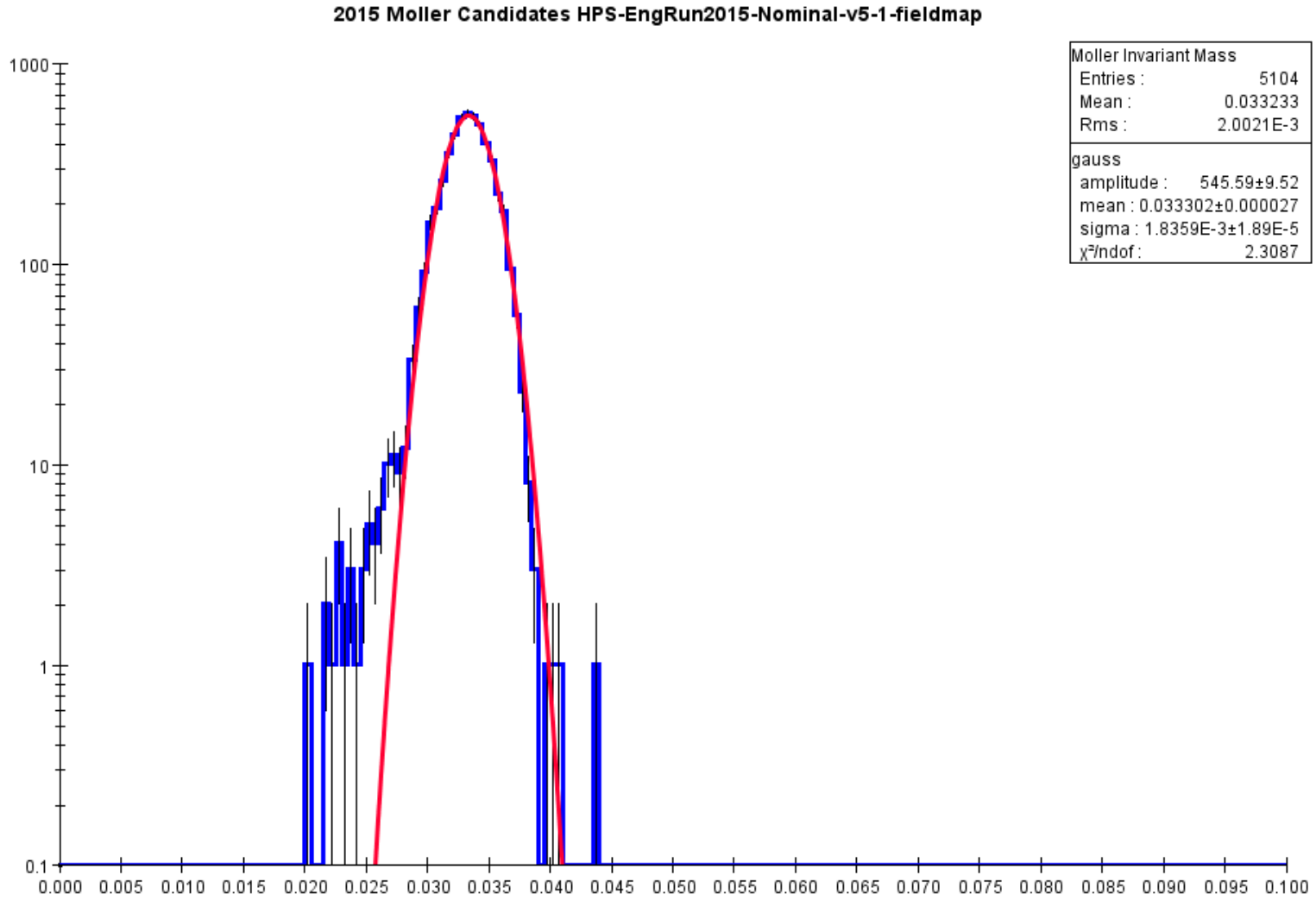

Alignment

- Good enough?
- Or should we spin through the data with selected, clean FEE and Møller candidates along with straight-throughs?

Tracking

- Start from scratch (evio)?
- Start from hit ADC and t0 (SVTRawTrackerHits)?
- Start from found tracks and simply refit using new geometry?
- Improvements to GBL will take time, recommend not waiting for them for this pass.
  - Track transport, energy loss
- Not starting from evio can save substantial amount of time.
  - Will require some coding to enable use of persisted lcio classes.
  - Will require some coding to ensure results are consistent with full re-reconstruction
  - Need to improve our unit/integration tests to catch bugs.
- Anything else?

Reconstructed Particles

- Recommend NOT making FinalState ReconstructedParticles using MatchedTracks
- Only use GBL from now on.

Vertexing

- Need to iterate vertex fits to get correct mass and track parameters at vertex position
- Need to use best guess for beam/target position for both Beam Constrained and Target Constrained vertices
  - What is best estimate for target z?
  - What is best estimate for beam (x,y) @ target?
  - How? Why?

Skims

- Fee and Møller candidates very useful for diagnostic studies.
- Propose using selection cuts I used for collaboration meeting presentation as basis for “golden” FEE and Møller skims.
- Do we need a looser set?
- Do we understand analysis sufficiently well to also implement a “golden” V0 skim for publication analysis?