

Software Coordinators Report

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ILD SW&Ana Meeting, Apr 11, 2018

- Generator
- Simulation
- Reconstruction
 - TOF
- Monte Carlo Production
- Time line and plans

- installed latest HEAD version of Whizard
 - still have (small) issue w/ some completely unlinked particles
 - no *show stopper* can be worked around
- not needed for 500 GeV optimization production

- no recent activities
- all checks done on *test production* seem OK
- minor issue w/ spurious *SimTrackerHits* outside of sensitive layers
 - will be ignored for reconstruction

missing ingredient for production release

- 4 T B-field map for small models

- checked so far in test production
 - tracking performance - OK
 - JER performance - OK
 - PID performance - OK
 - pair background checks - OK/ongoing
- minor issue reported for dEd/dx
 - parameterization of dEdx error is not optimal
 - don't expect visible effect on PID
 - **keep current parameterization**
- verification of the MC-truth information ongoing (MB)
 - observe spurious crashes in *TrueJetFinder*
 - **under investigation ...**

- presented at Ichinoseki ILD meeting:

- correct hit time wrt. entry point into calorimeter

$$t_{cor} = t_{hit} - dist(P_{calo}, P_{hit})/c$$

- compute mean value for (parts of the cluster)

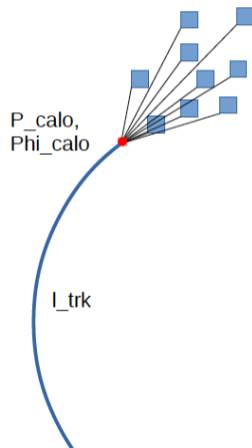
$$t_{clu} = \sum_{i=0}^N t_{cor,i}$$

- compute the track length

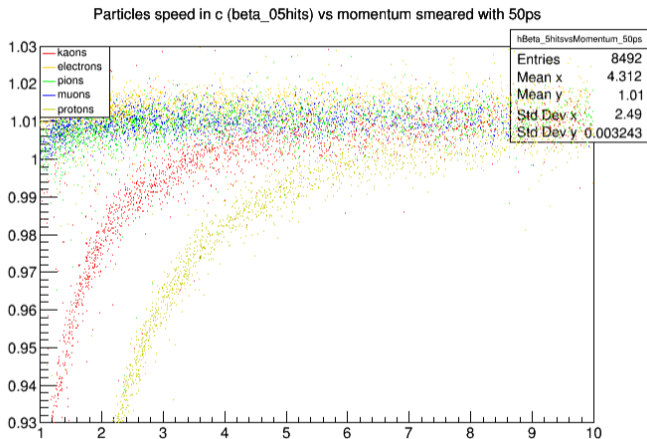
$$l_{trk} = |\phi_{IP} - \phi_{calo}|/\omega \sqrt{(1 + \tan^2(\lambda))}$$

- compute estimator for velocity

$$\beta = l_{trk}/t_{clu}/c$$



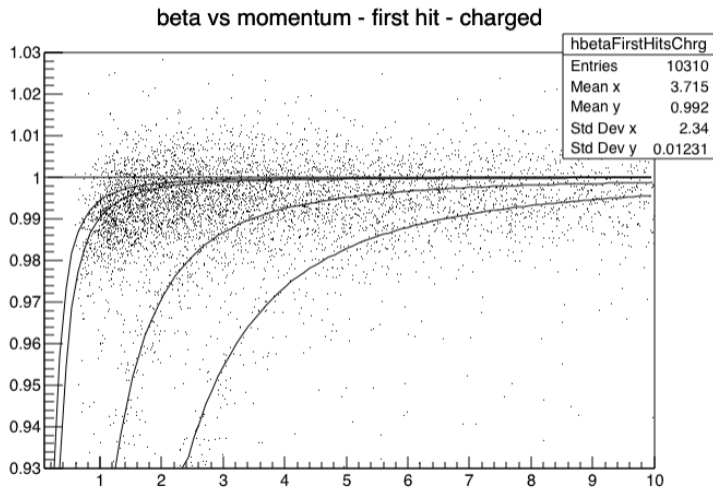
- estimators studied where all based on n fastest hits
- this introduces a *bias* for faster times
 - and higher particle speeds

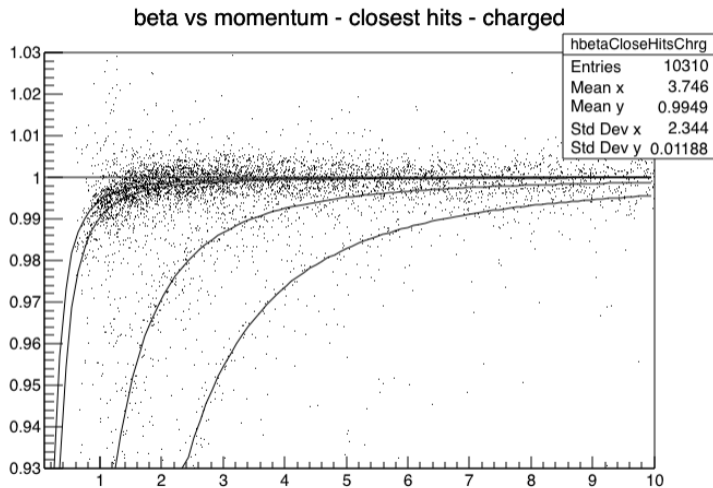


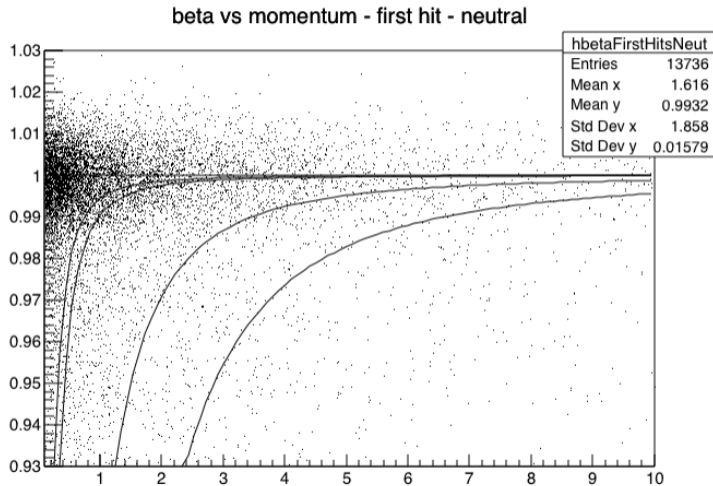
- select *subset* of calorimeter hits topologically:
- take hits that are closest to *straight line extrapolation*:
 - position of shower cluster as seen from IP for *neutrals*
 - straight line extrapolation from *TrackStateAtCalorimeter* for Tracks
- assign TOF estimators to *ReconstructedParticles*
- can be used on DSTs in analysis code

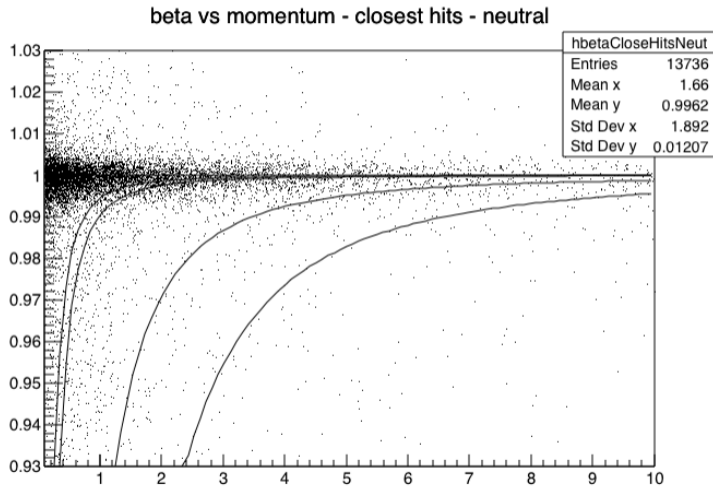
TOFFirstHit - first hit (closest to calo entry point)
TOFClosestHits - closest hit in every layer (<lMax)
TOFClosestHitsError - error of above
TOFFlightLength - trajectory length to reference point
TOFLastTrkHit - (unsmearred) time of last tracker hit (in SET)
TOFLastTrkHitFlightLength - trajectory length to last trk hit

- parameters can be stored for several assumptions on single hit time resolution
 - suggest to store for *0ps*, *10 ps* and *50 ps*

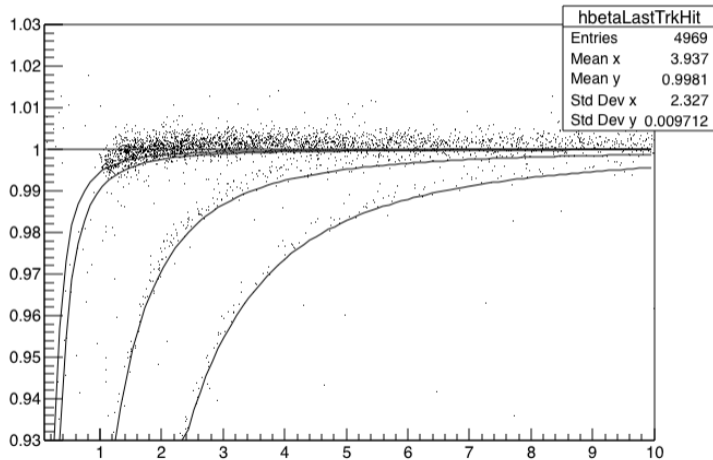








beta vs momentum - last tracker hit





- missed to specify `--constant.DetectorName=ILD_s5_v02` in prod scripts
 - all `ILD_s5_v02` and `ILD_15_o2` reco files have been reconstructed with settings for `ILD_15_o1_v02` !
 - **will re-run reconstruction for uds samples for both**
 - **will try to protect against this mistake**
- log files are in 'wrong' directory `mv-opt.dsk.dsk`
- updated confluence page w/ status of test production
 - will publish correct production ids for re-reconstructed files

- no major issues found in test production v01-19-06
- some minor issues under investigation
- implemented missing TOFProcessor
- only known open issues:
 - missing 4 T field map

Outlook

- try to make a production release in the next days
- unless any *show stoppers* arise