

Summary Tuesday

Tau ID

- two main approaches on the market:
 - TauJet: taus in hadronic events
 - Delphi: taus in low multiplicity events (up to ~ 10 -15 PFOs)
- plan:
 - release Taikan's TauJet in MarlinReco/Analysis
 - Taikan & Mikael go through details of both finders
 - how to combine?
 - port Delphi finder to C++? ~ 1000 lines f77
 - lepton ID: improve by MVA, dE/dx , cluster shape

Truth Algorithms

- new: TrueJets
 - colour singlets to jets and back
 - in v01-17-07
 - needs: fixes for Higgs in final state, ttH pythsim, gammagamma-> hadrons from Pythia
- RecoMCTruthLink
 - DBD unidirectional: which MCParticle contributed most to given RecoParticle
 - full version: not yet in svn
- TrueShower – would it be useful?
- Relation / Interplay with TruthVertices

Particle ID (I)

- Handler SETs PID, doesn't add
- that's ok – we go for ONE PIDObject per RecoParticle and per algorithm
- modify dumpevent? – works already!
- **separate dE/dx PID (todo):**
 - 5 hypotheses: pi, mu, K, p, e
 - store signed significance = signed distance to expected dE/dx over dE/dx error
 - find more sophisticated parametrisation of dE/dx uncertainty: dependence on number of hits / path length $5.4\% L^{-0.37}$ (L track-length in m).

Particle ID (II)

- separate shower shape PID (todo):
 - merge work by Hale & Masakazu ?
 - store likelihood $P(c | \text{vec}(x))$
 - application of prior $P(c)$ is analysis dependent – remove from central versions

Track refitting

- maxiDST with tracker hits `_used_` in tracks for refitting after particle ID?
- fit with 5 mass hypotheses (e, mu, pi, K, p) and store just track state at IP?
- multiple track states for different mass hypothesis

Vertexing

- Vertexing is run on PFOs only
- never tried on MarlinTrkTracks
- need MarlinTrkTrack quality
- suggestion to test:
 - make basic track quality selection
 - create a “TrackPFO” collection
 - test vertexing on that
 - Taikan comits Track2PFO converter into MarlinReco/Analysis
 - if promising: require Pandora to keep the relevant SOT tracks