A short summary of meeting SiD-PFA meeting at CERN from Sep 22-28, 2010
present: Ron Cassell, Mat Charles, Usha Mallik, Remi Zaidan

- A very productive meeting with detailed discussion
- Many ideas, but need diagnostic tools for assessment at each step for *any progress*
- A plan for taking pieces apart and putting back
- Will not be done in six weeks
- Hope to establish that we are on the right track

A multi-prong approach:

- Develop diagnostics and tools
    - Purity and efficiency check at each step with moderate output, neither debug nor resolution for checking performance
    - Establish baseline as benchmark with current performance
    - Use single pions for benchmarking as well
    - Cheater for photons and tracks (use real tracking)

    - Reconstruction cheater (see above)
    - Likelihood calibration for score dictionary
        - Uni-directional growth of shower, rather than bi-directional
        - Number of interaction lengths rather than distance
        - Different scoring for eg, ECAL, HCAL, and for different sub-cluster combinations
        - Should follow algorithmic development closely
    - Energy calibration, targeted neutral, charges, ECAL, HCAL, (particle type?)

PFA developments

- Many problems known but not precisely
- Remi's work helped diagnose in depth

- Use multi-pass track shower development
  - First pass mip connection only for the skeleton development (outward)
  - Second pass add other sub-clusters
  - Remove E/P check, stops shower development
  - Allow cluster sharing
  - Problem fixing third pass ?
  - Remove first cone and updating score
  - Modify second cone/reassignment algorithm (Remi's use of variables)
- Track-seed finding to revisit and improved, problems uncovered
- Jet merging algorithm to revisit, initially disconnect
- Improve showering point determination
- DT sub-cluster matching while crossing boundaries, fixed, put in CVS
- Better muon finder ready, put it in
- Better photon finder ?
- Electron finder has high efficiency at high energies, needs to improve at others
- DT clustering, with diagnostics check energy division among sub-clusters, optimal subcluster sizes

Frequent get together on phone and reassess