

Brainstorming Meeting on Hadronic Calibration in Oxford

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Group of Participants

- Oxford (Cigdem, Kristin, Claire, James, ..., + visitors)
- Arizona (Peter)
- Stockholm (Elin, Jorgen, ...)
- MPI Munich (Andreas, Sven + Paola via Skype)

Discussion Points (1)

- Introduction Talk (Peter Loch)
- Main Error on LHC
 - invisible particles (magn. field, dead material, cluster threshold, ...)
 - miss-classification em/had (Sven/Genady)
 - bias on weighting due to underlying event/noise

⇒ How can we make use of the shower history to improve the calibration
- MET performance of local hadron calibration
- Overview Stockholm (Elin)
 - <http://www.physto.se/elin/lic/>
- Talk: Kristin
 - Comparison Reco/Truth
 - Resolution/Linearity of the local hadron calibration

Discussion Points (2)

- Out-of-Jet Corrections
 - Hints from Et-flow around jets (different cone sizes)
 - Hints from jet shapes (particle flow)
 - Hints from Calorimeter response (signal distribution)
 - Hints from Inner Detector (Track Jets)
- Cluster/Jet shapes
 - How much hadronic is a cluster/jet?
 - no access to substructure cause of big cells in HEC
 - jet moments (as Sven's cluster moments)
 - statistical variables
- noise/ pile-up / underlying event
 - Discussion on paper from Doug ??? (Sven)
- Talk of Jorgen
 - scenario: very high pt top jets
 - substructure accessible

Task List (1)

- Refinement of LC in Jet context / Out-Of-Jet corrections (**Kristin, James, Claire, Andreas, Peter, Paola, Chiara**)
 - Hints from ET flow from around the jet
 - ET Flow inside the jet Particle and Calorimeter correlations, Constituent studies (Topo Cluster content of jets, width and shape of clusters inside)
 - hints from calorimeter signals for jets (longitudinal shape)
 - hints from ID tracks pointing to jets
 - comparison of truth jet shapes with reco jets shapes on EM scale and Had scale (another method to check quality of weighting)
- Missing ET (**Claire**)
 - correct energy scale for LocHad jets (fudge as first check?)
- Pile-up + underlying event (**David, Student**)
 - how do different calibrations perform on different pile-ups
- effect of REAL noise on the weights
 - how do different calibrations perform on different noise levels

Task List (2)

- monitoring / cluster stability / signal stability / stable hadronic signal (**Stockholm**)
 - how to measure, how to monitor (noise? RMS/vol of cells in database correct? dead cells?....)
- Look at shower history and possible correlations one can use to weight (**James, Cigdem, Claire, Kristin**)
 - cluster shapes (longitudinal and lateral distribution in showers)

- Oxford/UCL
 - Kristin (1 year)
 - James (1 year)
 - Claire (0.3 fte, 4 years)
 - Cigdem (0.3 fte)
- Stockholm
 - 1 Student ? (0.5 years)
 - David (0.2 fte)
 - Elin/Jorgen (? fte)
 - Philip?
- Arizona
 - 1 Student (1 year):
Photon+Jet relative change
of balance as function of jet
shapes
- Munich
 - Sven (0.1 fte)
 - Andreas (0.3 fte of 1 year)
 - Paola (0.3 fte of 1 years)
 - Gennadi (0.1 fte)
 - Teresa (0.1 fte)

- continue work on “Out-of-Jet Corrections” (Kristin, Paola, Andreas)
 - Quality checks using Calibration Hits
 - Et-flow studies
 - jet moments
- further coordination with Cigdem and Sven
- next Hadronic Calibration Workshop, March, 14th - 16th, Tucson (Arizona)
- next Brainstorming in one year in Stockholm