

Jet/Met goals and organization for upcoming year - Sarah Eno

ORGANIZATION

The Jet/Met group (and all the PRS groups) is being reorganized. It is being moved so that it is a subgroup of the HCAL group, and will be renamed HCAL/JET/MET (ecal/e/gamma, tracker/b/tau, muon/muon).

The scope will be expanded, to include

- simulation of the HCAL
- calibration of the HCAL
- test beam software
- anything else software like

Will be contacting people over the next week or so, to come up with a new organization chart to reflect the new scope.

We were asked to provide 2-3 **MILESTONES** for the upcoming year.

Dec 00: Document what we have done

- 1) get MET note approved (Pal)
- 2) produce note on jet work that's already been done (Silvia)
- 3) tau + track note: mid-february (Sasha)
- 4) produce note on fake jets: mid-february (Andrei)

Jun 01: find algorithms appropriate for the HLT for the following:

- 1) removing fake jets (Andrei)
 - 2) determining the energy of jets (A. Oulianov)
 - 3) determining MET (Pal)
 - 4) adding tracks to tau's (Sasha)
- and evaluate their effectiveness using a simulation of the HCAL that includes a realistic simulation of the electronics (Salavat)

Nov 01: Document plan and data samples needed to calibrate HCAL at high and low luminosity (ITEP/MSU group)

Nov 01: “final” answer for DAQ TDR: determine the lowest rate we can achieve with good

efficiency for the following signals

- 1) Higgs produced by bosonic fusion which decays to SUSY LSP's (???)
- 2) Higgs produced by bosonic fusion which decays to two tau's, and where at least one of the tau's decays hadronically (Sasha)
- 3) SUSY higgs to two taus, at least one of the tau's decaying hadronically (Sasha)
- 4) low mass supersymmetry to jets + MET (???)

List of Problem Areas:

- 1) not enough people that can contribute ORCA code. this is a serious problem that **will** prevent us from fulfilling our first milestone (even though we really need to make it)
- 2) communication between the farflung HCAL group. We need both Russia and Tata to invest in VRVS and to present results at JPG meetings.
- 3) not enough manpower willing to work on "fundamentals" like understanding the HCAL resolution, tuning weights, etc. (Though, this is changing, as the ITEP/MSU group is taking responsibilities in this area)
- 4) general manpower ;)

Detailed to-do list:

Christmas:

- 1) test calibrated jets in ORCA - ???
- 2) put MET object into ORCA - ???
- 3) put tau object into ORCA - ???
- 4) understand HCAL resolution in CMSIM - ???
- 5) tools to study alternative L1 segmentations complete
 - a) bigger HF showerlibrary
 - b) slightly different HE segmentation in CMSIM
 - c) readout quantization and proper pulse shape in HF in ORCA
 - d) ability to vary trigger segmentation in ORCA
 - e) fit for ET, not E in trigger primitive formation
 - f) L1 energy scale corrections in ORCA
- 6) get MET note approved: Christmas (Pal)
- 7) produce note on jet work that's already been done: Christmas (Silvia)

February

for use for May DAQ milestone

- 1) produce L1/HLT trigger table for use for May DAQ milestone
- 3) HLT tau algorithm that includes tracks - sasha
- 4) analysis of needs for jet/met-only trigger - ???
- 5) reoptimization of calorimeters weights for jet analysis - ITEP
- 6) an offline algorithm for rejection of fake jets - Andrei
- 7) offline MET with jet energy corrections

for use after May DAQ milestone

- 8) "correct" simulation of HCAL electronics and trig prim generation - salavat
- 9) tau + track note: (Sasha)
- 10) produce note on fake jets: (Andrei)

other

- 11) production for study of alternative L1 segmentations complete

March

- 1) evaluation of alternative L1 segmentations complete

September

- 1) Release of calibration database and interface software for HCAL/JetMET
- 2) Produce note on results from comparison between CMSIM events and OSCAR events reconstructed with ORCA
- 3) note comparing CMSIM to test beam results
- 4) Produce (or update) comprehensive note on HCAL/JetMET calibration
- 5) a note describing in detail all the components contributing to jet resolutions