

Jet Performance DPDs for the JetEtMiss group

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PH-ADE-CA
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I have just joined the PH-ADE group working for the calorimeter since October. My main work will be connected to the software development for the Atlas Jet/Etmiss group and to the understanding of the missing transverse energy in early data.

My primary responsibilities are preparation of a manageable data sample from the raw data: Derived Physics Data (DPD), including the beam collision data, commissioning data, and Monte Carlo sample. In particular, I will be responsible for the definition of this data format of the Jet/Etmiss group and will coordinate and integrate the needs of the various users. I will also contribute to the calibration software for jets and Etmiss.

In the beginning I worked on making the new ATLAS data analysis format (DPD) suitable for an analysis of real data from the commissioning of the ATLAS detector. The aim is to have all information available to understand the calorimeter performance in early data. Later, rejection techniques of events from cosmic radiation should be developed. This also includes studying the possibility to reject only certain energy deposits in an event. Such techniques will also be tested by overlaying Monte Carlo simulations of events produced in proton-proton collisions with real data from the commissioning runs.

The DPD definition will be revised, once real collision data can be analyzed. In particular the selection criteria of the events contained in the DPD have to be optimized and I will take over the coordination of this effort. I will also contribute to the overall calibration efforts and in particular to the software infrastructure needed for the calibration and missing Et in the early data.

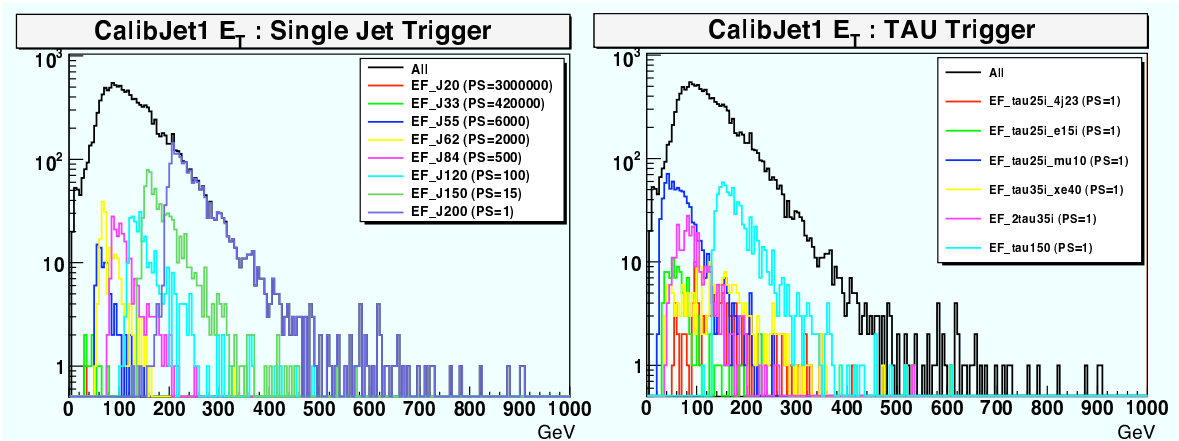


Figure 1: Jet energy distribution with Single-Jet and Tau triggers

Currently, the conditions of the Jet events are simply eta and P_T , and the additional pre-scales are applied for the events categorized with the uncalibrated jet energies. In order to avoid the ambiguity of the calibration at the initial stage, I tested the "trigger-based" pre-scaling in the offline level. Figure 1 shows the energy distribution of the jets with single-jet and Tau triggers. As we can see in the figures, the Tau triggers are not so useful for the Jet calibration comparing to the single jet triggers showing that they have almost same amount of events with the pre-scales. Thus this trigger-based pre-scaling would help to reduce the data size keeping the quality for the validation of the jet calibration.

The physics activities will concentrate initially on the evaluation of the performance of the missing transverse energy in early data. Later, I will work on the search of super-symmetric particles in events with large missing E_t .