

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Improving Event Identification in the HF Calorimeter of CMS

CHRISTOPHER FRYE, University of Central Florida, JEREMIAH MANS, University of Minnesota, COMPACT MUON SOLENOID COLLABORATION — The Forward Hadron Calorimeter (HF) of the Compact Muon Solenoid (CMS) at the Large Hadron Collider (LHC) lies in a region not covered by an inner tracking system, and we can rely only on the shapes of showers that hit the HF to determine whether or not they are due to electromagnetic particles. We review the current method of distinguishing shower types in the HF, and we bring attention to a drawback that will become present as the luminosity of the LHC increases and creates a need for tighter shower-shape cuts. We provide a method to correct this drawback, and we analyze the effectiveness of various tight cuts at isolating signal from background.

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Date submitted: 08 Nov 2011

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