

## Physics Selection Using The CMS Calorimeter Trigger

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The Compact Muon Solenoid (CMS) detector will operate at the Large Hadron Collider with luminosities of up to  $10^{34} \text{ cm}^{-2} \text{ s}^{-1}$ . At  $\mathcal{L}=10^{34} \text{ cm}^{-2} \text{ s}^{-1}$ , we expect  $10^9$  interactions per second. The rate of hard physics, e.g., W, Z boson and top quark production, exceeds the archival capacity of 100 Hz. The backgrounds from profusely produced jets from QCD processes dominate the rate. The CMS calorimeter trigger electronics is a first step toward reducing the rate to acceptable levels. The algorithms for this system are optimized to retain interesting new physics, e.g., higgs and SUSY, involving high  $P_T$  electrons, photons, taus, jets and missing  $E_T$ . Using CMS simulation software, we show that the rate requirements of the data acquisition system have been met while triggering on physics signals.

### References

- [1] CMS, *The TRIDAS Project Technical Design Report, Volume 1: The Trigger Systems*, CERN/LHCC 2000-38, CMS TDR 6.1
- [2] P. Chumney, S. Dasu, and W.H. Smith, *CMS Level-1 Regional Calorimeter Trigger Simulation Results*, CMS NOTE 2000/074

Available via the CMS information server: <http://cmsdoc.cern.ch>