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Detector Effects on Missing Transverse Energy and Missing Transverse Energy Performance in CMS ELIF ASLI ALBAYRAK, University of Iowa, CMS COLLABORATION — The theories that extend the Standard Model oftentimes introduce new weakly interacting particles. These particles produce imbalanced transverse momentum (or missing transverse energy, MET) even in the hermetic calorimeters since they escape the detectors without giving a signal. Hence, the measurement of MET in Large Hadron Collider (LHC) Experiments will be a strong evidence for new physics beyond the Standard Model. Compact Muon Solenoid (CMS) experiment is designed to have good MET measurement with its hermetic coverage. In this study we present the MET performance of the CMS detector. We also show the effects of detector malfunctions, such as dead or malfunctioned detector element or miscalibrated detector region, on the MET. We found that these malfunctions increase the number of events in the tails of MET distribution, thus mimics events from new physics. We also discuss several possible clean-up methods for such events.

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