

Simulation of the Cosmic Ray Background for the Mu2e Experiment

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The Mu2e experiment is designed to search for New Physics in an extremely rare process of muon to electron neutrino-less conversion. The Mu2e sensitivity to New Physics heavily relies on suppressing all the background sources to a fraction on event. The dominant background at Mu2e originates from cosmic ray (CR) muons that interact or decay in the detector solenoid and produce a signal-like electron. Mu2e expects to observe one CR background a day. In order to reach the proposed sensitivity, Mu2e is designed to suppress the CR background by 4 orders of magnitude, using the Cosmic Ray Veto detector that covers over 300 m^2 . The precision CR background prediction is an essential component of Mu2e's success. We will report on CR background estimates at Mu2e modeled by CRY cosmic ray generator and using the detector response simulated with the Geant4 framework.

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