Simulation of the Cosmic Ray Background for the Mu2e Experiment BEN BARTON, University of Virginia, YURI OKSUZIAN, Argonne Natl Lab, RALF EHRLICH, University of Virginia, RAY CULBERTSON, LISA GOOD-ENOUGH, ROB KUTSCHKE, Fermilab, NAM TRAN, Boston University, CRAIG DUKES, CRAIG GROUP, University of Virginia, MU2E COLLABORATION — The Mu2e experiment is designed to search for New Physics in an extremely rare process of muon to electron neutrino-less conversion with ¡ 0.5 expected background events. The Mu2e sensitivity to New Physics heavily relies on suppressing and understanding all the background sources at high precision. The dominant background at Mu2e originates from cosmic ray (CR) muons that interact or decay in the detector and produce a signal-like electron. Mu2e expects to observe over 750 background events induced by CR muons. 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 Mu2es 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.

Iuri Oksuzian
Argonne Natl Lab