



Contribution ID: 258

Type: not specified

## Studies of Beam Induced Radiation Backgrounds at the Mu2e Experiment and Implications for the Cosmic Ray Veto Detector Operations

*Friday, August 7, 2015 2:45 PM (15 minutes)*

The proposed Mu2e experiment will search for a neutrino-less muon to electron conversion process with almost four orders of magnitude of sensitivity improvement to the current best limit. One important background is caused by cosmic ray muons faking the conversion electron signature. In order to reach designed sensitivity, Mu2e needs to obtain a cosmic ray veto (CRV) efficiency of 99.99%. The CRV system consists of four layers of plastic scintillator which surrounds the detector, an area of approximately 300 m<sup>2</sup>. One of the challenges the CRV system faces is the large neutron and gamma fluxes present in the experimental hall, produced from beam interactions. This radiation can damage the detector components and generate large background noise in the CRV. We estimate the noise and total dead-time produced by the radiation backgrounds in the CRV using Geant4 based simulation with complete Mu2e experiment geometry and realistic CRV response.

### Oral or Poster Presentation

Oral

**Primary author:** Dr OKSUZIAN, Yuri (University of Virginia)

**Presenter:** Dr OKSUZIAN, Yuri (University of Virginia)

**Session Classification:** Accelerators, Detectors, Computing

**Track Classification:** Detectors