

Abstract Submitted  
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**Study of Beam-Induced Radiation in the CMS Detector at the Large Hadron Collider**<sup>1</sup> ANIL SINGH, Fermilab/Panjab Univeristy, PUSHPALATHA BHAT, Fermilab, Batavia, IL60510, SUMAN BERI, NIKOLAI MOKHOV, Fermilab, Batavia, IL60510 — The intense radiation environment at the Large Hadron Collider (CERN) at the design energy of  $\sqrt{s}=14$  TeV and luminosity of  $10^{34}$  cm<sup>-2</sup> sec<sup>-1</sup> poses unprecedented challenges for safe operation and performance quality of the silicon tracker detectors in the CMS and ATLAS experiments. The silicon trackers are crucial for the physics at the LHC experiments, and the inner layers, being situated only a few centimeters from the interaction point, are most vulnerable to beam-induced radiation. We have recently carried out extensive monte carlo simulation studies using MARS program to estimate particle fluxes and radiation dose in the CMS silicon pixel and strip trackers from proton-proton collisions and from machine background such as beam-gas interactions and beam-halo. We have also studied some possible machine accident scenarios. We will present results on radiation dose, particle fluxes and spectra from these studies and discuss implications for radiation damage and performance of the CMS silicon tracker detectors.

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