

Monte Carlo simulations of the radiation environment for the CMS Experiment

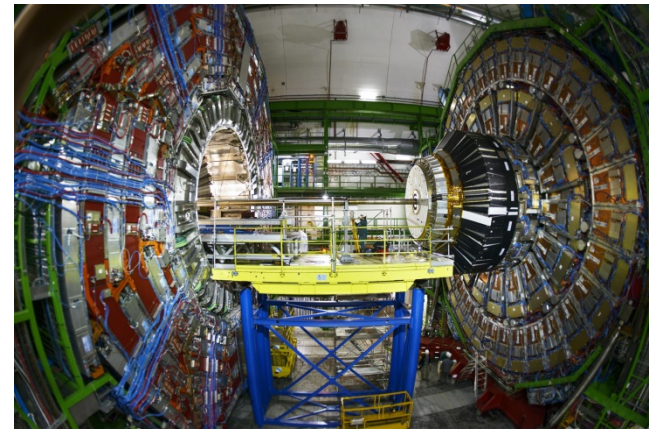
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Motivation

- Estimates of radiation levels at CMS are important to determine:
 - detector performance
 - longevity of materials
 - expected dose to personnel
- Simulations are performed by the CMS BRIL* Project, and the CERN Radiation Protection Group.
- FLUKA and MARS monte carlo radiation transport codes are used.

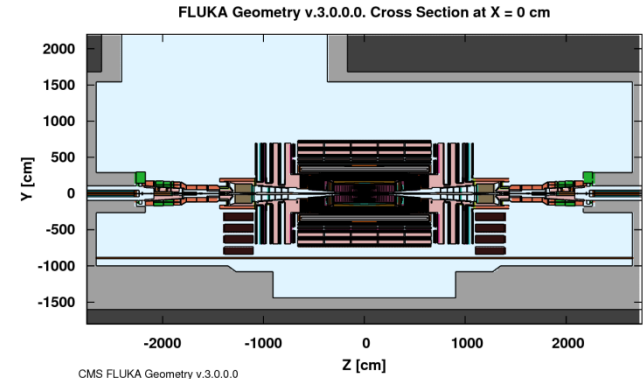
* *Beam Radiation Instrumentation and Luminosity*



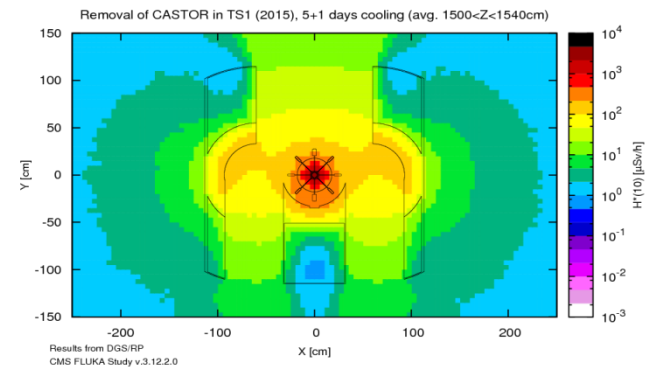
CMS, an LHC experiment in an 'open' configuration

Poster Content

- The poster includes examples of predicted radiation levels from the latest FLUKA and MARS Run 2 models for:
 - Machine Induced Background
 - Proton-proton collisions
 - Activation
- Activation results are based on ‘SESAME’ – a new tool for FLUKA simulations, developed by BRIL, to predict residual radiation for the CMS open scenarios.



The CMS FLUKA Model



*Residual dose equivalent rates with
open CASTOR and collars.*

Simulations use FLUKA + SESAME