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Code intercomparison and benchmark for muon fluence and absorbed dose induced by 14 and 18 GeV electron beams after massive iron shielding

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In 1974, Nelson, Kase, and Svensson published an experimental investigation on muon shielding around SLAC high energy electron accelerators (NIM 120 (1974) 413). They measured muon fluence and absorbed dose induced by 14 and 18 GeV electron beams hitting a copper/water beamdump and attenuated in a thick steel shielding. In their paper, they compared the results with the theoretical models available at that time.

In order to confront their experimental results with present model calculations, we have used the modern transport Monte Carlo codes MARS15, FLUKA2011 and GEANT4 to model the experimental setup and run simulations. The results are then compared between the codes, and with the SLAC data. Preliminary results from this campaign are reported in the presentation.

Summary

Results for muon fluence and dose after a thick shielding from the current versions of the MARS15, FLUKA2011 and
GEANT4 codes are compared with each other and with SLAC data for 14 and 18 GeV electron beams.

Primary author: MÜLLER, Stefan E. (Helmholtz-Zentrum Dresden-Rossendorf)

Co-authors: FASSÒ, Alberto (ELI-Beamlines); FERRARI, Anna (HDZR); MOKHOV, Nikolai (Fermilab); VERSACI, Roberto (ELI-Beamlines); TOSHIYA, Sanami (KEK); STRIGANOV, Sergei (Fermilab)

Presenter: MÜLLER, Stefan E. (Helmholtz-Zentrum Dresden-Rossendorf)

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