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## Shower simulations for the CERN proton synchrotron internal dump and possible shielding options

*Tuesday, 21 May 2024 16:00 (2 hours)*

During the Long Shutdown 2, the two internal dumps were replaced and successfully integrated into the CERN Proton Synchrotron operation to withstand the intense and bright beams for the High-Luminosity LHC. They function as safety devices, designed to swiftly intersect the beam's trajectory and effectively stop the beam over multiple turns. A significant challenge arises from their limited energy absorption capacity. Previous studies indicate that at the maximum PS beam energy of 26 GeV, only about 7% of the energy is absorbed by the dumps upon their insertion. This study, employing a combination of the FLUKA and SixTrack simulation code chain, evaluates the absorbed dose in downstream elements in view of the projected increase of beam intensities, according to the LHC injector upgrade parameters, and explores the feasibility and potential benefits of implementing shielding as a mitigation measure.

### Footnotes

### Funding Agency

### Paper preparation format

### Region represented

Europe

**Primary author:** NIANG, Samuel (European Organization for Nuclear Research)

**Co-authors:** HUSCHAUER, Alexander (European Organization for Nuclear Research); ESPOSITO, Luigi Salvatore (European Organization for Nuclear Research); GIOVANNOZZI, Massimo (European Organization for Nuclear Research); PUGNAT, Thomas (European Organization for Nuclear Research)

**Presenter:** NIANG, Samuel (European Organization for Nuclear Research)

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