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## Simulation studies of laser cooling for the Gamma Factory proof-of-principle experiment at the CERN SPS

*Sunday, 19 May 2024 16:00 (2 hours)*

The proof-of-principle (PoP) experiment at the Super Proton Synchrotron (SPS) at CERN aims at demonstrating laser cooling of high energy Li-like Pb79+ in a synchrotron. First laser cooling simulations with realistic laser and beam parameters of the Gamma Factory proof-of-principle experiment (PoP) in the Super Proton Synchrotron (SPS) at CERN are presented. Furthermore, we investigate the expected cooling performance for various laser-pulse types, such as Fourier-limited and continuous wave lasers, and compare their performance metrics such as emittance reduction and the required laser power.

### Footnotes

### Funding Agency

### Paper preparation format

LaTeX

### Region represented

Europe

**Primary author:** KRUYT, Peter (European Organization for Nuclear Research)

**Co-authors:** GAMBA, Davide (European Organization for Nuclear Research); FRANCHETTI, Giuliano (GSI Helmholtzzentrum für Schwerionenforschung GmbH)

**Presenter:** KRUYT, Peter (European Organization for Nuclear Research)

**Session Classification:** Student Poster Session

**Track Classification:** MC5: Beam Dynamics and EM Fields: MC5.D09 Emittance manipulation, Bunch Compression and Cooling