Contribution ID: **379** Contribution code: **THP014** Type: **Poster Presentation**

Beam Loss Modeling and Mitigation Due to Intra-Beam Stripping in H- Linacs

Thursday 14 August 2025 16:00 (2 hours)

Intra-Beam Stripping (IBS) is a critical beam loss mechanism in high-intensity H- linacs and presents a significant limitation to increasing beam power. This work presents a computational framework to evaluate and mitigate IBS-induced beam loss along the Spallation Neutron Source (SNS) LINAC. Our calculation is based on an analytic theory and involves evaluation of a 9D integral using the Monte-Carlo technique. We first benchmarked our calculations against simplified, analytically solvable cases. We then applied our algorithm to Gaussian bunches with a known probability density function (PDF). We next expanded our algorithm to arbitrary bunch distributions using the Neural Spline Flow (NSF) models trained on PyORBIT tracking data. In the future, we plan to validate our algorithm experimentally and apply it to design IBS mitigation strategies.

Please consider my poster for contributed oral presentation

No

Would you like to submit this poster in student poster session on Sunday (August 10th)

No

Footnotes

Funding Agency

I have read and accept the Privacy Policy Statement

Yes

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