Contribution ID: **489** Contribution code: **MOP027** Type: **Poster Presentation**

Integrating community codes for accelerator design and optimization

Monday 11 August 2025 16:00 (2 hours)

Advances in fidelity and performance of accelerator modeling tools, in tandem with novel machine learning capabilities, has prompted community initiatives aiming to realize "virtual test stands"that can serve as true analogues to physical machines. Such efforts require integrated, end-to-end modeling capabilities with support for parametric optimization and benchmarking. We present the ongoing development of an integrated Sirepo application to support the holistic modeling of accelerators. Our approach leverages existing modeling workflows, such as the Light Source Unified Modeling Environment (LUME), as well as community I/O frameworks, such as openPMD, to provide a toolbox for constructing and modeling beamlines. Users can build and test simulations using different community modeling tools, as well as connect individual tools to produce end-to-end simulations. Additional workflows have been developed to support machine learning tools that facilitate optimization and the development of surrogate models. We discuss some specific beamline modeling demonstrations as well as ongoing efforts to support code-agnostic design and development.

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

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I have read and accept the Privacy Policy Statement

Yes

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