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Impedance modeling of in-vacuum undulator with Gaussian process

Monday 11 August 2025 16:00 (2 hours)

The impedance of in-vacuum undulators (IVUs) significantly affect the broadband impedance and, consequently, the beam dynamics in storage rings. During the IVU design phase, numerous iterative discussions between physicists and engineers are required, often involving extensive simulations of the complete 3D geometry, a few meters long, using limited computational resources. In this paper, we propose training a Gaussian process model with limited simulation data to emulate the physical model. We compare the predictions of the trained model to the simulation data and explore its application in optimizing the IVU design.

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

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Yes

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