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Type: **Poster Presentation**

Expansions of the integrability program for novel accelerators

Monday, 20 May 2024 16:00 (2 hours)

The physical realization of integrable Hamiltonian dynamics provides promising avenues for investigations of new particle accelerators, best demonstrated by the Integrable Optics Test Accelerator (IOTA) at Fermilab. The core concept of IOTA centers around the results of the Danilov-Nagaitsev paper, where taking the paraxial approximation of the Hamiltonian for a charged particle can lead to a completely integrable system for a charged particle in the transverse plane. However, certain generalizations of that paper fail to provide similar results. We provide insights into some reasons for failure, as well as discuss a set-up for establishing a 6D integrable Hamiltonian system, in order to include the possibility of acceleration.

Footnotes

While I would like to present this in the Sunday Students Poster Session, I will be unable to due to conflicts with military service requirements and will not be present until the following day.

Funding Agency

Paper preparation format

Region represented

North America

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Track Classification: MC5: Beam Dynamics and EM Fields: MC5.D02 Nonlinear Single Particle Dynamics Resonances, Tracking, Higher Order, Dynamic Aperture, Code Developments