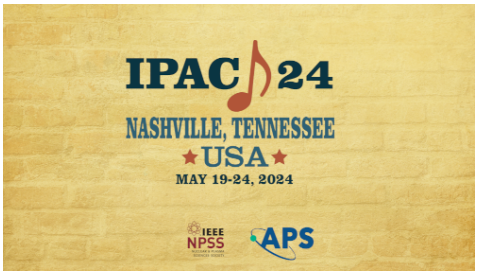

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Overview of the new beam physics research at the IOTA/FAST facility

Tuesday, 21 May 2024 16:00 (2 hours)

The Fermilab Accelerator Science and Technology (FAST) facility is dedicated to the exploration of novel concepts in accelerator and beam physics, and the development of a robust workforce, in order to enable and enhance next-generation particle accelerators. FAST comprises a high-brightness superconducting electron linac, and a storage ring, the Integrable Optics Test Accelerator (IOTA). Experiments in the most recent operational run include studies of nonlinear integrable lattices; tracking of single electrons; precise characterization of undulator radiation; studies with low-momentum-compaction lattices; and ultra-wide range beam diagnostics based on Photomultiplier tubes. In the linac, experiments on noise in intense electron bunches were conducted. The IOTA proton injector, currently being commissioned, will enable a diverse program on space-charge-dominated beams. Research areas include non-invasive beam profile monitoring for proton beams; beam dynamics with electron lenses; halo suppression, feedback systems, and electron cooling. In this presentation, we provide an overview of the recent results and highlight future plans together with opportunities for collaboration.

Footnotes

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