
Contribution ID: **305** Contribution code: **TUP008** Type: **Poster Presentation**

# Analysis of the elliptic integrable non-linear system in IOTA using tracking of a single electron.

*Tuesday 12 August 2025 16:00 (2 hours)*

Integrable nonlinear lattices that can be realized in practical accelerators are of great interest, as they offer the potential to support high-intensity beams via Landau damping of collective instabilities. One such system, based on an elliptic potential, has been extensively studied at the IOTA storage ring at Fermilab. The analysis of strongly nonlinear dynamics with multi-particle bunches is challenging due to the rapid decoherence of kicked beams. IOTA has the capability to track single electrons using linear multi-anode photomultiplier tubes for simultaneously measuring transverse coordinates and arrival times of synchrotron-radiation pulses. This technology enables the full reconstruction of turn-by-turn positions and momenta in all three planes for a single particle. Using this apparatus, we measured the dependence of small-amplitude tunes on the strength of the nonlinear magnet, as well as tunes dependence on oscillations amplitudes.

## Please consider my poster for contributed oral presentation

Yes

## 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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**Session Classification:** TUP: Tuesday Poster Session

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