Connecting The Dots 2020



Contribution ID: 4

Type: Plenary

Kinematic Kalman Filter Track Fit

Tuesday 21 April 2020 20:00 (25 minutes)

We will present the implementation of a kinematic Kalman filter-based track fit. The kinematic fit uses time as the free parametric variable to describe the charged particle's path through space, and as an explicit fit parameter (t0). The fit coherently integrates measurements from sensors where position is encoded as time (ie drift cells) with pure time sensors and geometric (solid-state) position sensors, including time-domain correlations. The kinematic formulation implicitly defines the particle mass and propagation direction, and provides a natural relativistic interface to both particle momentum and position. We will show results from testing the fit using a toy MC, and compare its performance to a conventional geometric Kalman filter fit when both are applied to simulations of the straw tracker design of the Mu2e experiment.

Consider for young scientist forum (Student or postdoc speaker)

No

Second most appropriate track (if necessary)

Enhanced performance of tracking algorithms

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Session Classification: Recording sessions