Contribution ID: **132** Type: **Parallel Session Presentation**

New Spin Tracking Software Developed For General Particle Tracer

Friday, 22 October 2021 09:30 (20 minutes)

A new particle spin tracking feature has been developed and implemented within General Particle Tracer (GPT). Simulating polarized particles under various conditions within accelerators requires the classical dynamics and time-dependent spin equation of motion. These equations capture the particles behavior as it interacts with electro-magnetic fields. The GPT-Spin extension is able to track particle spin coordinates in GPT using the generalized Thomas-BMT equation. GPT is based on fully relativistic 3D particle-tracking techniques, providing a solid basis for the study of all 3D and non-linear effects of charged-particles dynamics, now including spin, in electro-magnetic fields. New or modified GPT elements have been implemented to initialize and simulate an arbitrary particle beam with spin. Built in or custom elements and field maps can all be used to perform highly specialized calculations for specific applications. This work will present benchmark simulations and details of the newly available GPT -Spin feature.

Primary authors: STEFANI, Mark (JLab); Dr VAN DER GEER, S.B. (Pulsar Physics)

Presenter: STEFANI, Mark (JLab)

Session Classification: Acceleration, Storage and Polarimetry of polarized Beams

Track Classification: Parallel Sessions: Acceleration, Storage and Polarimetry of polarized Beams