Joint DESY and University of Hamburg Accelerator Physics Seminar

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(16:00 in Room 459/30b)

Mixed Accelerator and Particle Physics Simulation for Detector Background and Energy Deposition

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Abstract

Current and future accelerator facilities require precise control and prediction of beam losses be it for experimental backgrounds, radio-activation or energy deposition in cryogenic equipment. To accurately simulate beam loss a combination of accelerator tracking and particle physics processes is required. We present a combined simulation that can seamlessly track particles through a 3D model of an accelerator including the interaction of the beam with the machine as well as all secondary particles. The simulation tool, BDSIM, which is based on the Geant4 physics library, is described. Recent simulations for a variety of applications including proton and ion collimation at the Large Hadron Collider at CERN, low energy proton delivery systems, and high energy lepton collider muon backgrounds are presented.

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