

ACCELERATOR SEMINAR

“Advanced Computational Techniques for Design and Simulation of High Luminosity Muon Accelerators”

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Realizing a high luminosity Muon Collider/Neutrino Factory requires two essential components: a bright muon beam source and an aggressive ionization cooling. In this talk, I will go over the details of the design and optimization of a bright muon source and a novel high-field low-energy ionization cooling channel through advanced numerical simulation techniques.

The study of the design and the beam dynamics of the complex muon source and the ionization cooling channel through numerical simulation requires the integration of advanced parallel optimization algorithms with multi-particle tracking and Mont-Carlo simulations.

Details of a parallel multi-objective optimization algorithm which has the ability to work in multi-layer of parallelism will be presented. The application of such robust high performance optimization algorithm in the design of the above mentioned channels will be discussed in detail.

Finally, I will wrap up the talk with a thorough explanation of the meticulous process of integration of parallelized Monte - Carlo simulation codes with optimization algorithms.

Thursday, September 4, 2014

11:00 a.m.

CEBAF Center, Room F113

Coffee before seminar beginning at 10:45 a.m.