The Beams and Applications Seminar Series

Supercomputing in Beam Physics

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Bldg. 401, room E1100/1200
Monday, Mar. 8, 1:30 pm
Host: K.-J Kim, ASD

The SciDAC Accelerator Modeling Project is a DOE Office of Science project sponsored by the Office of High Energy Physics and performed in collaboration with the Office of Advanced Scientific Computing Research. The goal of this multi-institutional, multi-disciplinary effort is to develop a new generation of terascale accelerator design codes, targeted to parallel computing platforms, and to apply them to accelerator projects of national importance. In this talk I will first give an overview of the project, describing the primary focus areas of beam dynamics, electromagnetics, and advanced (laser/plasma) accelerator modeling. Next I will describe in greater depth the progress in terascale beam dynamics simulation, including new capabilities for modeling colliding beams and modeling intense beams in linear and circular accelerators. Lastly I will discuss future prospects in "ultrascale" computing, where computers will have peak performances of 100 TFLOP to a petaFLOP.