The Beams and Applications Seminar Series

Development, Verification, and Validation of Multiscale Methods for Simulating High-Brightness Beams

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Bldg. 401, room B3100 (Special location)
Monday, April 25, 1:30 pm

Host: John Lewellen, ASD

As one of its main initiatives, the Beam Physics and Astrophysics Group at NIU has embarked on a path to develop multiscale methods for simulating high-brightness, high-average-current beams, first in photoinjectors, and later in full hadron and lepton machines. Thus far the Group has concentrated on developing and commissioning a space-charge algorithm that employs wavelet denoising. The algorithm has been incorporated into the code Impact3D; it is running and is presently being optimized. An essential ingredient of the optimization is verifying results against output from other codes and validating results against laboratory experiments. Robust verification and validation require tools that probe far deeper than bulk properties of the beam; details are now important. I will present an overview and status report of the code itself, along with a summary of computational and experimental tools under development for verification/validation. I will also mention future applications in beam physics to which a wavelet-based code is especially well suited.

For more information visit
http://www.aps.anl.gov/asd/physics/seminar.html

Visitors from off-site please contact Yuelin Li
(ylli@aps.anl.gov, 630-252-7863) to arrange for a gate pass.

This ANL seminar series is a CARA activity and focuses on the physics, technology and applications of particle and photon beams. It is sponsored jointly by the ASD Division, the AWA group of the HEP Division, and the ATLAS group of the PHY Division.