John Adams Institute for Accelerator Science Lecture Series

Thursday 10th October 2013 at 2:30pm
Fisher Room, Denys Wilkinson Building

Nested Head-Tail Vlasov Solver: a New Powerful Program for Transverse Beam Stability Analysis

The lecture will be delivered by

Alexey Burov,
FNAL

Abstract: Nested Head-Tail (NHT) Vlasov Solver is a Matematica-based program, allowing fast and efficient analysis of bunched beams transverse instabilities. It takes into account azimuthal, radial, coupled-bunch and beam-beam dimensions of the transverse collective oscillations, assuming arbitrary given bunch distribution function, wake function, damper gain profile, as well as octupole strength, beam-beam and RF nonlinearity for computation of the instability thresholds. The code was applied to the LHC, leading to optimization of its chromaticity and the feedback and checking its impedance model. NHT application helped to refute strong-strong beam-beam and two-beam impedance hypotheses for end-of-squeeze instability in the LHC, thus opening a door for the three-beam or beam-beam-beam hypothesis.

For further details contact Glenn Christian at g.christian1@physics.ox.ac.uk