

Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Developing Multi-timescale in 3D PIC CODE OSIRIS XI-AODONG WANG, TOM KATSOULEAS, USC, WARREN MORI, FRANK TSUNG, UCLA — An idea of advancing the beam and plasma with different time scales is proposed in this paper. Because beam particles usually respond much more slowly than plasma particles, large time steps can be used to update beam particles to save computation time. We will describe how to apply this multi-timescales method in 3D particle-in-cell (PIC) code OSIRIS. Optimized parameters for preserving fidelity and saving computation time are discussed. The code is applied to modelling the energy gain in the SLAC E167 experiment and shows an energy gain of 40GeV for 75cm plasma length. The limitations of this method are also studied, such as trapped particles and hosing.

Xiaodong Wang
USC

Date submitted: 07 Sep 2006

Electronic form version 1.4