Contribution ID: 60

Type: not specified

## SP9: Inovesa: A Parallelized Vlasov-Fokker-Planck-Solver for Desktop PCs

Friday 15 July 2016 10:04 (3 minutes)

In order to simulate the dynamics of an electron bunch in a storage-ring due to the self-interaction with its own coherent synchrotron radiation it is a well established method to numerically solve the Vlasov-Fokker-Planck equation. We present Inovesa, a modularly extensible program that uses OpenCL to massively parallelize the computation, allowing a standard desktop PC to work with appropriate accuracy and yield reliable results within minutes. We provide numerical stability-studies over a wide parameter range, compare our numerical findings to known results. We will show that for ANKA there is a good agreement between measurements and simulation results assuming an impedance due to coherent synchrotron radiation shielded by parallel plates.

Primary author: SCHÖNFELDT, Patrik (KIT)

Co-authors: MÜLLER, Anke-Susanne (KIT); STEINMANN, Jonannes (KIT); BROSI, Miriam (KIT)

Presenter: STEINMANN, Jonannes (KIT)

Session Classification: Session 3: Beam Dynamics and Photon Sources