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Two Dimensional Transient CSR Simulation in Julia

Wednesday, 10 May 2023 16:30 (2 hours)

Coherent Synchrotron Radiation (CSR) occurs when electron beams traverse a curved trajectory. In novel accelerators, CSR poses a potential limit for electron beams to reach high brightness. While the longitudinal CSR wake has been well studied in one-dimensional theory and implemented in several simulation codes, transverse wakefields have received less attention. Following the recently developed two-dimensional CSR theory, we developed software packages in Julia to simulate the 2D transient CSR effects. To speed up computation for CSR wakes, the packages have GPU compatibility. We applied these codes to simulate the 2D CSR effects in the LCLS-II and FACET-II particle accelerators at the SLAC National Accelerator Laboratory.

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Footnotes

I have read and accept the Privacy Policy Statement

Yes

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