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Contribution ID: **229**   Type: **Poster (one author must be in person)**

Code development with real lattice and its initial application

Thursday, 8 June 2023 17:03 (1 minute)

Simulation study is more and more essential in the design and study of a modern e+e- collider. Existing tools often simplify the lattice model in beam-beam or collective effects study. GPU provide the feasibility to implement element-by-element tracking with large amount of particles and limited computing resources. New e+e- collider need more self-consistent simulation to predict the beam stability or machine performance quantitatively. We have developed a GPU-based parallel code (APES-T) which make it feasible to use 1 million macro-particles per bunch in element-by-element tracking besides beam-beam interaction and other effects. Some applications at superKEKB and BEPCII has started using the new codes. Very initial results will be presented.

Primary author: LI, Zhiyuan

Co-authors: OHMI, Kazuhito (KEK); ZHANG, Yuan (IHEP-CAS); ZHOU, Demin; WANG, Bin (中国科学院高能物理研究所)

Presenter: LI, Zhiyuan

Session Classification: Poster session and Wine & cheese

Track Classification: Accelerators posters