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Benchmark and performance of beam-beam interaction models for XSUITE

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The understanding of beam-beam effects, which influence the choice of the FCC-ee design parameters for several aspects, require sophisticated and high-performance numerical simulations. The self-consistent study of the interplay of nonlinear dynamical phenomena resulting from collisions in the machine is key to accurately assess its potential performance. Although current simulation frameworks can address specific aspects of the dynamics separately, they are difficult to interface with each other for more complex studies. To address this challenge, Xsuite, a new general purpose software framework for beam dynamics simulations, is currently under development. We discuss the implementation of the beam-beam interaction in this new toolkit and the evaluation of its performance on multiple platforms.

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Footnotes

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Yes

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