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Beam-beam effects in the STCF collider,

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The Super Tau-Charm Facility (STCF) is designed to achieve a peak luminosity of 1×10^{35} cm^{-2}s^{-1} using the crab waist (CW) collision scheme. Its design is currently underway, led by the USTC team in China. In this study, we investigate the impact of beam-beam effects on the STCF design by performing both weak-strong and strong-strong beam-beam simulations, with and without full lattices. We evaluate luminosity stability under the latest design updates and examine the influence of the CW scheme and key beam parameters. The findings provide essential insights for optimizing lattice configurations and refining global operational settings.

Footnotes

Funding Agency

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Yes

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