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Benchmarking equilibrium emittance simulation tools for the Future Circular Collider

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The determination of equilibrium emittance stands as a critical factor in optimizing the luminosity of the Future Circular Collider (FCC). In order to have accurate simulations and understanding of the emittance, multiple effects have to be taken into consideration including errors in the machine, solenoid effects, synchrotron radiation and beam-beam effects. The novel X-Suite software aims to encompass many of these effects. In this paper we present benchmark studies and first results for determining equilibrium emittances using X-Suite and other simulation codes.

Footnotes

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