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Optimizing the beam intensity control by Compton back-scattering in e⁺/e⁻ Future Circular Collider

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In this paper, we present the possible use of laser Compton back scattering (CBS) to adjust and tune the bunch intensity. In the future circular electron-positron collider “FCC-ee”, the intensity of the colliding bunches should be tightly controlled, with a maximum charge imbalance between collision partner bunches of less than 3–5%. The control of such tolerance is necessary due to the strong effect of beamstrahlung on the bunch length and “flip-flop” instability. We show a realistic beam optical line and simulation results of CBS in the “FCC-ee”, including the distribution of scattered positrons.

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Footnotes

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Yes

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