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CEPC circumference optimization

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The CEPC is a proposed high luminosity Higgs/Z factory, with the potential to be upgraded to top factory at center-of-mass energy of 360GeV. We perform an optimization study on the circumference of CEPC. We calculate the instant luminosity, the construction and operation cost for different circumferences. With respect to the total cost and average cost per particle, we conclude that the optimal circumference for the CEPC Higgs operation is 80 km. Taking into account of the Z pole operation, the potential high-energy upgrade of CEPC (top factory), the optimal circumference increased to 100 km. The long future proton-proton upgrade of CEPC (SPPC) also favors a larger circumference, and we conclude that 100 km is the global optimized circumference for this facility.

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Footnotes

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Yes

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