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Precision Higgs Physics at the CEPC

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Abstract: Version 0.8

The recent discovery of a Higgs boson with its mass around 125 GeV by the ATLAS and CMS Collaborations has provided the first insight into the scalar sector of the Standard Model and beyond. The particle will be the subject of extensive studies of the ongoing LHC program. A lepton collider Higgs factory has been proposed as a logical next step beyond the LHC to measure the properties and study potential new physics associated with the Higgs boson. The Circular Electron Positron Collider (CEPC) is one of such proposed Higgs factories. The CEPC is an e^+e^- circular collider with a center-of-mass energy of $\sim 240-250$ GeV in a tunnel of 50 km or longer in circumference proposed by China. It will be followed by a Super Proton-Proton Collider (SPPC) in the same tunnel with an energy $70-100$ TeV. In this paper, we examine physics cases of and estimate precision achievable at the CEPC as a Higgs factory.

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The historic discovery of a Higgs boson in 2012 by the ATLAS and CMS collaborations [? ?] at the Large Hadron Collider (LHC) has opened a new era in particle physics.

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References

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