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The Higgs->bb/cc/gg measurement at CEPC

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Accurately measuring the properties of the Higgs boson is one of the core physics objectives of the Circular Electron Positron Collider (CECP). As a Higgs factory, the CEPC is expected to operate at a centre-of-mass energy of 240 GeV, deliver an integrated luminosity of 20 inverse ab, and produce four million Higgs bosons according to the Snowmass report. Combining measurements of the LLH, vvH, and qqH channels, we conclude that the signal strength of Higgs->bb/cc/gg can be measured with a relative accuracy of 0.14%/2.13%/0.82% (relative statistical uncertainty only). We analyze the dependence of the expected accuracies on the critical detector performances: Color Singlet Identification (CSI) for the qqH channel and flavor tagging for both vvH and qqH channels. Compared to the baseline CEPC detector performance, ideal flavor tagging can increase the Higgs->bb/cc/gg signal strength accuracy by 2%/63%/13% in the vvH channel and 35%/122%/181% in the qqH channel. A strong dependence between the CSI performance and anticipated accuracies in the qqH channel is identified. The relevant systematic uncertainties are also discussed.

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