

Higgs physics opportunities at the FCC

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The Future Circular Collider physics programme is based on the sequence of a 90-365 GeV high luminosity e+e- collider (FCC-ee) followed by a 100 TeV hadron collider (FCC-hh). A main goal of the FCC is to fully study the Higgs boson properties. The FCC-ee makes use of the well-known c.m. energy by using Z tagging to perform a model-independent determination of the ZH cross-section at 240 GeV, and thereby measure the coupling to Z bosons and the total width. The couplings to W, b, c, g (and, partially, strange) will be measured at the FCC-ee, and the more rare, $\gamma\gamma$, $Z\gamma$, $\mu\mu$, invisible decays at the FCC-hh. The precise top-quark measurements at FCC-ee will be instrumental to determine the top Yukawa at the FCC-hh. The Higgs self-coupling will be determined from high-order corrections to $\sigma(\text{ZH})$ at FCC-ee, and at percent-level from HH production at the FCC-hh. Finally, the FCC-ee offers a unique opportunity to determine the electron Yukawa coupling via resonant s-channel Higgs production.

Alternate track

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Yes

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