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FCC-ee: synergies between Tera-Z and Higgs physics

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The FCC-ee will be a precision machine envisioned to be ready for data-taking in ~2045-2060 as a Higgs factory, allowing for the study of electroweak and top physics at the highest precision. The amount of data expected to be collected will surpass the LEP data in a few minutes of data-taking. The 17 million Z-bosons collected at LEP enabled highly precise measurements of electroweak observables. The Tera-Z program of the FCC-ee, which aims to collect 10^{12} Z-bosons, with 10^5 more Z's than LEP, will test the Standard Model at unprecedented precision, posing the unique challenge of requiring theoretical calculations with an accuracy of 10^{-6} . The Tera-Z program will facilitate precise measurements of the Higgs to gauge boson (HVV) couplings improving the precision by 50% with respect to a nominal run. The Tera-Z run will also help reduce the impact of uncertainties of electroweak parameters, which can be up to 10% on the Higgs coupling. The Tera-Z program will therefore be a crucial feature of the FCC-ee.

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