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EWK precision measurements at FCC-ee

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The FCC-ee offers powerful opportunities for direct or indirect evidence for physics beyond the Standard Model, via a combination of high precision measurements and searches for forbidden and rare processes and feebly coupled particles. The precision measurement program benefits from an extraordinary conjunction of circumstances: (i) very clean experimental conditions and excellent centre-of-mass determination at all energies from the Z to above the top quark pair production region, (ii) unprecedented statistics with in particular $5 \cdot 10^{12}$ produced Z bosons, 10^8 WW events, and more than 10^6 ZH and ttbar events. This will allow a huge leap in precision both for the ElectroWeak Precision Observables in both neutral and charged currents, as well as for direct measurements of other fundamental SM parameters such as $\alpha_{QED}(m_Z)$, $\alpha_S(m_Z)$, m_{top}, and m_H. Examples will be shown of the steady work that is ongoing to understand how to improve the detector, analyses, and theory calculations in order to reduce systematic errors towards the statistical ones. Consequences on decoupling, non-decoupling, and mixing new physics will be briefly given.

In-person participation

Yes

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