

# Electroweak precision physics at the FCC

*Friday 19 July 2024 08:45 (15 minutes)*

The FCC-ee offers unparalleled opportunities for direct and indirect evidence for physics beyond the Standard Model (SM), via a combination of high precision measurements and searches for forbidden and rare processes. The precision measurement program benefits from an extraordinary conjunction of (i) very clean experimental conditions and excellent c.m. energy determination from the Z up to the top-quark pair production, (ii) unprecedented statistics, with  $6 \cdot 10^{12}$  Z bosons,  $10^8$  WW events, and  $1.5 \cdot 10^6$  Higgs and  $t\bar{t}$  events. This will allow a huge leap in precision both for the Electroweak Precision Observables in both neutral and charged currents, as well as direct measurements of key SM parameters such as  $\alpha(m_Z)$ ,  $\alpha_s(m_Z)$ ,  $\sin \theta_W$ ,  $m_{top}$ , etc. Examples will be shown of the steady work that is ongoing to understand how to improve the detector, analysis, and theory calculations in order to reduce systematic errors towards the statistical ones.

## Alternate track

### I read the instructions above

Yes

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**Session Classification:** Top Quark and Electroweak Physics

**Track Classification:** 04. Top Quark and Electroweak Physics