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Type: **Parallel session talk**

# The general-purpose LHeC and FCC-eh high-energy precision programme: Top and EW measurements

*Friday 25 August 2023 08:30 (18 minutes)*

Duration: 14'+4'

The Large Hadron-electron Collider and the Future Circular Collider in electron-hadron mode [1] will make possible the study of DIS in the TeV regime providing electron-proton collisions with instantaneous luminosities of  $10^{34} \text{ cm}^{-2}\text{s}^{-1}$ . In this talk we will review the opportunities for measuring standard and anomalous top quark couplings, both to lighter quarks and to gauge bosons, flavour changing and conserving, through single top quark and  $t\bar{t}$  production. We will discuss the studies in inclusive DIS of different EW parameters like the effective mixing angle and the gauge boson masses, and the weak neutral and charged current couplings of the gauge bosons. We will also review the possibilities in direct  $W$  and  $Z$  production, and analyse the implications of a precise determination of parton densities at the LHeC or FCC-eh on EW measurements at hadronic colliders. Special emphasis is given to possibilities to empower  $pp$  and  $e^+e^-$  physics at the LHC and FCC.

[1] LHeC Collaboration and FCC-he Study Group: P. Agostini et al., J. Phys. G 48 (2021) 11, 110501, e-Print: 2007.14491 [hep-ex].

## Collaboration / Activity

LHeC/FCC-he Study Group

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