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Proton structure and precision QCD at the LHeC and FCC-he

Thursday 30 March 2023 16:50 (20 minutes)

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 per nucleon instantaneous luminosities around 10^{34} cm^{-2}s^{-1}. In this talk we review the opportunities that these proposals offer for the determination of the structure of the proton. The complete unfolding of all parton species in a single experiment with high precision in an extended kinematic domain would be possible already in a first stage of the machine with modest integrated luminosity. We will also present the determination of the strong coupling constant with per mille accuracy using inclusive and jet DIS data.

[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].

Submitted on behalf of a Collaboration?

Yes

Participate in poster competition?

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