

# DIS2023: XXX International Workshop on Deep-Inelastic Scattering and Related Subjects



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Type: **Parallel talk**

## High energy QCD and eA collisions at the LHeC and FCC-he

*Thursday, 30 March 2023 17:30 (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 (nucleus) collisions with per nucleon instantaneous luminosities around  $10^{34}$  ( $10^{33}$ )  $\text{cm}^{-2}\text{s}^{-1}$ . In this talk we review the opportunities for the determination of the nuclear parton structure at small  $x$  in view of the recent findings in proton-nucleus collisions at the LHC. We will also discuss the possibilities of establishing the existence of a new non-linear regime of QCD at small  $x$  which requires both  $ep$  and  $eA$  data to be available at TeV scale energies, by examining different observables sensitive to non-linear dynamics that, besides, provide differential information on proton and nuclear structure.

[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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**Session Classification:** WG6

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