

## New top and BSM Physics at the LHeC and FCC-he

*Tuesday 3 May 2022 15:40 (20 minutes)*

The LHeC and the FCC-he offer fascinating, unique possibilities for measurement of top properties and discovering BSM physics in DIS, both due to their large centre-of-mass energies and high luminosities. In this talk we will review the most recent studies. We will revisit the determination of the top mass through inclusive measurements. In addition, we will address the possibilities for precise measurements of  $Wtq$  and  $\gamma tq$  couplings, and competitive searches for FCNC top couplings. We will show the prospects for observing extensions of the Higgs sectors both with charged and neutral scalars, anomalous Higgs couplings and exotic decays. Then we will discuss searches for R-parity conserving and violating supersymmetry both with prompt and long-lived particles, and of feeble interacting particles like sterile neutrinos, fermion triplets, dark photons and axion-like particles. Finally we will address anomalous couplings and searches for heavy resonances like leptoquarks and vector-like quarks, excited fermions and colour-octet leptons.

Reference: P. Agostini et al. (LHeC Study Group), The Large Hadron-Electron Collider at the HL-LHC, J. Phys. G 48 (2021) 11, 110501, e-Print: 2007.14491 [hep-ex].

### Submitted on behalf of a Collaboration?

Yes

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