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LHeC detector design and simulation

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The Large Hadron Electron Collider (LHeC) is a proposed facility that will exploit the LHC beams for electron-proton/nucleus scattering, using a new 60 GeV electron accelerator. A detector concept is presented for the
measurement of precision deep inelastic scattering phenomena including the reconstruction of Higgs decay final states with
maximum acceptance. An overview is also given on the chosen technologies as well as steps towards simulating the LHeC
detector using the DD4HEP framework. Aspects are also presented for measurements of forward (p,n) and backward particle
(e,γ) production as it is required for diffractive and precision DIS
physics. Finally, first considerations are included as to how a DIS detector
could be built when exposed to the 50 TeV proton beam and the $O(100)$
GeV electron beam with the FCC configuration.

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