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The status of the LHeC project and its impact on Higgs physics

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Abstract :

The LHeC is envisioned to collide electrons and protons concurrently with proton-proton collisions at the LHC. The overall status of the project will be summarized. This comprises a review of the accelerator facility, the Energy Recovery Linac, and the detector design. The ATLAS and CMS collaborations at the Large Hadron Collider have observed a new particle consistent with a scalar boson and with a mass of about 125 GeV. The prospects of studying this newly discovered boson at the LHeC are reviewed. This includes ability to isolate the H to bb decay with a large signal-to-background ratio about $S/B = 2$ and the model independent exploration of the CP-properties of the $HVV, V = W, Z$ couplings. The latter is a unique capability of ep collisions. The prospects of other decay channels will also be discussed. An enhanced instantaneous luminosity scenario of $L = 10^{34} \text{cm}^{-2}\text{s}^{-1}$ is considered. In this scenario the LHeC becomes a Higgs factory.

Award :

No

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Paper :

Yes

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