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Two-photon processes in future electron-hadron facilities

High energy photon-photon interactions provide unique opportunity for studying with high precision the electroweak sector of particle physics at future electron-hadron colliders [1]. In particular, facilities such as the LHeC [2, 3], and its proposed phase-one option at a 0.75 TeV centre-of-mass energy [4], FCC-eh, or SppC-eh, will offer very advantageous experimental conditions and at the same time provide high $\gamma\gamma$ luminosities, for photon-photon centre-of-mass energies reaching the TeV scale.

In this talk we will give an overview of sensitivities for multiple SM, and BSM photon-induced processes at these colliders.

References:

[1] L. Forthomme, H. Khanpour, K. Piotrzkowski, Y. Yamazaki, "High energy $\gamma\gamma$ interactions at the LHeC", paper in preparation

[2] P. Agostini, H. Aksakal, et al, "The Large Hadron-Electron Collider at the HL-LHC", J. Phys. G 48 (2021) 11, 110501

[3] F. Ahmadova, K. André, et al, "The Large Hadron electron Collider as a bridge project for CERN", arXiv:2503.17727 [hep-ex]

[4] K. André, B. Holtzer, L. Forthomme, K. Piotrzkowski, "An electron-hadron collider at the high-luminosity LHC", arXiv:2503.20475 [hep-ex]

Secondary track

T09 - Beyond the Standard Model

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