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Exploring High Energy Photon-Photon Interactions at the LHeC

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The future Large Hadron-Electron Collider (LHeC) provides a unique platform to explore high-energy photon-photon ($\gamma\gamma$) interactions in electron-proton collisions. This talk focuses on the exclusive production of lepton pairs and the potential to probe supersymmetric particles, such as higgsinos, through photon-induced processes. Utilizing the Equivalent Photon Approximation (EPA), we investigate the kinematic properties and cross-sections of such interactions. Additionally, we compare our calculations based on EPA with predictions from various event generators, including cepgen/Lpair, and GRAPE, demonstrating excellent agreement. The high luminosity and clean environment of the LHeC make it an ideal laboratory for testing photon-induced processes, providing valuable insights into electroweak interactions and possible extensions of the SM.

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