

Anomalous Triple Gauge Boson Coupling and Higgs Photoproduction Measurements at LHeC

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Understanding the electroweak sector of the Standard Model is one of the most important tasks in particle physics. We discuss its precise measurement at the proposed Large Hadron electron Collider(LHeC) with a focus on vector boson fusion processes. The first example is measuring charged anomalous triple gauge boson coupling(aTGC) in single W boson production process. Angular distributions of final state electrons, jets and W boson decay products are used to construct kinematic angles. We find that these angles could effectively put constrain on aTGC parameters, especially when different beam energy options are available. We also study the possibility to use Higgs boson photoproduction rate to constrain the Higgs-two photon vertex at this ep machine. We find negative results in different Higgs decay channels when including background processes with both photon-photon and photon-gluon initial states.

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