

# Background simulations on Charged-Lepton Flavour Violation (CLFV) in the Leptoquark framework at the EIC

*Thursday, 16 February 2023 20:15 (15 minutes)*

The discovery of neutrino oscillations provided evidence of lepton flavour violation. In this work, we carry out the background simulations in the leptoquark framework. Leptoquarks are bosons which carry lepton and baryon numbers, coupling leptons to quarks and mediating charged lepton flavour violation processes at tree-level. The goal of this work is to study charged lepton flavour violations at the EIC based on the real detector simulations concentrating on three main background events, Charged Current Deep Inelastic Scattering (CC DIS), Neutral Current Deep Inelastic Scattering (NC DIS) and Photoproduction. The plan is to simulate higher statistics of these background events by using the Djangoh MC event generator for neutral and charged currents and Pythia8 for photoproduction while applying selection criteria on higher statistical input events compared to what was done before with ECCE.

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**Session Classification:** February 16 Evening Session

**Track Classification:** Physics Beyond the Standard Model