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Charged Lepton Flavor Violation at the EIC

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The discovery of neutrino oscillations provided conclusive evidence for lepton flavor violation (LFV). LFV in the neutrino sector is expected to induce charged lepton flavor violation (CLFV), although it is highly suppressed by the small neutrino masses. However, a wide variety of new physics beyond the Standard Model can lead to enhanced rates for CLFV processes within the reach of current experiments. CLFV can arise in Deep Inelastic Scattering (DIS) processes, such as $ep \rightarrow \tau X$, that can be searched for at the EIC in a manner that complements CLFV searches in other experiments. The high luminosity, wide kinematic range, and the availability of polarized beams at the EIC allows for improved sensitivity to different underlying CLFV mechanisms, providing complementary information to other low energy probes and constrains from the LHC. It could also lead to an improvement by an order of magnitude or more compared to previous limits set at HERA. In this talk, I will provide an overview of the impact the EIC can have in constraining CLFV physics. I will also discuss the possibility of probing CLFV between the first two generations of charged leptons at JLAB.

Name of collaboration or list of co-authors

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