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## Searching for Tau Lepton Appearance at the EIC at the Highest Luminosities

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The EIC at the highest luminosities will have competitive sensitivity to search for new physics beyond the Standard Model via the observation of charged lepton flavor violation, specifically electron-tau lepton transitions as would result from the existence for instance of leptoquarks. We investigate the identification of tau leptons in the detector with high efficiency using tracking with the vertex detector, energetic lepton and pion identification, and jet observables, while rejecting background. We will present preliminary studies to determine whether such a search could be carried out for a high integrated luminosity data set while maintaining close to perfect background rejection.

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