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Removing flat directions in SMEFT fits: how polarized electron-ion collider data can complement the LHC

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We study the potential of future Electron-Ion Collider (EIC) data to probe four-fermion operators in the Standard Model Effective Field Theory (SMEFT). The ability to perform measurements with both polarized electron and proton beams at the EIC provides a powerful tool that can disentangle the effects from different SMEFT operators. We compare the potential constraints from an EIC with those obtained from Drell-Yan data at the Large Hadron Collider. We show that EIC data plays an important complementary role since it probes combinations of Wilson coefficients not accessible through available Drell-Yan measurements.

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