Particle Physics on the Plains 2022



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Constraining SMEFT operators \mathcal{O}_{tZ} and \mathcal{O}_{tW} via searches in tZj and $t\overline{t}Z$ channels with Machine Learning

Sunday 3 April 2022 09:00 (20 minutes)

We explore the projected sensitivity for Standard Model Effective Field Theory (SMEFT) coefficients C_{tZ} and C_{tW} via associated single top production $pp \rightarrow tZj$ and top pair production $pp \rightarrow t\bar{t}Z$ channels with machine learning techniques, at the high luminosity LHC (HL-LHC). Implications from new physics modifications in relevant background processes are also included. We identify the subset of observables that are most relevant towards constraining C_{tZ} and C_{tW} . Differential measurements in $pp \rightarrow t\bar{t}Z$ and $pp \rightarrow tZj$ channels have only recently begun and are expected to become more accessible at the upcoming runs of the LHC. We show that complementing cross-section measurements with kinematic information can boost the sensitivity for C_{tZ} and C_{tW} at the HL-LHC.

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