Constraining Effective Field Theories with Machine Learning in Top Quarks Pair Production at CMS

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Effective Field Theories (EFT) provide a systematic way to look for physics beyond the Standard Model (SM) via indirect searches. Nevertheless even the most restrictive scenarios contain dozens of operators predicting subtle deviations from the SM. Such small effects could only be significantly measured over a high-dimensional space of observables. While this complex problem does not scale well with traditional analyses approaches, *likelihood-free inference* methods based on machine learning (ML) techniques can be combined with the knowledge of the EFT structure to give highly scalable analysis with respect to both the number of EFT parameters as well as to the number of observables. In this study, we aim at applying recent developments on ML-based inference on the measurement of dimension-six EFT operators in the top quark pair production process at the LHC.