

Contribution ID: 653

Type: **not specified**

## Dimension-eight Operator Basis for Universal Standard Model Effective Field Theory

*Monday 13 May 2024 16:30 (15 minutes)*

We present the basis of dimension-eight operators associated to universal theories. We first derive a complete list of independent dimension-eight operators formed with the Standard Model bosonic fields characteristic of such universal new physics scenarios. Without imposing C nor P the basis contains 175 operators - this is, the assumption of Universality reduces the number of independent SMEFT coefficients at dimension eight from 44807 to 175. 89 of the 175 universal operators are included in the general dimension-eight operator basis in the literature. The 86 additional operators involve higher derivatives of the Standard Model bosonic fields and can be rotated in favor of operators involving fermions using the Standard Model equations of motion for the bosonic fields. By doing so we obtain the allowed fermionic operators generated in this class of models which we map into the corresponding 86 independent combinations of operators in the dimension-eight basis of arXiv:2005.00059.

### Mini Symposia (Invited Talks Only)

**Authors:** Prof. GONZALEZ-GARCIA, Concepcion (YITP, Stony Brook and ICREA, U. Barcelona); DESAI, Jay (Stony Brook University); CORBETT, Tyler (University of Vienna); EBOLI, oscar

**Presenter:** DESAI, Jay (Stony Brook University)

**Session Classification:** Physics Beyond the Standard Model

**Track Classification:** Other BSM