Contribution ID: **23**   Type: **not specified**

Dimension-eight operator basis for Universal Standard Model Effective Field Theory

Tuesday 3 June 2025 16:30 (15 minutes)

I will present the basis of dimension-eight operators associated with universal theories. Without imposing C nor P the universality assumption reduces the number of independent SMEFT operators 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 SM bosonic fields and can be rotated in favor of operators involving fermions using the SM equations of motion for the bosonic fields. I will then describe how one would incorporate the finite renormalization effects introduced to the input parameters from these operators and compute amplitudes consistently to $O(1/\Lambda^4)$. I will finalize by showing how some simple UV models match onto the universal operators.

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

Presenter: DESAI, Jay (Stony Brook University)

Session Classification: Higgs and Electroweak I