Contribution ID: **325** Type: **Parallel session talk**

Renormalization Group Equations for the Dimension-Seven SMEFT Operators

Friday 19 July 2024 16:45 (15 minutes)

In this work, we propose a Green's basis and a new physical basis for dimension-seven (dim-7) operators, which are suitable for the matching of ultraviolet models onto the Standard Model effective field theory (SMEFT) and the deviation of renormalization group equations (RGEs) for the SMEFT dim-7 operators. The reduction relations to convert operators in the Green's basis to those in the physical basis are achieved as well, where some redundant dim-6 operators in the Green's basis are involved if the dim-5 operator exists. Working in these two bases, we work out the one-loop RGEs resulting from the mixing among different dimensional operators for the SMEFT dim-7 operators for the first time and revisit those from the mixing among dim-7 operators. These results complete the full RGEs of dim-7 operators and can be used for a consistent one-loop analysis of the SMEFT. Some applications of those results to lepton- and baryon-number violation processes are also discussed.

Alternate track

1. Neutrino Physics

I read the instructions above

Yes

Author: Dr ZHANG, Di

Presenter: Dr ZHANG, Di

Session Classification: Formal Theory

Track Classification: 10. Formal Theory