Phenomenology 2018 Symposium



Contribution ID: 456

Type: parallel talk

The Constructive SM: Part I

Monday 7 May 2018 14:15 (15 minutes)

This paper is based on arXiv:1802.00448 where we construct the complete set of minimal 3-point vertices for the massive Standard Model (SM) based purely on symmetry principles, mass dimension and high-energy behavior and without any recourse to field theory, gauge symmetries or Feynman rules. Because the gravitational vertices are no more challenging than any other vertices in this constructive method, we include them as well. We also calculate the high-energy behavior of these vertices and compare with the well-known massless vertices, both as a check and as a way to pin down the normalization constants. We include all these vertices in tables as a reference for future investigations.

Summary

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Session Classification: Theoretical Developments