

Learning about axion-like particles from SMEFT

Wednesday 21 June 2023 14:00 (25 minutes)

In the presence of axions and axion-like particles (ALPs) that couple to the Standard Model via non-renormalisable dimension-5 operators, non-zero Wilson coefficients (WCs) of the Standard Model effective field theory (SMEFT) are induced by renormalisation group evolution. Since many of the SMEFT WCs are experimentally constrained, this ALP-SMEFT interference allows to derive indirect bounds on the ALP couplings to SM particles. In this talk, we reinterpret bounds on the SMEFT to perform a global analysis of the WCs of the ALP EFT. The obtained bounds are independent of the mass of the ALP. They are competitive with direct (collider) bounds in the $O(\text{GeV}) - O(\text{TeV})$ ALP-mass range.

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