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Amplitude/Operator Basis for Chiral Perturbation Theory

Tuesday 9 May 2023 17:30 (15 minutes)

The problem of enumerating a complete and independent set of operators for an effective field theory has been solved systematically by the Young Tensor method. In this talk, I am going to present the method adapted for Chiral Perturbation Theory, which introduces the Adler's zero condition to account for the nonlinearly realized symmetry associated with Goldstone bosons. Several subtleties are clarified, including the nonlinear constraint from the Gram determinant, the Cayley-Hamilton theorem for finite N_f, and the inclusion of CP-odd operators. Mesonic operators up to N^3LO with multiplicity 6 are presented together with the corresponding amplitude basis. Finally I will show the technique applied to the HEFT to obtain the NLO and NNLO operator basis.

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