Contribution ID: **5** Type: **not specified**

Model independent evaluation of the Wilson coefficient of the Weinberg oparator in QCD

Wednesday 17 January 2018 11:30 (30 minutes)

We derive a Wilson coefficient of a CP-violating purely gluonic dimension-6 operator called the Weinberg operator ($GG\tilde{G}$) generated by a scalar and two fermions at the two-loop level. We do not specify the representation of $SU(3)_c$ for the scalar and the fermions, and thus our result can be applied to a variety of models beyond the standard model. We estimate the nucleon EDMs induced by the Weinberg operator in some examples and discuss the importance of measuring EDMs. It is found that future measurements of the EDMs can probe physics at higher energy scale beyond the reach of collider experiments.

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