

Abstract Submitted
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CP violation in Standard Model Effective Field Theory: C vs P violation JUN SHI, South China Normal University, SUSAN GARDNER, University of Kentucky — It has long been thought that the observed size of the cosmic baryon asymmetry suggests that mechanisms of CP violation beyond the Standard Model should exist. Standard Model Effective Field Theory (SMEFT) is a useful way of classifying new CP-violating sources at low energy from underlying new physics effects. We present the results of our study of leading-mass-dimension CP-violating operators from SMEFT, carefully separating operators that are P-odd from those that are C-odd just below the electroweak scale. The P-odd and CP-odd effective operators that generate permanent electric dipole moments (EDM) have been much investigated; we now consider C-odd and CP-odd operators systematically as well. We emphasize that for flavor-conserving interactions, the lowest-mass-dimension CP-odd operators from SMEFT which are also C-odd, such as those contributing to mirror-symmetry breaking in the Dalitz plot in $\eta \rightarrow \pi^+\pi^-\pi^0$ decay, and those which are P-odd, such as those constrained by permanent EDM searches, are completely different, and we analyze the consequences explicitly.

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