

# An Updated Estimation of CP violating Electric Dipole Moments from known mechanisms in the Standard Model

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New sources of CP violation, beyond the CKM matrix in the Standard Model (SM), which encodes the weak sector, are required to explain the baryon asymmetry of the universe. An additional mechanism within the SM that can generate CP violating electric dipole moments (EDMs), is through the QCD  $\theta_s$  parameter, via the strong sector. Significant advances in the recent past coming from new theoretical calculations of the, (i) electron EDM via hadronic contributions, (ii) CP violating semi-leptonic scalar (and tensor) interaction parameter of  $C_S$  (and  $C_T$ ), and (iii) nuclear magnetic quadrupole, Schiff moment contributions to the molecular systems, has allowed us to update our lower estimates of the EDMs of: charged leptons, certain baryons, select atoms and molecules, within the CKM $\oplus\theta_s$  framework, in light of the current experimental upper limits. We were able to impose a new constraint of  $\theta_s < 9.5 \times 10^{-11}$  (95% C.L.), using an analysis of  $^{199}\text{Hg}$  EDM.

## Alternate track

1. Beyond the Standard Model

## I read the instructions above

Yes

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