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New bounds on heavy quark EDMs and implications for coloured scalar models

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New physics (NP) models with additional CP violation sources are heavily constrained by the experimental limits on permanent electric dipole moments (EDMs) of particles. Using the stringent limits on their chromo-EDMs, new bounds on the EDM of charm and bottom quarks are derived. The new limits improve the previous ones by about three orders of magnitude. The implications for different NP models are explored, giving special attention to colored scalar extensions of the Standard Model. For this model, we compute the full set of one-loop diagrams and the enhanced higher-order effects from Weinberg operators, CP-odd four-fermion interactions and Barr-Zee diagrams.

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