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The Electric Dipole Moment of the electron in the decoupling limit of the aligned Two-Higgs Doublet Model

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We present a discussion of model-independent contributions to the EDM of the electron.
We focus on those contributions that emerge from a heavy scalar sector that is linearly realized. In particular, we explore the decoupling limit of the aligned 2HDM.
In this model, Barr-Zee diagrams with a fermion loop produce logarithmically-enhanced contributions that are proportional to potentially large new sources of CP violation. In the decoupling limit these contributions are generated by effective dimension-6 operators via the mixing of four-fermion operators into electroweak dipole operators.
These logarithmic contributions are not present in more constrained versions of the 2HDM where a $\mathcal{Z}_2$ symmetry is imposed, since it controls the basis of effective operators needed to describe the new physics contributions to the electron EDM. Thus, the $\mathcal{Z}_2$ symmetry provides a suppression mechanism.
We then study how the experimental bounds on the electron EDM constrain the set of parameters of the aligned 2HDM.

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