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## The EDM of the electron in the decoupling limit of the aligned 2HDM

We discuss model-independent contributions to the electron EDM, focusing on those contributions emerging from a heavy scalar sector linearly realized. To provide a concrete new physics realization, we investigate the aligned 2HDM in the decoupling limit. We point out that logarithmically enhanced contributions generated from Barr-Zee diagrams with a fermion loop are present in the aligned 2HDM, an effect encoded in the decoupling limit by effective dimension-6 operators, through the mixing of four-fermion into dipole operators. The same large logarithms are absent in specific 2HDMs where a  $Z_2$  symmetry is enforced, which thus controls the basis of effective operators relevant for calculating new physics contributions to EDMs. In other words, the  $Z_2$  symmetry acts as a suppression mechanism. In the aligned 2HDM these contributions are proportional to sources of CP violation that are potentially large, and absent in presence of the  $Z_2$  symmetry. We then investigate the impact on the electron EDM of this extended set of free parameters.

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