

Contribution ID: 479

Type: Parallel

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

Tuesday 8 July 2025 09:45 (15 minutes)

We present a discussion of model-independent contributions to the EDM of the electron.

We focus on those contributions that can emerge from an extended heavy scalar sector, and in particular we explore the decoupling limit of the aligned 2HDM.

In this model, Barr-Zee diagrams with a fermion loop produce logarithmically-enchanced contributions that are proportional to potentially large 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 the EW dipole operator.

Some of these logarithmic contributions are not present in more constrained versions of the 2HDM where a Z_2 symmetry is imposed. Thus, the Z_2 symmetry provides a suppression mechanism.

We then study how does the experimental constraints oelectron EDM affect the extended set of parameters of the aligned 2HDM.

Secondary track

T09 - Beyond the Standard Model

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Session Classification: T09

Track Classification: T09 - Beyond the Standard Model