



Contribution ID: 167

Type: **not specified**

## Probing Dark Sectors with EDMs

*Thursday 29 May 2025 15:40 (20 minutes)*

Dark sectors provide beyond Standard Model scenarios which can address unresolved puzzles, such as the observed dark matter abundance or the baryon asymmetry of the Universe. A naturally small portal to the dark sector is obtained if dark-sector interactions stem from a non-Abelian hidden gauge group that couples through kinetic mixing with the hypercharge boson. In this work, we investigate the phenomenology of such a portal of dimension five in the presence of CP violation, focusing on its signatures in fermion electric dipole moments. We show that, currently unbounded regions of the parameter space from dark photon searches can be indirectly probed with upcoming electron dipole moment experiments for dark boson masses in the range  $1 - 100$  GeV. We also discuss two particular scenarios where a  $SU(2)_D$  dark gauge group spontaneously breaks into either an Abelian  $U(1)_D$  or nothing. In both cases, we show that potentially observable electron dipole moments can be produced in vast regions of the parameter space compatible with current experimental constraints and observed dark matter abundance.

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**Session Classification:** Flavor and Intensity Physics