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Large electron electric dipole moment in the standard model

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The electron electric dipole moment (EDM) is a very good probe of new physics beyond the standard model, and it is currently measured in many experiments.

It also receives contribution from the standard model, but this was estimated to be very small in previous works.

In this talk, we show that the short distance (quark-level) contribution to the electron EDM is suppressed by factors of quark masses.

We then calculate the long distance (hadron level) contribution, and show that the one-loop level process generates an EDM of $O(10^{-39})$ e cm, which is many orders of magnitude larger than the short distance one.

Summary

CP violation

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