Contribution ID : **38** Type : **not specified**

# Studies of CPT with $D^0$ mesons

*Thursday, 30 November 2023 09:15 (60)*

CPT symmetry is assumed to be strictly conserved in the Standard Model.
Consequently, detection of any deviation from CPT invariance would be hinting at a more fundamental theory, possibly at the Planck scale.
Current technology enables us to explore energies nearing the Planck scale by probing space-time symmetry violations.
The framework to study these deviations is called the Standard Model Extension (SME).
In particular we can test CPT violation by looking at the oscillations of the neutral $D$ meson.
At present, the $D^0$ meson system is arguably the only experimental way to access effects of Lorentz and CPT violation at good sensitivity in the charm sector.
I shall give a summary of the current experimental status of CPT violation studies with $D^0$ mesons and show how to extract the most stringent limits on SME CPTV parameters using LHCb (2015-2018) data and beyond.

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