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Towards a new generation of EDM experiments using molecules¹

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Theories of particle physics that extend the Standard Model frequently predict new phenomena at the TeV scale. These phenomena give rise to electric dipole moments (EDMs) of fundamental particles such as the electron and proton that are within a few orders of magnitude of current limits. The observable effects of EDMs can be enhanced by 3 or more orders of magnitude by using molecules rather than atoms. This talk will describe recent advances in technology for cooling, manipulating, detecting, and trapping molecules that are opening the prospects for significant improvements in sensitivity to EDM-related effects. As an example, the CeNTREX experiment—a new search for the proton EDM and related effects—will be described.

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