

Measuring the electron electric dipole moment in YbF

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The standard model of particle physics predicts that the permanent electric dipole moment (EDM) of the electron is very nearly zero. A non-zero value would violate time reversal symmetry. Many extensions to the standard model predict an electron EDM just below current experimental limits, thus there is great interest in new experiments and in improving current experimental precision.

I will discuss our recent measurement of the electron EDM using YbF molecules at Imperial College London. This experiment uses a form of laser-radiofrequency double resonance spectroscopy to search for very small energy differences between hyperfine levels in a strong electric field. In addition to describing our experimental and analysis techniques, I will also give an overview of sensitivity improvements that are underway.

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