

Abstract Submitted
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Measuring the electron-EDM using a slow, intense and cold beam of BaF molecules STEVEN HOEKSTRA, University of Groningen and Nikhef, Amsterdam, HENDRICK L. BETHLEM, Vrije Universiteit Amsterdam, ANASTASIA BORSCHEVSKY, KLAUS JUNGSMANN, ROB TIMMERMANS, University of Groningen and Nikhef, Amsterdam, WIM UBACHS, Vrije Universiteit Amsterdam, LORENZ WILLMANN, University of Groningen and Nikhef, Amsterdam, E-EDM COLLABORATION — We have started a program to perform a measurement of the permanent electric dipole moment of the electron (eEDM) with barium monofluoride molecules, thereby searching for phenomena of CP violation beyond those incorporated in the Standard Model of particle physics. Although the BaF molecule has a smaller internal electric field enhancement factor than other molecules used in current studies (YbF, ThO and ThF⁺), we exploit the possibilities to Stark-decelerate and laser-cool this species, combined with an intense primary cold source of BaF molecules. With the resulting long coherent interaction times obtainable in a cold beam of BaF, we aim to reach a competitive sensitivity for an eEDM in this first generation experiment. In this contribution we describe the rationale, the challenges and the experimental methods envisioned to achieve this target.

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