Abstract Submitted
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EDM^3: Progress towards a new search for the electron electric dipole moment using molecules in a matrix E.A. HESSELS, M. HORBATSCH, M.C. GEORGE, C.H. STORRY, G. KOYANAGI, R. FOURNIER, A. RAGYANSZKI, A. MARSMAN, H.M. YAU, Z. CORRIVEAU, N. MCCALL, J. PEREZ-GARCIA, K. SALTOUN, York University, J.T. SINGH, F. FRY, E. WHITE, Michigan State University, A.C. VUTHA, University of Toronto, EDM^3 COLLABORATION — Improved measurements of the electron electric dipole moment (eEDM) will strongly constrain the parameter space of new physics theories. Over the last decade, polar molecules have become established as the most promising systems for eEDM searches, due to the large internal electric fields experienced by an eEDM in these molecules. The sensitivity of eEDM searches is determined by the coherence time available for measuring eEDM-induced electron spin precession, as well as the total number of molecules available over the course of a measurement. We present our progress in implementing a new method, which combines long coherence times and large molecule numbers, for an eEDM search experiment with significantly improved precision [1]. Our system, involving polar molecules oriented within a rare-gas matrix, also offers an array of reversals and controls for cleanly suppressing systematic effects to a level commensurate with the improved statistical precision. [1] AC Vutha, M Horbatsch, EA Hessels PRA 98, 03251

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