

Abstract Submitted
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Progress towards an improved electron and positron magnetic moment measurement as a test of the Standard Model and CPT symmetry¹ SAM FAYER, Center for Fundamental Physics, Northwestern University, XING FAN, Department of Physics, Harvard University, THOMAS MYERS, BENEDICT SUKRA, GERALD GABRIELSE, Center for Fundamental Physics, Northwestern University — The most accurate measurement of the electron magnetic moment is the most precise test of the Standard Model, with precision of 0.28 ppt [1]. A new Penning trap apparatus has been constructed and is being tested with an aspiration of improving the electron magnetic moment measurement precision by a factor of 10. Positrons will now be loaded into the trap to allow for a more precise measurement of the positron magnetic moment which we aspire to improve by a factor of 150 times. A direct comparison of these two measurements (made in the same apparatus) allows for the most precise test of CPT symmetry for the light leptons. In addition, these measurements, combined with the standard model, result in a precise determination of the fine structure constant. A 2.4 standard deviation discrepancy between previous magnetic moment measurements and atom recoil experiments [2] also warrants additional investigation. Recently, the apparatus has been moved to the new Center for Fundamental Physics at Northwestern University where setup is complete. Further developments and progress on the experiment will be presented. 1. D. Hanneke, S. Fogwell, and G. Gabrielse, Physical Review Letters 100 (2008) 120801 2. R. H. Parker, C. Yu, W. Zhong, B. Estey, and H. Mller, Science 360 (2018) 191

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