Abstract Submitted
for the DAMOP20 Meeting of
The American Physical Society

**Material magnetism characterization for particle trap design**[1] SAMUEL FAYER, GERALD GABRIELSE, Northwestern University — The magnetic properties of electrode and electronics used in particle and ion traps are important for high precision measurements, such as the electron magnetic moment that was able to test the standard model to 0.9 ppt [1]. At low temperatures and high magnetic fields, the magnetism of the trap materials can cause a significant perturbation to the background field. These perturbations can be temperature, position, and background field dependent. Impurities in even high purity sample materials have been identified to cause additional unwanted magnetism. The potentially detrimental effect of these materials on trapped particles will presented in the context of the electron and positron magnetic moment measurement [1] (where nuclear paramagnetism was a considerable challenge in the previous determination) and high resolution NMR magnetometry [2]. 1. G. Gabrielse, S. E. Fayer, T.G. Myers, X. Fan, Atoms 7 (2019) 45. 2. X. Fan, S.E. Fayer, G. Gabrielse, Review of Scientific Instruments 90 (2019) 083107

[1]Supported by the National Science Foundation.

Samuel Fayer
Northwestern University

Date submitted: 02 Feb 2020 Electronic form version 1.4