

Abstract Submitted
for the DAMOP19 Meeting of
The American Physical Society

Single-electron qubits in a planar Penning trap¹ SAM FAYER, Center for Fundamental Physics, Northwestern University, MELISSA WESSELS, Department of Physics, Harvard University, GERALD GABRIELSE, Center for Fundamental Physics, Northwestern University — Planar Penning traps could provide a scalable architecture for one electron qubits. A prototype trap was designed with the optimal geometry, fabricated with minimal imperfections, and tested to characterize its properties. A number of narrow axial resonances from loaded electrons have been measured, showing this planar trap to be sufficiently harmonic to detect electron clouds of small sizes, down to those consistent with a single electron. These would offer the possibility of building an array of coupled single-electron qubits for quantum information studies.

¹We acknowledge support from the National Science Foundation

Samuel Fayer
Center for Fundamental Physics, Northwestern University

Date submitted: 01 Feb 2019

Electronic form version 1.4