

Abstract Submitted
for the DAMOP11 Meeting of
The American Physical Society

Modeling ion dynamics for BEC-ion interaction experiments¹ ANDREW T. CADOTTE, DAVID A. ANDERSON, GEORG RAITHEL, University of Michigan — We present simulations of Coulomb repulsion effects in an experiment designed to study BEC-ion interactions. Since the studies require free charged particles, Coulomb effects are expected to have a non-negligible influence on the observed ion dynamics. In our simulations, we assume an ion extraction electric field generated by a small, circular electrode (diameter 100 micron) embedded in a grounded plate. To model ion trajectories, a Runge-Kutta method is used. A triangular interpolation method is employed to obtain the extraction electric field values along the ion trajectories. To describe the dynamics of a few, discrete ions during extraction, we explicitly sum over all Coulomb interaction terms. To consider the extraction behavior of many ions, we model the system by a continuous charge distribution. The results serve as a guide for experimental studies.

¹Funding by AFOSR

Andrew T. Cadotte
University of Michigan

Date submitted: 04 Feb 2011

Electronic form version 1.4