Abstract Submitted
for the DAMOP12 Meeting of
The American Physical Society

**Expansion dynamics of a non-spherical ultracold plasma in a supersonic molecular beam** MARKUS SCHULZ-WEILING, ED GRANT, University of British Columbia — Molecular beam plasma dynamics are subject to a superposition of the residual molecular beam expansion of the laser illuminated excitation volume with ambipolar expansion owing to charged particle many-body interactions. We combine beam calculations with a consideration of the excitation processes that lead to plasma formation to determine the initial phase space distribution function of our plasma particles. Subsequent application of kinetic theory yields a model for the evolution of our system. By solving Vlasov's equation for our initial conditions, we obtain a first-order approximation for ambipolar expansion in the geometry of our system.

Markus Schulz-Weiling
University of British Columbia

Date submitted: 26 Jan 2012 Electronic form version 1.4