Abstract Submitted
for the DPP11 Meeting of
The American Physical Society

Beam Phase Space of an Intense Ion Beam in a Neutralizing Plasma[1] PETER A. SEIDL, GUILLAUME BAZOUIN, LBNL, ALICE BENEYTOUT, Grenoble INP, France, STEVEN M. LIDIA, JEAN-LUC VAY, LBNL, DAVID P. GROTE, LLNL — The Neutralized Drift Compression Experiment (NDCX-I) generates high intensity ion beams to explore warm dense matter physics. Transverse final focusing is accomplished with an 8-Tesla, 10-cm long pulsed solenoid magnet combined with a background neutralizing plasma to effectively cancel the space charge field of the ion beam. We report on phase space measurements of the beam before the neutralization channel and of the focused ion beam at the target plane. These are compared to WARP particle-in-cell simulations of the ion beam propagation through the focusing system and neutralizing plasma. Due to the orientation of the plasma sources with respect to the focusing magnet, the plasma distribution within the final focusing lens is strongly affected by the magnetic field, an effect which can influence the peak intensity at the target and which is included in the model of the experiment.

[1]Work performed under auspices of U.S. DoE by LLNL, LBNL under Contracts DE-AC52-07NA27344, DE-AC02-05CH1123.

Peter A. Seidl
LBNL

Date submitted: 27 Jul 2011 Electronic form version 1.4