Abstract Submitted
for the DPP09 Meeting of
The American Physical Society

Simulating the NDCX-II Physics Design[1] W.M. SHARP, A. FRIEDMAN, D.P. GROTE, R.H. COHEN, S.M. LUND, LLNL, M. LEITNER, J.-L. VAY, W.L. WALDRON, LBNL — The Virtual National Laboratory for Heavy-Ion Fusion is developing a physics design for NDCX-II, an experiment to study warm dense matter heated by ions near the Bragg-peak energy. Present plans call for using thirty-four induction cells to accelerate 30 nC of Li^+ ions to more than 3 MeV. Neutralized drift-compression is then used to compress the beam to the sub-millimeter radius and 1-ns duration needed to attain useful target temperatures. A 1-D particle-in-cell simulation ASP has been used for developing the NDCX-II acceleration schedule, and centroid equations have recently been added to study the effects of transverse-focusing errors. Multidimensional simulations with Warp have validated the ASP model and have been used both to design transverse focusing and to compensate for injection non-uniformities and 3-D effects. Results from this work are presented, and ongoing work to replace the analytic waveforms with output from circuit models is discussed.

[1]Work performed under the auspices of US Department of Energy by LLNL under Contract DE-AC52-07NA27344 and by LBNL under Contract DE-AC03-76SF00098.

W. M. Sharp
LLNL

Date submitted: 22 Jul 2009 Electronic form version 1.4