

Abstract Submitted
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Characterization of the NDCX-II accelerator via simulation¹

DAVID GROTE, ALEX FRIEDMAN, WILLIAM SHARP, LLNL — The Neutralized Drift Compression Experiment-II (NDCX-II) will generate ion beams for use in driving targets for warm dense matter experiments and heavy ion fusion target studies and to do high-current beam physics.² It is designed to produce beams of Li^+ ions with energies of 1 to several MeV compressed to sub-nanosecond pulses with peak currents of 10 or more Amps. Here, we discuss characterization of the design with simulation, including optimization of the operating point, examination of error tolerances, and integrated source to target simulations for validation. There is some flexibility in the shaping and timing of the induction waveforms that provides a large operating space to optimize the performance of NDCX-II. Some examples will be discussed. Simulation has been used to characterize the tolerances for errors. The resulting requirements appear to be feasible. Full validation of the experiment requires self-consistent inclusion of the plasma dynamics. To this end, simulations that include a particle-in-cell plasma model have been carried out and will be discussed.

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²see A. Friedman, et al., this meeting

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