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Simulations of particle beam heating of foils for studies of warm dense matter*

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We present simulations of particle beam heating of target foils using the multi-physics radiation hydrodynamics code HYDRA^{**}. We simulate possible targets for a near-term experiment at LBNL (the so-called Neutralized Drift Compression Experiment, NDCX) and possible later experiments on a proposed facility (NDCX-II) for studies of warm dense matter. Simulation results are presented showing the degree of temperature uniformity and the maximum temperature expected. Various target materials (including aluminum, aluminum foam, water ice, and gas jets) and target configurations are presented. Strategies for characterizing the material equation of state, using data from the experiments together with simulations, will be discussed. Requirements on the NDCX-II accelerator, based on target considerations, will also be discussed.

^{**}M. M. Marinak, G. D. Kerbel, N. A. Gentile, O. Jones, D. Munro, S. Pollaine, T. R. Dittrich, and S. W. Haan, *Phys. Plasmas* **8**, 2275 (2001).

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