

Abstract Submitted  
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**Short Intense Ion Pulses for Materials and Warm Dense Matter Research**<sup>1</sup> PETER SEIDL, Q. JI, S.M. LIDIA<sup>2</sup>, A. PERSAUD, M. STETTLER, J.H. TAKAKUWA, W.L. WALDRON, T. SCHENKEL, LBNL, J.J. BARNARD, A. FRIEDMAN, D.P. GROTE, LLNL, R.C. DAVIDSON, E.P. GILSON, I.D. KAGANOVICH, PPPL — We have commenced experiments with intense short pulses of ion beams on the Neutralized Drift Compression Experiment-II at Lawrence Berkeley National Laboratory, by generating beam spots size with radius  $r < 1$  mm within 2 ns FWHM and approximately  $10^{10}$  ions/pulse. To enable the short pulse durations and mm-scale focal spot radii, the 1.2 MeV Li<sup>+</sup> ion beam is neutralized in a 1.6-meter drift compression section located after the last accelerator magnet. An 8-Tesla short focal length solenoid compresses the beam in the presence of the large volume plasma near the end of this section before the target. The scientific topics to be explored are warm dense matter, the dynamics of radiation damage in materials, and intense beam and beam-plasma physics including selected topics of relevance to the development of heavy-ion drivers for inertial fusion energy. We will describe the accelerator commissioning and time-resolved ionoluminescence measurements of yttrium aluminium perovskite using the fully integrated accelerator and neutralized drift compression components (arXiv:1506.05839).

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<sup>2</sup>present address: Michigan State Univ.

Peter Seidl  
Lawrence Berkeley Natl Lab

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