Abstract Submitted
for the DPP20 Meeting of
The American Physical Society

Production of synthetic phase contrast images for comparison with CRASH radiograph output[1] CONNOR TODD, MATTHEW TRANTHAM, U. of Michigan, Ann Arbor, ALEXANDER THOMAS, YONG MA, MARIO BALCAZAR, Univ of Michigan, Ann Arbor, FELICIE ALBERT, NUNO LEMOS, PAUL KING, Lawrence Livermore National Laboratory, STUART MANGLES, BRENDAN KETTLE, CARY COLGAN, EVA LOS, Imperial College London, HAIEN TSAI, TOBIAS OSTERMAYR, CAMERON GEDDES, CARL SCHROEDER, THOMAS SCHENKEL, ERIC ESARAY, Lawrence Berkeley National Laboratory, CAROLYN KURANZ, U. of Michigan, Ann Arbor — We plan to use the BELLA Hundred TW Thompson laser at the Lawrence Berkeley National Laboratory to perform experiments evaluating shock wave propagation in high-energy-density (HED) plasma research. The laser produces betatron oscillations of a laser-wakefield accelerated electron beam to act as an X-ray source for the experiments. The University of Michigan's Center for Radiative Shock Hydrodynamics (CRASH) software is used to simulate shock propagation through a 120-micron-radius water target at the point of impact of the 1-2 J laser pulse. The output from these CRASH simulations is incorporated into an algorithm developed for Phase Contrast Imaging to obtain synthetic images of the shock front at a distance of 490 cm. These images may be compared to the synthetic radiographs of similar phenomena produced by CRASH in earlier experiments in order to capture finer details of the dynamic evolution of shock waves propagating in HED plasma environments.

[1]This work is funded by DOE Fusion Energy Sciences LaserNetUS Program and U.S. DOE NNSA under cooperative agreement number DE-NA0003869, and by U.S. DOE under Contract No. DE-AC02-05CH11231.

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Date submitted: 02 Jul 2020 Electronic form version 1.4