Abstract Submitted
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100J Pulsed Laser Shock Driver for Dynamic Compression Research[1] X. WANG, J. SETHIAN, Washington State University, J. BROMAGE, S. FOCHS, D. BROEGE, J. ZUEGEL, R. ROIDES, R. CUFFNEY, G. BRENT, University of Rochester, J. ZWEIBACK, Z. CURRIER, Logos Technologies, K. D'AMICO, Argonne National Laboratory, J. HAWRELIAK, J. ZHANG, P. A. RIGG, Y. M. GUPTA, Washington State University — Logos Technologies and the Laboratory for Laser Energetics (LLE, University of Rochester) – in partnership with Washington State University – have designed, built and deployed a one of a kind 100J pulsed UV (351nm) laser system to perform real-time, x-ray diffraction and imaging experiments in laser-driven compression experiments at the Dynamic Compression Sector (DCS) at the Advanced Photon Source, Argonne National Laboratory. The laser complements the other dynamic compression drivers at DCS. The laser system features beam smoothing for 2-d spatially uniform loading of samples and four, highly reproducible, temporal profiles (total pulse duration: 5-15ns) to accommodate a wide variety of scientific needs. Other pulse shapes can be achieved as the experimental needs evolve. Timing of the laser pulse is highly precise (<200ps) to allow accurate synchronization of the x-rays with the dynamic compression event. Details of the laser system, its operating parameters, and representative results will be presented.

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