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Status of the OMEGA EP High-Energy Petawatt Laser Facility

C. STOECKL, J. BROMAGE, J.H. KELLY, T.J. KESSLER, B.E. KRUSCHWITZ, S.J. LOUCKS, R.L. MCCRORY, D.D. MEYERHOFER, S.F.B. MORSE, A.L. RIGATTI, T.C. SANGSTER, W. THEOBALD, L.J. WAXER, J.D. ZUEGEL, Laboratory for Laser Energetics, U. of Rochester — OMEGA EP, a new multibeam, high-energy petawatt laser is under construction at the University of Rochester's Laboratory for Laser Energetics. This laser will have four beamlines delivering up to 25 kJ of UV laser energy in long-pulse (ns) mode into a new target chamber. Two of these four beams can be operated in short-pulse (1 to 100 ps) mode, with a maximum energy of 2.6 kJ at 10-ps pulse durations. The short-pulse beams can be routed coaxially combined into the OMEGA target chamber for joint experiments with the OMEGA laser, and coaxially combined or as separate backlighter and sidelighter beams into the OMEGA EP target chamber. OMEGA EP will be used to generate backlighting sources for OMEGA experiments including cryogenic implosions, fast-ignitor experiments, and ultra-intense laser-matter experiments. The status of the laser construction, progress in both laser and target diagnostics, and results of the first OMEGA EP user workshop will be reported. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement No. DE-FC52-92SF19460.

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