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An All-Optical Platform to Characterize Strongly Magnetized Hot Dense Plasmas at >10 kT[1] M. BAILLY-GRANDVAUX, F.N. BEG, C. MCGUFFEY, CER, UCSD, USA, A. CALISTI, S. FERRI, Univ. Aix-Marseille, CNRS, PIIM, France, J.R. DAVIES, LLE, UR, USA, R. FLORIDO, ULPGC, Spain, M.A. GIGOSOS, Univ. Valladolid, Spain, J.J. HONRUBIA, ETSIAE, UPM, Spain, R.C. MANCINI, UNR, USA, T. NAGAYAMA, SNL, USA, J.J. SANTOS, V.T. TIKHONCHUK, Univ. Bordeaux, CNRS, CEA, CELIA, France, F. SUZUKI-VIDAL, Imperial College London, UK, C.A. WALSH, LLNL, USA — We present the design of a novel all-optical platform to magnetize laser-driven cylindrical implosions at the OMEGA facility and characterize them via X-ray line emission to investigate the effects of magnetization. A pair of capacitor-coil targets driven by OMEGA beams is expected to produce a seed B-field of ˜50 T along the cylinder. The cylindrical targets are filled with Ar-doped D_2 gas and symmetrically imploded using a 36-beam 15 kJ, 1.5 ns laser drive. Proton radiography and magnetic B-dot probes will be used to characterize the seed B-field. The 2-D numerical simulations performed with the MHD code GORGON predict a compressed B-field >10 kT at stagnation, with ρ >1 g/cm^3 and T_e >1 keV. This magnetic field is strong enough to impact the hydrodynamic behavior and alter the characteristic conditions of the compressed core throughout the implosion. Initial results of the platform will be discussed and compared to our modeling predictions.

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