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Abstract Submitted
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Characterization of cylindrically imploded magnetized plasma by spectroscopy and proton probing[1] M. DOZIERES, P. FORESTIER-COLLEONI, Univ of California - San Diego, M. S. WEI, General Atomics - San Diego, P-A GOURDAIN, J. R. DAVIES, Univ of Rochester - New York, S. FUJIOKA, Univ of Osaka - Japan, J. PEEBLES, M. CAMPBELL, Univ of Rochester - New York, J. J. SANTOS, D. BATANI, Univ of Bordeaux - France, C. MCGUFFEY, F. N. BEG, Univ of California - San Diego — Understanding the role of magnetic field in relativistic electron beam transport and energy deposition is important for several applications including fast ignition inertial confinement fusion. We report the development of a cylindrically compressed target platform with externally applied magnetic fields on OMEGA. As a first step, we performed an experiment to characterize the imploded plasma and compressed field condition. The implosion of the target was performed using 36 UV beams (400 J per beam, 1.5 ns square pulse), and the magnetic field was measured by proton deflection using mono-energetic protons produced from D3He capsule implosion. The target was a CH foam cylinder doped with 1% chlorine in order to detect the time-resolved 1s-2p Cl absorption structures, using a gold foil as a broad band backlighter source. A Cu foil at the beginning of the foam cylinder and a Zn foil at the end, allowed us to measure the Kα and the 1s-2p transitions of He-like and Li-like ions for both elements. The emission and absorption spectroscopic data are compared to atomic physics codes to determine the plasma temperature and density under the influence of the magnetic field.

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