Abstract Submitted
for the DPP20 Meeting of
The American Physical Society

Magnetized shock-driven implosion platform at OMEGA for studies of strong electron and ion magnetization[1] ARIJIT BOSE, J. A. FRENJE, N. V. KABADI, P. J. ADRIAN, G. F. SUTCLIFFE, M. GATU JOHNSON, C. K. LI, F. H. SEGUIN, R. D. PETRASSO, MIT, J. PEEBLES, F. J. MARSHALL, C. STOECKL, S. P. REGAN, V. YU. GLEBOV, J. R. DAVIES, R. BETTI, S. X. HU, E. M. CAMPBELL, LLE, C. A. WALSH, H. SIO, J. MOODY, LLNL, A. CRILLY, B. D. APPELBE, J. P. CHITTENDEN, Imperial — This talk reports on a new experimental platform, that uses 50T externally imposed B-fields, producing unique plasma conditions, with both strongly magnetized electrons (e) and ions (i). The first set of experiments produced e and i Hall parameters of ˜40 and ˜5 respectively, based on the experimentally measured temperatures, convergence, and fuel composition, and ˜7MG B-field. The field is flux compressed in these implosions because the B-field diffusion time (˜10^{-6}s) is much longer than the implosion time (˜ns). We observe, for the first time, that these high B-fields increased the (P2) anisotropy in implosions. Suppression of thermal transport by the strongly magnetized electrons is the primary mechanism for this effect. This platform opens-up opportunities for studies of (i)-Knudsen number reduction and (e)-thermal transport suppression in strongly magnetized HED plasmas.

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Date submitted: 28 Jun 2020 Electronic form version 1.4