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Point Design of Scaled-Down Magnetized Liner Inertial Fusion on OMEGA P.-Y. CHANG, J.R. DAVIES, D.H. BARNAK, G. FIKSEL, R. BETTI, Laboratory for Laser Energetics and Fusion Science Center, U. of Rochester, A. HARVEY-THOMPSON, D. SINARS, SNL — Significant yield enhancement in cylindrical liner implosions using the Z machine at Sandia was observed when the deuterium fuel was laser heated and magnetized prior to compression.[1] A higher initial temperature improves flux conservation and reduces the radial convergence required to achieve the final temperatures necessary for high neutron yield when heat flow is suppressed by the axial magnetic field. A scaled-down experiment with a 100-km/s implosion velocity using laser-driven implosions will be conducted on OMEGA. The implosion was simulated using the 1-D hydrocode *LILAC* with the addition of resistive magnetohydrodynamic subroutines. For an initial D_2 temperature of 100 eV and an initial axial magnetic field of 15 T, the neutron-averaged ion temperature increases from 0.8 keV to more than 4 keV, and the neutron yield increases by 100× compared to the case without the gas being heated and magnetized prior to compression. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0001944 and the Office of Fusion Energy Sciences Number DE-FG02-04ER54786.

[1]M. R. Gomez *et al.*, "Experimental Demonstration of Fusion-Relevant Conditions in Magnetized Liner Inertial Fusion," submitted to Physical Review Letters.

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