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Computational Study of Magnetic Field Compression by Laser Driven Implosion

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A compression of external magnetic field by a laser driven implosion is studied using two dimensional radiation hydrodynamic simulation. The simulation results show that (i) it is possible to compress the magnetic field to be 10kT (108 Gauss), and (ii) the strong magnetic field should affect the implosion dynamics because of the suppression of the electron heat flux which across strong magnetic field lines. This result suggest that a target and initial conditions for fast ignition with external magnetic field must be designed carefully not only for the control of the hot electron transport but also for the formation of high dense plasma.

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