

Laser Compression and Ignition of Z-Pinch Magnetized Dense Fusion Targets

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With thin wire multimegampere shear flow stabilized fast z-pinch discharges, magnetic fields of hundreds of megagauss can be reached in the vicinity of the discharge channel. Then, if by laser-ablation-propulsion pieces of solid DT are simultaneously shot onto the discharge channel from several sides, the DT is compressed upon impact to high densities, with the magnetic field acting as a cushion to make the compression isentropic. The highly compressed and magnetized DT target can then be ignited at one point by a pulsed laser beam launching a thermonuclear detonation wave propagating along the discharge channel. Estimates indicate thermonuclear gains large in comparison to hohlraum targets.