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Simulation for the Magnetized Plasma Compression Study

Authors : Victor V. Kuzenov, Sergei V. Ryzhkov

Abstract : Ongoing experimental and theoretical studies on magneto-inertial confinement fusion (Angara, C-2, CJS-100, General Fusion, MagLIF, MAGPIE, MC-1, YG-1, Omega) and new constructing facilities (Baikal, C-2W, Z300 and Z800) require adequate modeling and description of the physical processes occurring in high-temperature dense plasma in a strong magnetic field. This paper presents a mathematical model, numerical method, and results of the computer analysis of the compression process and the energy transfer in the target plasma, used in magneto-inertial fusion (MIF). The computer simulation of the compression process of the magnetized target by the high-power laser pulse and the high-speed plasma jets is presented. The characteristic patterns of the two methods of the target compression are being analysed.

Keywords : magnetized target, magneto-inertial fusion, mathematical model, plasma and laser beams
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