

NUMERICAL STUDY OF THE MAGNETIC FIELD EFFECT ON COMPRESSED PLASMA

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The problem statement and a mathematical model of the interaction of a cryogenic and then a plasma target with powerful jets (plasma and laser beams) are presented taking into account the external and spontaneous magnetic field. The authors developed a numerical technique and a method for calculating the characteristics of a target and the parameters of compressing beams and jets in a strong magnetic field.

The processes in the target are simulated and the results of the calculation of the plasmodynamic parameters inherent in similar magnetic inertial fusion facilities are presented. The calculation results are presented in the form of graphical dependences of the main parameters of the plasma target (temperature, pressure, density) and magnetic field on the energy characteristics of the powerful radiation and compression system (laser radiation intensity, plasma jet velocity) over the radius of the target at different times.

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