STUDYING THE OPTICS OF DENSE KRYPTON PLASMA IN THE LONG-WAVELENGTH REGION OF THE OPTICAL SPECTRUM

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A correct description of the behavior of strongly interacting charged particles requires the application of quantum statistical theory in the presence of sufficient information about the optical and transport properties of the medium under study. An analysis of the response of dense plasma to an electromagnetic wave of moderate intensity can be a tool for verifying the reliability of physical models describing the behavior of matter at high temperatures and pressures.

The results of new experiments in which the reflective properties of shock-compressed strongly correlated krypton plasma were studied are presented. To study the optics of a warm dense matter the method of oblique probing a plasma object were used. The composition and thermodynamic parameters of the plasma were determined using a modified SAHA IV code [1, 2]. The simulation of the interaction of plasma with laser radiation was carried out both on the basis of the numerical solution of the field equations and using the Fresnel formalism.

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1. Ebeling W. // Coulomb Interaction and Ionization Equilibrium in Partially Ionized Plasma Physica 1969. V. 43. P. 293.
2. Gryaznov V. K., Iosilevskiy I. L. // Contrib. Plasma Phys. 2016. V. 56. No. 3-4. P. 352-360.