Investigation of the interaction of laser radiation with shock-compressed dense krypton plasma

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The correct description of collision processes in a partially ionized dense plasma is possible only on the basis of sufficient information about its optical properties and the study of the optics of a dynamic object is a powerful research tool, since optical properties are very sensitive to changes in the electronic subsystem of the medium.
The results of new experiments on opto-polarizing properties of an explosively driven dense krypton plasmas are presented. The optics of shock-compressed plasma were studied by the method of oblique probing. The measurements of polarized reflectivity coefficients of strongly correlated dense plasma have been carried out at incident angles up to $\theta = 65^\circ$ simultaneously for s- and p-polarization using laser light of frequency $\nu_{\text{las}} = 2.83 \times 10^{14}$ s^{-1}. The experiments were performed at the plasma density $\rho = 1.7$ g/cm^3 and $\rho = 1.95$ g/cm^3, pressure up to $P = 12$ GPa and temperature up to $T = 29000$ K. The composition and thermodynamic parameters of the plasma were determined using the modified Saha IV code [1].

[1] Gryaznov V K, Iosilevskiy I L and Fortov V E 2012 *AIP Conf. Proc.* **917**(6) 1426