Experimental investigation of optical-polarization properties of shock-compressed krypton plasma

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Further development of the theory of warm dense matter, characterized by a strong interaction of the particles of its components, determines the need to obtain new data on the optical and transport properties of the environment under study for a wide range of changes of thermodynamic parameters up to extremely high. This, in turn, involves performing physical experiments using powerful shock waves. The data bank formed on the basis of experiments can serve as a tool for adjusting the functional dependencies of physical models describing the behavior of matter at high temperatures and pressures, as well as be used for their verification.

The results of new experiments are presented in which the reflection of a probing polarized electromagnetic wave of moderate intensity from a shock-compressed non-ideal krypton plasma was investigated. The composition and thermodynamic parameters of the plasma were determined within the framework of a quasi-chemical model using the modified SAHA IV code [1]. The solution of the variational problem based on the integration of field equations using the obtained experimental data made it possible to determine the spatial parameters of the plasma transition layer.

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