Laser-optical methods for registration object parameters under shock loading

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The report presents the latest developments of the Dukhov Automatics Research Institute in the field of laser-optical systems and instruments for the initiation of ultrafast processes and investigation of object parameters under shock loading in gas-dynamic experiments. The main characteristics of unique multichannel interferometric systems designed to record the velocity (PDV) and surface coordinates (LIDAR) of fast-moving objects with ultrahigh temporal resolution are given. The digital cameras with rotating mirror for streak registration or multi-frame recording with nanosecond temporal resolution of fast processes accompanied by optical radiation is presented. The developed sub-nanosecond high-power solid-state lasers with diode pumping for shadow registration of fast-moving objects and investigations of plasma dynamics are demonstrated.