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## Investigation of plasma ablation and crater formation processes in the Prague Asterix Laser System laser facility

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### Keywords

laser-produced plasma, interferometric measurements, crater, laser beam intensity distribution, absorption mechanism

### Abstract

The present investigation of the processes of ablative plasma generation and formation of craters was carried out at the Prague Asterix Laser System (PALS) iodine laser facility. Experiments were performed with broad range of laser beam intensities ( $10^{13}$ - $10^{16}$  W/cm<sup>2</sup>), focal spot radii (35-600  $\mu$ m), and two laser wavelengths ( $\lambda_1 = 1.315 \mu$ m and  $\lambda_3 = 0.438 \mu$ m). The laser beam was focused on the surface of the massive solid aluminum targets. The main goal of our study was to estimate conversion efficiency of the laser beam energy into the energy of shock waves for different mechanisms of laser beam-target interaction. The expansion of plasma generated as a result of the interaction process was observed by means of the 3-frame interferometry. Dimensions and shapes of the craters were determined using optical microscopy and wax-replica technique.



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