

# Numerical simulation of non-equilibrium plasma bunch under different external laser pulse

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Using numerical simulation of a cylindrical plasma bunch with non-equilibrium ionic composition under the action of an external laser pulse, an analysis of the influence of impulse shape and parameters on the dynamics and charge composition of the plasma is made. Also it is shown what part of the laser pulse energy is absorbed depending on the given conditions. The pulses with maximum intensity up to  $10^{14}$  W/cm<sup>2</sup> are considered. A non-stationary one-dimensional two-temperature radiation-hydrodynamic model is used. The plasma radiation is taken into account under the assumption that the plasma is transparent to its own radiation; the radiation only from a continuous spectrum is considered. The interest to the highly ionized plasma is associated with the creation of high-brightness sources of electromagnetic radiation in the extreme ultraviolet (EUV) and soft x-ray (SXR) spectral ranges, in particular lasers [1,2]. The work was supported by the Russian Foundation for Basic Research (grant No. 20-38-90259).

[1] Suckewer S and Jaegle P 2009 *Laser Phys. Lett* **6** 411–436

[2] Daido H 2002 *Rep. Progr. Phys.* **65** 1513–1576