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Interferometry phase and amplitude shift fields deep processing for femtosecond laser ablation plasma plume characterization K. YU. KUVAEV, R.R. KHAZIEV, E. YU. LOKTIONOV, YU. YU. PROTASOV, Bauman Moscow State Technical University, STATE LAB FOR PHOTON ENERGETICS TEAM — Interferometry is a powerful tool for plasma parameters characterization, but its both hardware realization and obtained data processing are rather complicated. For femtosecond laser ablation plasma investigation it is practically the only suitable quantitative method due to its high sensitivity, spatial and temporal resolution. Plasma induced phase shift fields are usually transformed to electron number density fields using Abel transformation for axis symmetry flows. We present the results of laser (λ ~266, 400, 800 nm, $\tau_{0.5}$ ~45-70 fs) plasma induced phase and amplitude shift spatio-temporal fields to evaluate such plasma parameters as refraction and extinction coefficients, electron (n_e ~ 10^{16}-10^{19} cm^{-3}) and lattice (n_l ~10^{16}-10^{19} cm^{-3}) number densities, temperature (T~0,05–5 eV), pressure (p~10^3–10^7 Pa), velocity (v~0,1–25 km/s), momentum (I_m ~10^{-10}–10^{-8} N·s) and momentum coupling coefficient (C_m ~10^{-5}–10^{-3} N·s).

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