Diploma abstract edited by Khodakovskiy N.G.

Topic: Relaxation of energy of microplasma formed in volume of fluorite crystals by femtosecond radiation of Cr:Forsterite laser system.

In diploma the processes of energy transfer from the electronic microplasma produced by tightly focused femtosecond Cr:Forsterite (1.24 μm, 140 fs, 10 μJ) laser radiation to the lattice of fluoride crystals were studied.

The dynamics of plasma energy relaxation and ionic vibrations was registered by using of nonlinear pump-probe scheme, based on registration of the energy of third harmonic generation signal of probe pulse.

The thresholds of plasma formation in crystals of lithium fluoride (LiF) and barium fluoride (BaF_2) were measured. The striking advantages of third harmonic over transmitted energy of the probe pulse registration were demonstrated.

The transmittance of the probe pulse energy and efficiency of the third harmonic of the probe pulse at time delays up to tens of picoseconds containing information about the frequency of the excited coherent phonons were measured.

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