Diploma thesis abstract.
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Spectral and temporal transformation of ultra short laser pulses with high peak power in microstructured fibers.

Experimental results of research of propagation and nonlinear interaction of femtosecond laser pulses in microstructured fibers are presented in this work. Investigations have been done on experimental setup based on Cr:forsterite laser system.

Effective generation of new spectral components in short wavelength range has been observed during propagation of femtosecond pulses in the microstructured fiber. Dependence of short wavelength components on parameters of pump pulse (energy and polarization) has been investigated. The character of spectral transformation depends on properties of pump pulses and dispersion characteristic of photonic-crystal fiber. Explanation of pulses spectral form modification and generation of new spectral components are based on soliton propagation theory.

The possibility of using large-mode-area photonic-crystal fibers for microjoule energy level supercontinuum generation has been shown. Frequency resolved optical gating technique has been used for measuring characteristic of ultra broad band radiation.