Diploma annotation

Generation of infrared ultrashort laser pulses

The possibility of optical parametric amplification of infrared ultrashort laser pulses is investigated in this diploma work. Continuum from transparent dielectric (sapphire crystal) is used as seed wave in the optical parametric amplifier. The possibility to use effects of spectrum broadening in single-mode optical fiber or continuum and soliton generation in microstructured fiber for creation of sources of broadband radiation is consedered. Ultrabroadband amplification in OPAs is explored theoretically. Five nonlinear crystals were found to support ultrabroadband amplification. Optical parametric amplification in BBO and LBO crystals is studied experimentally using second harmonic of Cr:Forsterite laser radiation as pump wave. Generation of broadband frequency-tunable pulses in PCF is also experimentally explored.

Diploma by
Kryuchkov Alexander

Scientific supervisor
Dmitry Sidorov-Biryukov