Diploma thesis abstract

Broadband emission of laser-induced air plasma in terahertz spectral range

625 gr. student Kuritsyn I.I.

Scientific adviser – Shkurinov A.P.

The process of low-frequency (THz) pulsed radiation generation from optical breakdown air plasma, induced by two-color femtosecond laser pulse is studied in this work. Generation of THz waves is described within the photocurrent model, according to which a transient is occurring inside laser beam focal volume due to ionization of the medium. Experimental evidence is given to the fact that this model is capable of correct description of THz radiation generation by breakdown air plasma as far as polarization and spatial properties of this radiation are concerned.

Within the experimental part of the work a method of broadband THz radiation detection, based on second optical harmonic generation in air is implemented and studied. It is shown that main features of the detection process can be given within phenomenological approach.

Graduation work also describes main principles and design of broadband THz time-domain spectroscopy setup, based on generation of THz pulsed radiation by means of laser plasma methods.