Diploma thesis abstract
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High order harmonic generation in the process of atomic silver interaction with two-color laser field

The characteristics of high-order harmonic generation arising from the interaction of a single silver atom with two-color laser field formed by the co-polarized first and second harmonics of Ti: Sapphire laser are studied. On the basis of non-perturbative quantum mechanical theoretical approach, using the exact solution of the boundary value problem for an atom interacting with an external field, a set of computer programs to calculate the response of an atom photoemission spectra for different values of the parameters of the two-color field was developed. We investigated the dependence of the harmonic generation efficiency from the time delay between pulses in the two modes of interaction: the perturbative and nonperturbative regime. It is shown that in the perturbative regime of interaction the harmonic generation efficiency depends periodically on the time delay. However, with the increase of the laser field intensity the periodical dependence ceases. The results can be used to enhance the efficiency of selected harmonics (or some harmonic band) generation.