ABSTRACT

G.R. Kashaeva "Generation of elliptically polarized harmonics in the neon gas"

The thesis is devoted to a numerical study of high-order optical harmonic generation in rarefied gas of neon within the frame of nonperturbative theory. The first part of this work contains the harmonic generation process description in classical model for 1s state of the Bohr model of atom, placed in the field of incident wave with the intensity, comparable to intra-atomic intensity. The appearance of even harmonic generation process is shown along with the fact that the number of them grows with the incident field intensity. Then, in a more rigorous quantum-mechanical model, in the one-electron approximation, using the basis of the wave functions the eigenfunctions of the an atom in a field boundary problem, the polarization state of high optical harmonics of the neon atom response to the action of a two-color linearly polarized field with orthogonal polarization directions is investigated. It was shown that the ellipticity of the various harmonics depends on the field geometry change in respect to the direction of electron orbital angular momentum.