

POLARIZATION PROPERTIES OF THE THIRD  
HARMONIC OF A PUMPING FIELD THAT  
IS GENERATED IN PLASMAS CREATED  
BY THE IONIZATION OF EXCITED  
HYDROGEN-LIKE ATOMS

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S u m m a r y

We use a model of ionization of the gas of pre-excited atoms. As the time of ionization is very short and the electromagnetic field is strong enough, we use the electron distribution function which has the memory about the excited electron states of pre-ionized atoms. A theory of the polarization properties of the radiation harmonics, which are generated by a monochromatic pumping field in the plasma of hydrogen-like ions, is constructed. Taking the generation of the third harmonic as an example, we analyze the properties of a degree of its circular polarization as a function of both the intensity of a pumping electric field and a degree of the circular polarization of the field. The threshold character of the bifurcation of a position of the complete circular polarization of the third harmonic is established, and the dependence of the polarization properties of this harmonic on the principal quantum number of excited states of electrons is described.