ANALOG OF THE COHERENT POPULATION TRAPPING STATE IN A POLYCHROMATIC FIELD

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S u m m a r y

The interaction between a three-level atom and a polychromatic field with an equidistant spectrum (Λ-scheme of the atom–field interaction) has been studied theoretically. It is shown that the interaction of an atom with such a field can be reduced to its interaction with a bichromatic field with additional light shifts of transition frequencies and an additional coupling of the lower atomic levels, which is proportional to the field intensity. Owing to this coupling, the idea of the coherent population trapping can be considered only as an approximation, because the dark state is not an eigenstate of the effective Hamiltonian in the general case of arbitrary dipole moments. The analyzed model gives a simple theoretical interpretation for the formation of the atomic state, which is close to the coherent population trapping, in the radiation field of a femtosecond laser.