STIMULATED RAMAN ADIABATIC PASSAGE IN PHASE-FLUCTUATING FIELDS

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S u m m a r y

The phenomenon of stimulated Raman adiabatic passage (STIRAP) in the field of laser pulses with fluctuating phases is studied. The phase fluctuation is described by the Wiener stochastic process. The effect of spontaneous transitions from the excited state on the limiting value of population transfer from the ground state of an atom into the metastable one (or between two metastable states) is discussed. It has been demonstrated that phase fluctuations, besides the restriction on the population transfer efficiency, lead to a shift of the population transfer maximum with respect to the exact two-photon resonance. This shift is proportional to the arithmetic mean of the Stokes and pump field detunings from the single-photon resonance and does not vanish in the limit of high-intensity laser fields.