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Formation of trains of attosecond pulses via ionization switching of the resonant interaction between XUV radiation and IR-field-dressed atoms TIMUR AKHMEDZHANOV, Department of Physics and Astronomy, Texas A&M University and Institute for Quantum Studies and Engineering, College Station, TX 77843-4242, USA, VLADIMIR ANTONOV, Institute of Applied Physics of the Russian Academy of Sciences, 46 Ulyanov street, Nizhny Novgorod 603950, Russia, OLGA KOCHAROVSKAYA, Department of Physics and Astronomy, Texas A&M University and Institute for Quantum Studies and Engineering, College Station, TX 77843-4242, USA — Investigating processes unfolding on the attosecond time scale is one of the key aims of modern physics. Attosecond light pulses with carrier frequency in the vicinity of atomic resonances present themselves the major tool for study of such processes in atoms and molecules. Recently, we presented an analytical model describing formation of attosecond pulses from quasi-resonant quasi-monochromatic vacuum-ultraviolet (VUV) radiation in an atomic gas simultaneously irradiated by a moderately strong infrared (IR) laser field. Subcycle time-dependence of ionization rate of excited states of atoms is used to form attosecond pulses from VUV field. In this contribution we present the results of numerical solution of time-dependent Schrodinger equation for IR-dressed He atoms interacting with quasi-resonant XUV radiation. Our results demonstrate the possibility to form trains of pulses with pulse duration in the range of hundreds of attoseconds in atomic helium dressed by IR field. The results are in a rather good agreement with the analytical solution. Required parameters of IR dressing laser are achievable experimentally.

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