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Controlling double ionization of atoms in an intense bichromatic laser pulse ADAM KAMOR, Georgia Institute of Technology, FRANCOIS MAUGER, Aix-Marseille University, CRISTEL CHANDRE, CNRS, TURGAY UZER, Georgia Institute of Technology — We consider the classical dynamics of a two-electron system subjected to an intense bichromatic linearly polarized laser pulse. By varying the parameters of the field, such as the phase lag and the relative amplitude between the two colors of the field, we observe several trends from the statistical analysis of a large ensemble of trajectories initially in the ground state energy of the helium atom: High sensitivity of the sequential double ionization component, low sensitivity of the intensities where nonsequential double ionization occurs while the corresponding yields can vary drastically. All these trends hold irrespective of which parameter is varied: the phase lag or the relative amplitude. We rationalize these observations by an analysis of the phase space structures which drive the dynamics of this system and determine the extent of double ionization. These trends turn out to be mainly regulated by the dynamics of the inner electron. Ref: A. Kamor, F. Mauger, C. Chandre, and T. Uzer, Physical Review E, in press (2011).

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