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An analytical description of carrier-envelope phase effects[1] V. ROUDNEV, B.D. ESRY, Kansas State University — We consider a quantum system interacting with a short intense linearly polarized laser pulse. Using the two-dimensional time representation and the Floquet representation, we establish a straightforward connection between the laser carrier-envelope phase (CEP) and the wave function. This connection is simply a unitary transformation in the space of Floquet components. This approach allows us to interpret any CEP effect as an interference between the Floquet components and to put limits on using the CEP in coherent control. In particular, we discuss the dependence of the CEP effect on the pulse duration. We illustrate the theory for a two-level system as well as for atomic and molecular systems.

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Vladimir Roudnev
Kansas State University

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