

Abstract Submitted
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Coherent control of nonresonant two-photon excitation in molecules¹ JING SU, SHAOHAO CHEN, AGNIESZKA JARON-BECKER, ANDREAS BECKER, JILA and Department of Physics, University of Colorado, 440 UCB, Boulder, CO 80309-0440 — We extend coherent control schemes of nonresonant two-photon excitation from the atomic case to the molecular case. In particular, we study the two-photon excitation process induced by a set of laser sub-pulses both in a higher dissociating state and a bound state by solving the time-dependent Schrödinger equation. Our results show that for two-photon excitation to a higher dissociating state previous control schemes, validated for the atomic case before, do fail due to the coupling electronic and nuclear motion. For bound states we show that by controlling the time delay and the carrier-to-envelope phase difference between two consecutive Gaussian pulses we can either maximize or minimize the two-photon excitation process to a desired bound state.

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