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Photoelectron circular dichroism amplification by interferometric two-photon transitions R. ESTEBAN GOETZ, Department of Physics, Kansas State University, CHRISTIANE KOCH, Department of Physics, Freie Universität Berlin, LOREN GREENMAN, Department of Physics, Kansas State University —
We present an extension of the RABBITT scheme to enhance the photoelectron circular dichroism (PECD) in rotationally isotropic ensemble of chiral molecules. Different portions of the photoelectron wave packet ionized by a comb of XUV frequencies are constrained to interfere in the presence of an infrared (IR) dressing field. An enhancement of the PECD is achieved for appropriate polarization states of the XUV and IR pulses and short IR pulse durations, while the absence of the latter results in a negligible enhancement. We show that the high degree of PECD is robust to the XUV spectral phase and can be efficiently controlled by varying the time delay between the XUV and IR pulses. We exploit this mechanism in pump-probe spectroscopy and show that chiral effects in the dynamics of electronic current density flows can be mapped to the PECD observable while enhancing the sensitivity of detection.

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