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Quantum coherent control of the photoelectron angular distribution in bichromatic-field ionization.[1] KLAUS BARTSCHAT, Drake University, NICOLAS DOUGUET, University of Central Florida, ELENA V. GRYZLOVA, ALEXEI N. GRUM-GRZHIMAILO, EKATERINA I. STAROSELSKAYA, Moscow State University — We investigate the coherent control of the photoelectron angular distribution (PAD) in bichromatic atomic ionization. Practical issues, such as the role of the fine-structure splitting, the pulse length, and the intensity, are discussed. We employ time-dependent and stationary perturbation theory, and we also solve the time-dependent Schrödinger equation in a single-active electron model. As a specific example, we consider atomic neon, for which a recent experiment [1] used one of the $(2p^5 4s)$ states with total electronic angular momentum $J = 1$ as the intermediate state in simultaneous two-photon excitation by the fundamental and one-photon ionization by the second harmonic of the seeded free-electron laser FERMI [2]. Coherent control of the PAD was achieved by controlling the time delay, corresponding to the relative phase, between the fundamental and the second harmonic to a precision of 3.1 attoseconds. We also investigate the contribution of the nonresonant two-photon process and its potentially constructive or destructive role for quantum coherent control. [1] K. C. Prince *et al.*, Nature Photonics **10** (2016) 176. [2] https://www.elettra.trieste.it/lightsources/fermi.html

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