Abstract Submitted
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A Perturbative Approach to Attosecond Transient Absorption[1] C CARIKER, Dept. Physics, Univ. Central Florida, FL, USA, T KJELLSSON LINDBLOM, E LINDROTH, Stockholm University, Stockholm, SE, EU, L ARGENTI, Dept. Physics and CREOL, Univ. Central Florida, FL, USA — We present theoretical predictions for the dipolar response of a prototype atom ionized by a weak extreme-ultraviolet pump pulse and dressed by a moderately strong infrared pulse. The results are obtained with a finite-pulse resonant analytical model based on a third-order perturbative expansion of the light-atom interaction and on a Fano representation for the resonant continuum. Here the model is used to study how the frequency, time-delay, polarization, and spectral width of the external fields affect the resonant attosecond transient absorption spectra. It is shown that, within the assumptions of the model, only transitions involving intermediate resonant states can in fact alter the absorption spectrum as a function of the delay between pump and dressing pulse. The model predictions are compared with *ab-initio* calculations for realistic atoms, obtained by solving numerically the time-dependent Schrödinger equation in a multichannel close-coupling basis [1]. [1] L Argenti and E Lindroth, Phys. Rev. Lett. 105, 053002 (2010). [2] T Carette et al., Phys. Rev. A 87, 023420 (2013).

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