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Attosecond streaking of correlated two-electron transitions RENATE PAZOUREK, STEFAN NAGELE, Institute for Theoretical Physics, Vienna University of Technology, Austria, EU, JOHANNES FEIST, ITAMP, Harvard-Smithsonian Center for Astrophysics, MA, USA, JOACHIM BURGDÖRFER, Institute for Theoretical Physics, Vienna University of Technology, Austria, EU —
Attosecond streaking is one of the most fundamental processes in attosecond science allowing for a mapping of temporal information to the energy domain. For the measurement of the release time of electrons in atomic photoemission a time-resolution on the sub-100 attosecond time scale could be achieved [Science 328, 1658 (2010)]. The measured time shifts contain timing (or spectral phase) information associated with the Eisenbud-Wigner-Smith (EWS) time delay. Considerable additional time shifts caused by the probing infrared field could be identified on the single-particle level. In this contribution we adress the role of electron correlation in the streaking process. We study two-electron systems for which we solve the full time-dependent Schrödinger equation. For final ionic states with small polarizability correlation effects beyond those of the one-photon transition already included in the EWS time delay are absent. However, for shake-up ionization we find an additional streaking time shift due to the correlated dynamics of the dressed bound electron and the streaked continuum electron.

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