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Two-electron time-delay interference in atomic double ionization by attosecond pulses¹ ALICIA PALACIOS, Universidad Autonoma de Madrid, THOMAS N. RESCIGNO, Lawrence Berkeley National Laboratory, C. WILLIAM MCCURDY, U. C. Davis — Two-color two-photon atomic double ionization with subfemtosecond UV pulses is explored in the particular case that laser parameters are chosen such that the sequential two-color process dominates, and one electron is ejected by each pulse, emerging with overlapping energy distributions. Benchmark-level time-dependent ab initio numerical calculations for the case of a helium target show that a prominent interference pattern in the joint energy distribution of the ejected electrons is observed for short enough pulses. This pattern: (1) arises from electron indistinguishability, (2) depends on their spin coupling, (3) is a measure of the time delay between pulses and (4) occurs in two-photon double ionization when it is necessarily dominated by sequential ionization by the two pulses. Additionally, even if for very short time delays these interference oscillations are visible, suggesting sequential ejection, the associated angular distributions show important differences from those expected from a pure sequential mechanism.

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C. William McCurdy
Lawrence Berkeley National Laboratory

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