

Abstract Submitted
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Quantum theory of recollisional (e, 2e) process in strong field nonsequential double ionization of helium¹ ZHANGJIN CHEN, J. R. Macdonald Laboratory, Physics Department, Kansas State University, Manhattan, Kansas 66506-2604, USA, YAQIU LIANG, College of Physics, Liaoning University, Shenyang 110036, People's Republic of China, C.D. LIN, J. R. Macdonald Laboratory, Physics Department, Kansas State University, Manhattan, Kansas 66506-2604, USA — Based on the full quantal recollision model and field-free electron impact ionization theory, we calculated the momentum correlation spectra of the two outgoing electrons in strong field nonsequential double ionization (NSDI) of helium to compare with recent experiments. By analyzing the relative strength of binary vs recoil collisions exhibited in the photoelectron spectra, we confirmed that the observed finger- like structure in the correlation spectra is a consequence of Coulomb interaction between the two emitted electrons. Our result supports the recollision mechanism of strong field NSDI at the most fundamental level.

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Zhangjin Chen
J. R. Macdonald Laboratory, Physics Department, Kansas

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