

Abstract Submitted
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Control of Electron Recollision and Molecular Nonsequential Double Ionization¹ MARCOS DANTUS², SHUAI LI, Michigan State University, ITZIK BEN-ITZHAK, Kansas State University — Control over non-sequential double ionization (NSDI) via spectral-phase pulse shaping of strong femtosecond laser pulses was measured on ethane molecules. The shaped pulses having either a positive or a negative π phase step that is scanned across the spectrum of the pulse, while all other parameters fixed, and the yield of all resulting ions generated by the field are measured. We find that the shaped pulses can enhance or suppress the yield of dications resulting from electron recollision by factors of 3 to 6, the maximum degree of control is observed when the phase step is near $\pi/2$ of the Gaussian laser spectrum. Identifying molecular NSDI from other ionization processes, such as multiphoton ionization, allow us to time-resolve roaming chemical reactions such as those producing H_3^+ .

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