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Attosecond Control of Photoabsorption Through Manipulating the Electron–Electron Correlation S.X. HU, Laboratory for Laser Energetics, University of Rochester — This talk reports on studies of photoabsorption control by manipulating the electron−electron correlation in a double-ionization process with an attosecond extreme ultraviolet (EUV) pulse. Electron correlation plays an essential role in a wide range of fundamentally important many-body phenomena in modern physics and chemistry. An example is the importance of electron–electron correlation in multiple ionization of multielectron atoms and molecules exposed to intense laser pulses. Manipulating the dynamic electron correlation in such photoinduced processes is a crucial step toward the coherent control of chemical reactions and photobiological processes. We will show for the first time, from full-dimensional *ab initio* calculations of double ionization of helium in intense laser pulses ($\lambda = 780$ nm), that the electron–electron interactions can be instantaneously tuned using a time-delayed attosecond EUV pulse.[1] Consequently, the probability of producing energetic electrons from excessive photoabsorption can be enhanced by an order of magnitude through the attosecond control of electron–electron correlation. This work was partially supported by the Department of Energy National Nuclear Security Administration under Award No. DE-NA0001944, the University of Rochester, and the New York State Energy Research and Development Authority. Computations have been conducted utilizing the "Kraken" Supercomputer at NICS.

[1]S. X. Hu, Phys. Rev. Lett. **111**, 123003 (2013).

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