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Attosecond interferometry in strong field physics[1]

KENNETH SCHAFER, Department of Physics & Astronomy, Louisiana State University

The combination of an attosecond extreme ultraviolet (XUV) pulse with an infrared (IR) laser field has been the mainstay of attosecond metrology. It has been used to characterize both attosecond pulse trains and single attosecond pulses. Over the last few years it has been demonstrated that this same combination can also be used to study and control strong field processes such as high harmonic generation [1], strong field ionization [2] and electron rescattering [3]. We will illustrate these principles with examples from our most recent work on the absorption of XUV radiation in strong IR fields, and discuss recent experiments as well.

[1] K.J. Schafer, et al., "Strong field quantum path control using attosecond pulse trains," Phys. Rev. Lett. 92 023003 (2004).
[2] P. Johnsson, et al., "Attosecond control of ionization dynamics by wavepacket interference," Phys. Rev. Lett. 99, 233001 (2007).
[3] J. Mauritsson, et al., "Coherent Electron Scattering Captured by an Attosecond Quantum Stroboscope," Phys. Rev.Lett. 100, 073003 (2008).

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