

Abstract Submitted
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Measuring sub-femtosecond x-ray pulses with angular streaking¹

SIQI LI, P. BUCKSBAUM, E. CHAMPENOIS, J. CRYAN, T. DRIVER, J. DURIS, R. COFFEE, A. GATTON, Z. HUANG, J. KNURR, M.F. LIN, J. MACARTHUR, T. MAXWELL, M. NANTEL, A. NATAN, J. O'NEAL, N. SHIVARAM, P. WALTER, T. WOLF, A. MARINELLI, SLAC National Accelerator Laboratory, M. KLING, P. ROSENBERGER, Department of Physics, Ludwig-Maximilians-Universitat Munchen, G. HARTMANN, Institut fur Physik und CINSaT, Universitat Kassel, W. HELML, Max Planck Institute of Quantum Optics, XLEAP COLLABORATION — The recent development of sub-femtosecond x-ray pulses from free-electron lasers has called for a high resolution measurement scheme to characterize such short pulses and the electronic dynamics they induce. The angular streaking technique exploits the phase-dependent momentum shift experienced by the photoelectrons ionized by x-ray pulses in the presence of a circularly polarized streaking laser field. We present a method to extract the temporal and spectral profiles of an electronic wavepacket produced by x-ray ionization from the photoelectron momentum distribution. We use this method to demonstrate the attosecond operation of a soft x-ray FEL, and study attosecond electron dynamics in x-ray photoionization.

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