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Characterizing isolated attosecond pulses with angular streaking

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The development of isolated attosecond pulses (IAP) with the free-electron laser at LCLS called for a high-resolution, single-shot diagnostic method. In this talk I will discuss the use of angular streaking to characterize IAPs. An IAP with sufficiently high photon energy will ionize an atomic system to produce photoelectrons. In the presence of the IR field, the energy of the ionized photoelectron will be modulated, or streaked, depending on the phase of the IR laser field at the time of ionization. Through the streaking interaction, information about the temporal profile of the IAP will be encoded in the energy (and momentum) distribution of the emitted photoelectrons. Using a circularly polarized streaking laser, the temporal profile of the electron wavepacket is encoded in the angular distribution of streaked photoelectrons.

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