IMAGING OF ATTOSECOND RING CURRENT DYNAMICS

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When a helium atom is excited into a superposition of a $1s$ state and a $np+$ state, the electron wave packet produces a ring current with attosecond scale charge density dynamics. The dynamics in the field free wave packet manifest in a time dependent relative phase between the ground and excited state. In this talk, we will discuss an interference scheme that allows for time resolved imaging of the relative phase of the bound states to be extracted from a photoelectron spectrum. The presented results are obtained from *ab initio* simulations of the time dependent Schrödinger equation in the single active electron and dipole approximations. Effects of pulse length, polarization and other parameters of the imaging pulse on the obtained data will be discussed.

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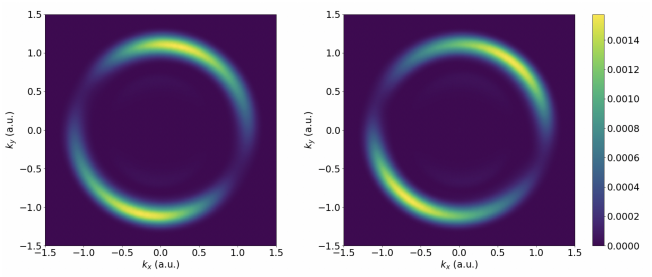

Figure 1: Photoelectron spectra of He atom in a superposition of $1s$ and a $2p+$ with different initial relative phase.