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Effects of the Coulomb potential in strong-field holography with photoelectrons

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Strong-field photoelectron holography (SFPH) is a new method for time-resolved molecular imaging [1]. The SFPH technique is based on the interference between rescattered electrons that are driven back to their parent ions and rescatter on them, and direct electrons that do not recollide with the ions. The semiclassical three-step model [2] accounting only for the laser field predicts four different types of subcycle interference structure [3]. Despite the appealing physical picture of the SFPH provided by the three-step model, neglecting the Coulomb potential may be severe.

We investigate modification of the interference structures emerging in the SFPH due to the Coulomb potential of the atomic core using the semiclassical two-step model for strong-field ionization [4]. For each kind of interference pattern predicted by the three-step model we calculate the corresponding structure emerging in the presence of the Coulomb potential. We show that the Coulomb potential can manifest itself in three main effects. These are: the shift of the interference pattern as a whole, the filling of the parts of the interference structure that are missing when the Coulomb potential is neglected, and the characteristic kink of the interference stripes at zero momentum.

[1] Y. Huismans et al., Science 331, 61 (2011).
[2] P. B. Corkum, Phys. Rev. Lett. 71, 1994 (1993).
[3] X.-B. Bian et al., Phys. Rev. A 84, 043420 (2011).
[4] N. I. Shvetsov-Shilovski et al., Phys. Rev. A 94, 013415 (2016).

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