

Abstract Submitted
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Symmetric electron vortices of hydrogen ionized by orthogonal elliptical fields. MENG LI, Tianjin University — we designed a novel exciting-pulse combination involving a pair of time delayed orthogonally elliptically polarized intense pulses. This pulse combination, beneficial for studying the elliptical polarized pulse, can be regarded as a general form of bi-circular field leading to an orthogonally symmetric vortex shaped momentum pattern. We employed the strong field approximation (SFA) theory in our numerical simulation, and investigated the vortex shaped momentum patterns with varying time delays, ellipticities as well as pulse energies and so on. Being different from the results of Starace group that focus on circularly polarized pulses, we aim at exploring the characteristics of ionization by elliptically polarized field. It is found that the width of vortex arm is sensitive to the time delay for a fixed ellipticity, and the bending degree and number of vortex arms depend on the value of the ellipticity under some certain conditions. Moreover, we predicted some novel structures of the momentum pattern. These observations can serve as an alternative sensitive tool for characterizing the elliptically or more complexly polarized pulse, and deeply exploring the ionization features of atom or molecule..

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