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Strong Field Ionization of hydrogen in bi-circular fields PHILIPP M. STAMMER, FELIPE MORALES, OLGA SMIRNOVA, MIKHAIL IVANOV, Max-Born-Institute for Nonlinear Optics and Short Pulse Spectroscopy — Interaction of a strong laser field with an atom or a molecule is often described in a simple three-step picture: an electron is tunnel ionized, then it is accelerated away from the core, to be finally driven back to the parent ion, by the laser field. The recollision or the rescattering with the parent ion is at the heart of strong-field phenomena, i.e. High Harmonic Generation (HHG) and Above Threshold Ionization (ATI). While a circularly polarized laser field does not allow for recollision, a bi-circular field (consisting of two co-planar, counter-rotating, circularly polarized laser fields) does. Bi-circular HHG has been studied both experimentally and theoretically, whereas research on ATI spectra in these fields has been mostly limited to analytical studies. In this work we present ATI spectra calculated via direct solution of the Time Depending Schrödinger Equation for the Hydrogen atom, exposed to an intense bi-circular field. These calculations are computationally demanding, and will help to understand the underlying physics, and confirm the analytical predictions. The emitted photo-electrons exhibit the same three-leaf structure as the electric field, but also deflections and structure due to the interaction with the Coulomb potential will be discussed.

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