Abstract Submitted
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Bohmian trajectory analysis of sub-cycle multiphoton ionization dynamics[1] HOSSEIN Z. JOOYA, University of Kansas, DMITRY A. TELNOV, St. Petersburg State University, PENG-CHENG LI, National Taiwan University, SHIH-I CHU, University of Kansas — An accurate 3D numerical scheme for the De Broglie-Bohm's framework of Bohmian mechanics is presented. This method is utilized to explore the sub-cycle multiphoton ionization dynamics of the hydrogen atom subject to intense near infrared (NIR) laser fields on the sub-femtosecond time scale. The analysis of the time-dependent electron density reveals that several distinct density portions can be shaped and detached from the core within a half cycle of the laser field. We identify several distinct groups of the Bohmian trajectories which are responsible for the multiple detachments of the electron density at different times. The method presented provides very accurate electron densities and Bohmian trajectories that allow to uncover the origin of the formation of the transient and distinct electron structures seen in the MPI processes.

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