Abstract Submitted
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Plasma Production by Optical Field Ionization[1] KATHRYN WOLFINGER, GREGORY WERNER, MICHAEL LITOS, University of Colorado Boulder, JARROD LEDDY, Tech-X Corporation, JOHN CARY, Tech-X Corporation and University of Colorado Boulder — The 2D optical field ionization of neutral gases and the subsequent plasma expansion has been computed using the VSim particle-in-cell computational application. This model combines self-consistent electromagnetic fields with external laser fields to drive the charged particles. Those laser fields consist of either circular or linearly polarized gaussian pulses, and the ionization rates come from the ADK formula. In addition to field ionization, elastic electron-ion and electron-neutral collisions, as well as impact ionization reactions, are implemented. Comparisons with the computational and experimental work on plasma channel formation presented by Shalloo et al [1] are presented. An electromagnetic pulse polarized in the direction of laser propagation has been observed following the field ionization. Exploration of plasma channel formation and the use of this pulse to measure the normalized vector potential will be presented. 1. Shalloo et al, Physical Review, E 97, 053203.

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Kathryn Wolfinger
University of Colorado Boulder

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