

Abstract Submitted
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Strong Field Atomic Dynamics Driven by Shaped Ultrafast Laser Pulses STEPHEN CLOW, Stony Brook University, UVO HOLSCHER, University of Würzburg, CARLOS TRALLERO, National Research Council of Canada, THOMAS WEINACHT, Stony Brook University — We demonstrate coherent control of atomic dynamics in strong laser fields including a phenomenon very similar to electromagnetically induced transparency (EIT) and population transfer in a multilevel system with multiphoton coupling between states. Ultrafast pulse shaping allows us to produce probe and coupling pulses for our EIT measurements with arbitrary intensities and time delays from a single ultrafast laser pulse. We compare our results to more traditional implementations of EIT. In our population transfer measurements we find that sequential population transfer is generally more efficient than adiabatic passage on ultrafast timescales with multiphoton coupling between states. Behind these experiments lies a simple time domain picture which draws upon the atom-field phase evolution in strong fields.

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