

Abstract Submitted
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High Harmonic Generation from Non-symmetric Molecular Targets in a Hollow-Core Waveguide¹ BRETT SICKMILLER, ROBERT JONES, Physics Department, University of Virginia — We explore high harmonic generation (HHG) from gas-phase molecules in hollow-core waveguide driven by intense 2-color (400nm+800nm) laser pulses. For symmetric molecules and laser fields, parity conservation precludes the generation of even harmonics. However for non-symmetric molecules such as CO, the predicted preference for ionization from the C rather than O site should allow for the generation of even harmonics using a symmetric fundamental laser field. Unfortunately, in a macroscopic sample, the random orientation results in a cancellation of the even-harmonics produced by individual molecules within the ensemble. We are attempting to transiently orient CO molecules in a waveguide by impulsively kicking them with a short, asymmetric 2-color laser pulse, creating an ensemble of rotational wavepackets without definite parity. We monitor the production of even harmonics generated by a 30 fsec, 800 nm laser pulse as a function of its delay after the 2-color pump. Liquid nitrogen cooling of the waveguide improves the achievable degree of alignment and orientation.

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