

Abstract Submitted
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Studies of inner-orbital ionization through velocity map imaging and Fourier transform spectroscopy¹ GEORGE GIBSON, VINCENT TAGLIAMONTI, University of Connecticut — Since the first observation of inner-orbital ionization (IOI) of molecules by strong laser fields [PRL 67, 1230 (1991)], the influence of the inner-orbitals on ionization and high-harmonic generations has attracted much attention. We discuss a new technique to study IOI which is sensitive to both the geometry and phase of the orbitals. By combining velocity map imaging and Fourier transform spectroscopy, we can directly measure the populations in non-dissociating states of the molecular ion and their spatial distribution. We specifically report on the X $^2\Pi_{g,3/2}$ and A $^2\Pi_{u,3/2}$ states of I_2^+ , which represent ionization of the HOMO (π_g) and HOMO-1 (π_u) orbitals of I_2 , respectively. Once we have access to the populations of these states, we can study their dependence on polarization and coherent redistribution via a third coupling pulse.

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