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Inner-orbital ionization of iodine[1] GEORGE GIBSON, DALE SMITH, University of Connecticut, VINCENT TAGLIAMONTI, Stony Brook University, JAMES DRAGAN, University of Connecticut — Many coincidence techniques exist to study multiple ionization of molecules by strong laser fields. However, the first ionization step is critical in many experiments, although it is more difficult to obtain information about this initial step. We studied the single electron ionization of I_2, as it presents interesting opportunities in that it is heavy and does not expand significantly during the laser pulse. Moreover, there are several distinct low-lying valence orbitals from which the electron may be removed. Most importantly, the kinetic energy release of the $I^+ + I$ dissociation channel can be measured and should correspond to well-known valence levels and separated atom limits. As it turns out, we must invoke deep valence orbits, built from the 5s electrons, to explain our data. Ionization from deep orbitals may be possible, as they have a smaller critical internuclear separation for enhanced ionization.

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