Abstract Submitted
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Resonant Enhancement of Strong Field Inner Orbital Ionization of Molecular Iodine[1] GEORGE GIBSON, DALE SMITH, University of Connecticut — We present a wavelength study of the strong field single electron ionization of molecular iodine near its one-photon B-state resonance at 530 nm which shows a remarkably strong wavelength dependence. We have previously identified two ionization channels (PRA 95, 013410): ionization of the high lying molecular orbitals and ionization of the deep orbitals in I_2. We find a resonant enhancement of both channels, although the peak enhancement occurs at different wavelengths for the different channels. Moreover, the branching ratio of the ionization of the deep orbitals shows a dispersion-like function, with the branching ratio of the deep orbitals reaching over 98% at 519 nm. Finally, the branching ratio of double ionization into an excited state of I_2^{2+} as a function of wavelength closely matches the branching ratio of the single ionization of deep orbitals, implying that excitation of molecular ions generally comes about through inner orbital ionization.

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