

Abstract Submitted
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Dissociation of LiF in intense, ultrafast laser pulses¹ BRANDON RIGSBEE, BRETT ESRY, Kansas State University — The alkali-halide family of molecules are of particular interest to study with intense, ultrafast lasers. In general, the lowest two electronic states correspond to an ionic ground state and covalent excited state that cross, giving rise to charge-exchange transitions. The Coulomb potential of the ground state exhibits a dense Rydberg series of vibrational states that are coupled to the covalent excited state at energies above the (diabatic) neutral fragment threshold. Probing this rich structure and controlling the preference between the ionic and covalent properties of the molecule is the focus of this work. We numerically solve the time-dependent Schrödinger equation for LiF subject to intense, few-cycle laser pulses to calculate branching ratios and energy spectra for the neutral and ionic fragments. These observables are examined as a function of the laser parameters, including the carrier-envelope phase, to explore the dominant mechanisms of dissociation.

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