

Abstract Submitted  
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**Fragmentation of negative ions in a strong laser field**<sup>1</sup> BEN BERRY, BETHANY JOCHIM, T. SEVERT, PEYMAN FEIZOLLAH, JYOTI RAJPUT, D. HAYES, K. D. CARNES, B. D. ESRY, I. BEN-ITZHAK, J. R. Macdonald Laboratory, Physics Department, Kansas State University, Manhattan, KS 66506, USA — The fragmentation of negative ions in a strong laser field can provide a testing ground for a variety of unique phenomena. For example, anions with a loosely bound electron allow for the study of rescattering phenomena at lower laser intensities than for neutral targets. We study the behavior of keV anion beams in an ultrafast, intense laser field. The use of a fast-beam target facilitates the measurement of neutral fragments. This capability allows us to explore laser-induced dynamics in both ionic and neutral charge states. Using a coincidence 3D momentum imaging technique, we obtain the full 3D momentum of all nuclear fragments. In this preliminary work, we study atomic ( $\text{H}^-$ ) and molecular ( $\text{H}_2^-$ ,  $\text{F}_2^-$ ) systems with the goal of identifying and controlling their fragmentation pathways.

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