

Abstract Submitted
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Enabling momentum-imaging studies of competing proton and hydrogen elimination channels initiated by a strong laser field¹ T. SEVERT, BETHANY JOCHIM, K. D. CARNES, I. BEN-ITZHAK, J.R. Macdonald
Laboratory, Physics Department, Kansas State University, Manhattan, KS 66506, USA — We are interested in imaging and controlling proton versus atomic hydrogen elimination in the strong-field induced dissociation of hydrocarbon molecular ions, such as $H^+ + C_2H$ and $H + C_2H^+$ from $C_2H_2^+$. To permit kinematically complete measurements of these processes, we employ “fast” (few keV) molecular ion-beam targets, allowing the detection of both neutral and charged fragments [1]. However, measuring breakup channels with large mass asymmetries simultaneously is difficult [2]. We present an upgrade of our coincident three-dimensional momentum imaging method to overcome these challenges and measure the proton and hydrogen elimination channels.

[1] I. Ben-Itzhak *et al.*, Phys. Rev. Lett. **95**, 073002 (2005).

[2] L. Graham *et al.*, Phys. Rev. A **91**, 023414 (2015).

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Travis Severt
Kansas State Univ

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