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Abstract Submitted
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Strong-field fragmentation of diiodomethane studied with time-resolved three-body Coulomb explosion[1] BALRAM KADERIYA, Y. MALAKAR, KANAKA RAJU P., T. SEVERT, X. LI, W.L. PEARSON, F. ZI-AEE, Kansas State University, K. JENSEN, Univ. of Nebraska, J. RAJPUT, I. BEN-ITZHAK, D. ROLLES, A. RUDENKO, Kansas State University — Laser Coulomb explosion imaging (CEI) is an efficient tool for mapping time-dependent changes of molecular geometry in many light-induced bond breaking or rearrangement processes. Here, we apply the three-body CEI technique to map in space and time nuclear wave packets created in strong-field ionization and dissociation of diiodomethane molecules. Analyzing coincident three-particle momentum maps in the triply ionized final state, we disentangle different ionization and break-up pathways and trace the time evolution of both, bond lengths and angles for major reaction channels. By combining different representations of the three-body breakup (kinetic energy release vs. relative ion emission angle, Dalitz plots, Newton diagrams etc.), we identify contributions due to bound and dissociating parts of the nuclear wave packet in the singly charged ionic state, observe signatures of I_2/I_2^+ elimination and highlight the role of intermediate long-lived doubly charged states.

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