Abstract Submitted
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Dynamics of slow dissociation of D_3^+ in intense ultrashort laser pulses[1] B. GAIRE, J. MCKENNA, M. ZOHRABI, K.D. CARNES, I. BEN-ITZHAK, J.R. Macdonald Laboratory, Physics Department, Kansas State University — We have studied laser-induced slow dissociation of D_3^+, which is a benchmark polyatomic system, using an improved coincidence three-dimensional momentum imaging method. In our measurements, we clearly separate and distinguish between all fragmentation channels and measure kinetic energy release down to 0 eV within the experimental resolution. Our results for D_3^+ dissociation suggest that two-body breakup is dominant over three-body fragmentation and that the low kinetic energy release is associated with the D^++D_2 dissociation channel. We explore the pathways for such slow dissociation and further test their validity by changing laser pulse duration and wavelength. Our observations show that slow dissociation is more dominant using ultrashort pulses at 790 nm than at 395 nm, yet the total dissociation rate integrated over all kinetic energies is higher at 395 nm.

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