

Abstract Submitted
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Femtosecond Time-Resolved Coulomb Explosion Imaging of UV-Induced Photodissociation of Iodomethane¹ F. ZIAEE, K. BORNE, KANKA RAJU P., B. KADERIYA, Y. MALAKAR, T. SEVERT, I. BEN-ITZHAK , A. RUDENKO, D. ROLLES, Department of Physics, Kansas State University, Manhattan KS, USA, R. FORBES, University College London, University of Ottawa — The UV-induced photodissociation of iodomethane (CH₃I) and the ensuing molecular dynamics is investigated by time-resolved Coulomb explosion imaging. We utilize a UV-IR pump-probe setup with a coincident 3D ion momentum imaging apparatus to measure yields and kinetic energies of all ionic fragments as a function of the time-delay between the pump and probe pulses. Excitation at a wavelength of 258 nm initiates a resonant one photon dissociation into neutral fragments, which results in C-I bond cleavage. The dissociation products are then strong-field ionized, using the IR probe pulse. Analysis of the delay-dependent kinetic energy release, for each fragmentation channel, allows the time evolution of the internuclear distance to be extracted. The results highlight the sensitivity of Coulomb explosion imaging as probe of structural dynamics on ultrafast timescales.

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