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Neutral dissociation and strong-field ionization of iodine-containing halomethanes studied by time-resolved coincident ion momentum imaging[1] FARZANEH ZIAEE, K. BORNE, KANKA RAJU P., T. SEVERT, Y. MALAKAR, B. KADERIYA, I. BEN-ITZHAK, A. RUDENKO, D. ROLLES, J.R. Macdonald Laboratory, Department of Physics, Kansas State University, R. FORBES, PULSE Institute, Stanford University — We study the UV-induced dissociation and NIR-strong-field ionization of CH3I and iodine-containing dihalomethanes using a time-resolved coincident ion momentum imaging technique. Upon absorption of a single 263 nm photon, the molecules dissociate primarily via C-I bond cleavage, and the dissociating neutral molecule is then ionized after a variable time delay by an intense 23-fs 790 nm pulse. We compare the observed delay-dependent ion kinetic energy release to a numerical model that relates the experimental data to the shape of the dissociative neutral and di-/tri-cationic potential energy curves. Our time-resolved coincidence data also allows identifying competing two- and three-photon excitation channels in the pump step.

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