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Time resolved Coulomb explosion imaging of multi-channel non-adiabatic photodissociation dynamics[1] RUARIDH FORBES, Stanford University, DANIEL ROLLES, Kansas State University, TARAN DRIVER, Stanford University, MICHAEL BURT, MARK BROUARD, Oxford University, PHILIP BUCKSBAUM, Stanford University, 2019B8063 COLLABORATION, BURT2019 COLLABORATION — We utilize soft X-ray Free Electron Laser (FEL) pulses to track non-adiabatic and photodissociation dynamics in a series of iodide containing hydrocarbons. A time-stamping camera and a hexanode delay line were utilized at the FLASH and SACLA FEL facilities, respectively, to correlate the ion vector momenta following excitation across the deep ultraviolet. In the FLASH results, predissociation of the B-state in methyl iodide is investigated and photofragment angular distributions are extracted from sliced ion velocity map images. At SACLA, the photoexcitation energy dependence of the A-band in methyl iodide and iodobenzene is explored by using tunable pulses from an optical parametric amplifier. Highlighted is the competition between both direct (excited state) and indirect (ground state) photodissociation pathways, with latter mediated by internal conversion.

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