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Probing Ultrafast Electronic and Nuclear Dynamics during Ring-Opening Reactions[1] SHASHANK PATHAK, JAN TROSS, DANIEL ROLLES, J.R. Macdonald Laboratory, Kansas State University, USA, MIKE ASHFOLD, CHRISTOPHER HANSEN, REBECCA INGLE, University of Bristol, UK, REBECCA BOLL, European XFEL, Schenefeld, CARLO CALLEGARI, MICHELE DI FRAIA, OKSANA PLEKAN, KEVIN PRINCE, FERMI, Italy, BENJAMIN ERK, Deutsches Elektronen-Synchrotron, Hamburg, RAIMUND FEIFEL, RICHARD SQUIBB, Gothenburg University, Sweden, RUARIDH FORBES, University of Ottawa, Canada, DAVID HOLLAND, Daresbury Laboratory, UK, ROBERT MASON, University of Oxford, UK, ARNAUD ROUZEE, Max-Born-Institut, Berlin, Germany — We report the results of a time-resolved photoelectron spectroscopy experiment performed using short-pulse and narrow-bandwidth extreme ultraviolet radiation provided by the seeded free-electron laser FERMI. We studied the UV-induced ring-opening and subsequent unimolecular dissociation of a heterocyclic ring molecule. Theoretical predictions suggest the existence of several ring-opened isomers with about 1-2 eV less binding energy as compared to the parent molecule. Our experiment probes the ultrafast electronic pathways leading to their creation.

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Shashank Pathak
J.R. Macdonald Laboratory, Kansas State University, USA

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