

Abstract Submitted
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Frequency-resolved x-ray scattering¹ NOOR

AL-SAYYAD, MATTHEW WARE, Department of Physics at Stanford University, PULSE Institute, JAMES GLOWNIA, LINAC Coherent Light Source, SLAC National Laboratory, JORDAN O'NEAL, Department of Physics at Stanford University, PULSE Institute, PHILIP BUCKSBAUM, Department of Physics, Applied Physics, and Photon Science at Stanford University, PULSE Institute — In a series of experiments at the LINAC Coherent Light Source (LCLS), the time-resolved x-ray scattering (TRXS) from molecular iodine was measured after excitation by an 800 nm, 520 nm, and a combination of 800 and 520 nm laser pulses. The measured TRXS is used to generate a frequency scattering spectrum by taking a temporal Fourier transform along the laser-pump-xray-probe delay axis. This is known as frequency-resolved x-ray scattering (FRXS). Using FRXS, vibrational and dissociative motion are separated in the spectrum allowing for the easy characterization of motion. An overview of FRXS measurements will be presented. For dissociations, velocities and initial positions are measured, and for vibrations, the equilibrium position, amplitude of motion, and beat frequency are measured.

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