

High energy upgrade of the Linac Coherent Light Source

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The high energy high rep-rate upgrade to the Linac Coherent Light Source (LCLS-II HE) hard X-ray Free Electron Lasers enables a broad range of high spatial resolution, ultrafast X-ray science. With millijoule pulses and detectors that can read out at up to 25 kHz, it is an enabling technology for solving challenging science problems, such as how biomolecules change in time during stochastic or triggered motions. For instance, the time resolved macromolecular crystallography (TR-MX) experiment, which is currently limited to 5-10 time points currently at LCLS, could collect data for 100s of time delays in a single experiment and truly allow for a proper sampling of the time domain for TR-MX. This talk will give an overview of the accelerator and instrument upgrades of the LCLS and how they can be leveraged for crystallography experiments in the upcoming LCLS-II-HE era.