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LCLS-II: Upgrade Plans for the Linac Coherent Light Source–Including New Scientific Opportunities[1] WILLIAM SCHLOTTER, LCLS, SLAC National Accelerator Laboratory, LCLS-II TEAM — The Linac Coherent Light Source (LCLS) is planning a major upgrade that will provide revolutionary new scientific capabilities for exploring materials on the atomic and nano-scale with element specificity and ultrafast temporal resolution. The LCLS is an x-ray free electron laser with six experimental instruments accessible via a peer-reviewed proposal process. The upgraded LCLS-II facility will continuously deliver ultrafast x-ray pulses at repetition rates greater than 100kHz with photon energies tunable between 250 eV and 5 keV. The upgrade will also produce pulses with photon energies as high as 25 keV at a repetition rate of 120 Hz. These capabilities will enable new scientific methods that will revolutionize the study of highly correlated electron systems, magnetization dynamics and nanoscale fluctuations in soft matter to name a few. Expected capabilities and prospective experimental examples will be presented.

[1]The Linac Coherent Light Source (LCLS) at the SLAC National Accelerator Laboratory. LCLS is an Office of Science User Facility operated for the U.S. Department of Energy Office of Science by Stanford University.

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