Abstract Submitted
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Characterization of LCLS X-Ray Pulses Using Atomic Spectroscopy[1] A.M. MARCH, L. YOUNG, S.H. SOUTHWORTH, E.P. KANTER, B. KRÄSSIG, R. SANTRA, Y. LI, S.T. PRATT, Argonne National Laboratory, N. BERRAH, M. HÖNER, L. FANG, Western Michigan University, J.P. CRYAN, J.M. GLOWNIA, D.A. REIS, S. GHIMIRE, P. BUCKSBAUM, Pulse Stanford, L. DIMAURO, G. DOUMY, C. ROEDIG, The Ohio State University, J.D. BOZEK, C. BOSTEDT, M. MESSERSCHMIDT, SLAC — The first experiments at the LCLS succeeded in not only revealing the nature of interactions between intense x-rays and atomic or molecular systems, but also properties of the LCLS x-ray pulses. Our spectroscopic measurements of the interaction with neon atoms have revealed information on x-ray photon energy, the pulse duration, and the focal spot size. When analyzed in conjunction with diagnostics of the electron beam, the data yields information on the photon energy bandwidth and shot-to-shot photon energy jitter. The intrinsic bandwidth of the LCLS pulse is strongly dependent on the LINAC tuning, thus high resolution photoelectron spectroscopy is a valuable diagnostic that can be implemented in a pass through configuration.

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