Abstract Submitted
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High Resolution Electron Spectroscopy with Time-of-Flight Spectrometers[1] BERTOLD KRÄSSIG, ELLIOT P. KANTER, Argonne National Laboratory — We have developed a parametrization based on ray-tracing calculations to convert electron time-of-flight (eTOF) to kinetic energy for the spectrometers of the LCLS-AMO end station at SLAC National Accelerator Laboratory [C. Bostedt *et al*, J. Phys. B **46**, 164003 (2013)]. During the experiments the eTOF detector signals are recorded as digitized waveforms for every shot of the accelerator. With our parameterization we can analyze the waveforms on-line and convert detector hit times to kinetic energies. In this way we accumulate histograms with equally spaced bins in energy directly, rather than *a posteriori* converting an accumulated histogram of equally spaced flight times into a histogram of kinetic energies with unequal bin sizes. The parametrization is, of course, not a perfect replica of the ray tracing results, and the ray tracing is based on nominal dimensions, perfect alignment, detector response, and knowledge of time zero for the time-of-flight. In this presentation we will discuss causes, effects, and remedies for the observed deviations. We will present high-resolution results for the Ne KLL Auger spectrum that has been well studied and serves as a benchmark for our analysis algorithm.

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