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Calibration of high-dynamic-range, finite-resolution x-ray pulse-height spectrometers for extracting electron energy distribution data from the PFRC-2 device C SWANSON, P JANDOVITZ, S. A. COHEN, Princeton Plasma Physics Laboratory — Knowledge of the full x-ray energy distribution function (XEDF) emitted from a plasma over a large dynamic range of energies can yield valuable insights about the electron energy distribution function (EEDF) of that plasma and the dynamic processes that create them. X-ray pulse height detectors such as Amptek’s X-123 Fast SDD with Silicon Nitride window can detect x-rays in the range of 200eV to 100s of keV. However, extracting EEDF from this measurement requires precise knowledge of the detector’s response function. This response function, including the energy scale calibration, the window transmission function, and the resolution function, can be measured directly. We describe measurements of this function from x-rays from a mono-energetic electron beam in a purpose-built gas-target x-ray tube. Large-Z effects such as line radiation, nuclear charge screening, and polarizational Bremsstrahlung are discussed [1]. [1] Avdonina, N. B., and R. H. Pratt. “Bremsstrahlung Spectra from Atoms and Ions at Low Relativistic Energies.” *Journal of Physics B: Atomic, Molecular and Optical Physics* 32, no. 17 (1999): 4261. doi:10.1088/0953-4075/32/17/310.

Charles Swanson
Princeton Plasma Physics Laboratory

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