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Analysis of Fast Electron Energy Distribution by Measuring Hard X-ray Bremsstrahlung[1] TYLER DAYKIN, HIROSHI SAWADA, YASUHIKO SENTOKU, ANTHONY BASS, BRANDON GRIFFIN, RISHI PANDIT, UNR, FARHAT BEG, UCSD, HUI CHEN, HARRY MCLEAN, ANTHONY LINK, PRAV PATEL, YUAN PING, LLNL — Characterization of intense, short-pulse laser-produced fast electrons is important for fundamental understanding and applications. We carried out an experiment to characterize the fast electron energy distribution by measuring angular-dependent high-energy bremsstrahlung x-rays. A 100 μm thick metal foil (Al, Cu, and Ag) mounted on a plastic backing was irradiated by the 0.35 ps, 15 J Leopard Laser at the Nevada Terawatt Facility. The bremsstrahlung x-rays and the escaping electrons from the target were recorded using differential filter stack spectrometers at 22° and 45° off laser axis and a magnet-based electron spectrometer along the laser axis. The electron spectrum inferred from two different diagnostics had single slope temperature of $\sim$ 1.5 MeV for the Cu foil. The results were compared to an analytic calculation and a 2-D Particle-in-cell code, PICLS. The analysis of the electron energy distribution and angular distribution will be presented.

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