

Abstract Submitted
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Measuring X-ray Spectra of Flash Radiographic Sources

AMANDA GEHRING, MICHELLE ESPY, TODD HAINES, JACOB MENDEZ, DAVID MOIR, ROBERT SEDILLO, PETR VOLEGOV, Los Alamos National Laboratory, TIM WEBB, Sandia National Laboratory — A Compton spectrometer has been re-commissioned for measurements of flash radiographic sources. The determination of the energy spectrum provides information about the x-ray production mechanisms of these sources (ie. reaction history of plasmas, electron-target interactions) and benefits the analysis of images obtained at radiographic facilities. However, the measurements of the spectra are difficult due to the high count rates and short nature of the pulses (~ 50 ns). The spectrometer is a 300 kg neodymium-iron magnet which measures spectra in the <1 MeV to 20 MeV energy range. Incoming x-rays are collimated into a narrow beam incident on a converter foil. The ejected Compton electrons are collimated so that the forward-directed electrons enter the magnetic field region of the spectrometer. The position of the electrons at the focal plane of the magnet is a function of their momentum, allowing the x-ray spectrum to be reconstructed. Recent measurements of both flash and continuous radiographic sources will be presented.

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