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Measurements of X-ray spectra from irradiated gold foils at the OMEGA Laser facility JOSHUA DAVIS, PAUL KEITER, PAUL DRAKE, SALLEE KLEIN, JEFF FEIN, University of Michigan — In many HED systems high intensity x-rays can be used to measure plasma properties such as density and temperature. At the OMEGA laser facility, these X-rays are produced by irradiating a metal foil with high-intensity lasers, which heats the foil and causes it to act as a quasi-continuum x-ray source for radiography or absorption spectroscopy. As this emission is quasi-continuous and the transmission of x-rays through a material varies with photon energy a well-characterized x-ray source is vital. Therefore, in order to optimize diagnostics reliant upon x-rays it is necessary to gain a better understanding of how the x-ray emission from these targets varies over time and varying beam energy. We will present experimental results studying the effect that beam energy and pulse length have on M-band and sub-keV x-ray emission generated from a 5μm thick gold disk using time-resolved spectroscopy and a Henway crystal spectrometer. This work is funded by the U.S. Department of Energy, through the NNSA-DS and SC-OFES Joint Program in High-Energy-Density Laboratory Plasmas, grant number DE-NA0001840, and the National Laser User Facility Program, grant number DE-NA0000850, and through the Laboratory for Laser Energetics, University of Rochester by the NNSA/OICF under Cooperative Agreement No. DE-FC52-08NA28302.

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