Abstract Submitted
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Investigation of the high-energy x-ray spectrum of pinhole point-projection backlighters[1] JEFF FEIN, PAUL KEITER, CAROLYN KURANZ, CHRISTINE KRAULAND, University of Michigan, JONATHAN PEEBLES, CHARLIE JARROTT, University of California, San Diego, SALLEE KLEIN, JOSH DAVIS, ROBB GILLESPIE, JAMES HOLLOWAY, PAUL DRAKE, University of Michigan — Laser-produced hot electrons may present many undesirable effects in high-energy-density physics experiments. In particular, the secondary production of high-energy x-rays produces a background that reduces the signal-to-noise. Experiments were performed to study the hot electron-induced high-energy x-ray background present in pinhole point-projection x-ray backlighters. In these experiments, bremsstrahlung x-ray spectrometers (BMXS) were used to measure the high-energy x-ray signal from the backlighter targets. The response of the BMXS diagnostic is capable of retrieving both the continuous x-ray spectrum and a best fit of the hot electron temperature describing the hot electron energy distribution. We will present the inferred hot electron temperatures and discuss how the x-ray spectra depend on backlighter and pinhole substrate material. Additionally, we will discuss the x-ray spectra angular dependence. Lastly, we will discuss the effect of the background on the quality of x-ray radiographic data.

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