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Monochromatic X-Ray Imaging by X pinches on the COBRA Accelerator J.D. DOUGLASS, D.A. HAMMER, S.A. PIKUZ, T.A. SHELKOVENKO, Cornell University — The COBRA accelerator is a pulsed power generator capable of producing up to 1 MA current pulses with a typical rise time of 100 ns and pulse width of about 200 ns. Time-gated x-ray imaging is an important diagnostic for the study of imploding dense z-pinches. These plasmas must be studied on the nanosecond time scale, and they generally radiate strongly in the soft x-ray range. As such, they require short, intense x-ray sources to illuminate them. Monochromatic x-ray imaging using an X pinch is a way that has been used successfully in the past [1,2] to image single exploding wires and various static objects. Experiments have been performed to investigate x-ray source parameters for various materials and configurations. Of these materials aluminum (6.6343Å) and zinc (9.815Å) have the most potential for use as a monochromatic source on COBRA. Data presented includes x-ray spectra ($\sim 1-10$ Å) along with source size estimates and results from initial imaging experiments. This research was supported by the Stewardship Sciences Academic Alliances program of the National Nuclear Security Administration under DOE Cooperative agreement DE-FC03-02NA00057.

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