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An Investigation of X-Pinch Dynamics by X-Ray Absorption ADAM CAHILL, CAD HOYT, SERGEI PIKUZ, TANIA SHELKOVENKO, DAVID HAMMER, Cornell University — Previous studies of plasma pinches, such as xpinches or hybrid pinches, have thoroughly characterized the radiating hot spot formed at the center of the plasma in terms of size, temperature, and density. However, much of the plasma volume surrounding the hot spot has remained relatively unstudied. We propose that a study of the surrounding plasmacanbe accomplished by means of absorption spectroscopy in spite of the high brightness of the x-pinch hot spot. Such an experiment has been designed for the XP pulser at Cornell University. The XP pulser, which is capable of delivering 500kA of current in 100ns, is used to drive an x-pinch as a source of continuum radiation. This radiation is dispersed by an astigmatic mica crystal before interacting with another x-pinch serving as the object plasma. The astigmatism of the crystal allows focusing to occur both at the sample location as well as at the detector for increased luminosity. To date, the experimental design for the study of plasma in an aluminum x-pinch has been completed. The object plasmaunder study willbe Al 5056, an Al alloy containing 5% Mg. The H-like and He-like resonance and satellite lines in the spectrum from the Mgwill be used as the basis for plasma diagnosis. Preliminary results from this experiment will be presented.

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