

Abstract Submitted
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Magnetic Field Measurements using Zeeman splitting on the SMP Diode at Sandia National Laboratories¹ SONAL PATEL, University of Michigan, MARK JOHNSTON, TIMOTHY WEBB, Sandia National Labs, YITZHAK MARON, Weizmann Institute of Science, DAVID MURON, MARK KEIFER, Sandia National Labs, RONALD GILGENBACH, University of Michigan — Self-Magnetic Pinch (SMP) diode experiments are in progress at the RITS-6 accelerator (5-11 MV, 100-200 kA) at Sandia National Laboratories. A hollow cathode emits electrons through an approximately 1-cm vacuum A-K gap onto a high-Z material. The high current compresses the electron beam to a few mm spot for use in flash x-ray radiography.² Visible spectra of the diode plasma have been taken during the radiation pulse using a high resolution (0.6 Å) spectrometer and a lens coupled fiber array focused across the anode surface of the diode. Zeeman splitting measurements of CIV and Al III suggest magnetic fields of 3-4 T a few mm off the diode axis. These measurements yield current density profiles near the target surface.

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²K. Hahn, N. Bruner, M. D. Johnston, B.V. Oliver, et. al., IEEE Trans. Plasma Sci. 38 (2010) 2652-62.

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