

Abstract Submitted  
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**Measuring  $\sim 10$  T B-Fields Using Zeeman Splitting of Sodium Emission Lines on a 500 kA Pulsed Power Machine<sup>1</sup>** JACOB BANASEK, JOSEPH ENGELBRECHT, DAVID HAMMER, SERGEI PIKUZ, TATIANA SHELKOVENKO, Cornell University — Following earlier work by M. Gomez *et al.* [1], we have shown that Zeeman splitting of the Sodium (Na) D-lines at 5890 Å and 5896 Å can be used to measure the magnetic field (B-field) produced in high current pulsed power experiments. In the present experiments, we have measured the B-field next to a return current post during hybrid X-pinch experiments near peak current. These measurements were performed at 500 kA current on the XP machine at Cornell University using a 150 ns current rise time. Na was added to the system by applying a few drops of a NaCl solution onto the inner surface of one of two 4 mm radius return current posts, located about 4 cm away from the hybrid X-pinch. The Na is desorbed from the return current post by radiation from the hybrid x-pinch, enabling observation of the Na vapor's spectral lines. Measurements have shown a B-field of 10-15 T near the return current post, which is consistent with the calculated B-field. Future experiments will explore applying this approach to regions of higher B-field in higher current machines.

[1] M. R. Gomez, *et al.* Rev. Sci. Instrum. **85**, 11E609 (2014)

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