

## LOW CURRENT SINGLE WIRE OPTICAL SPECTROSCOPY EXPERIMENTS

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Experiments on the Low Current Pulser LCP3 at Cornell University are exploring the properties of high energy density plasmas generated by current-driven explosions of single fine metal wires. These experiments are employing non-perturbing emission spectroscopy at visible wavelengths to obtain plasma conditions, including temperatures, electron density, ionization state, and magnetic field. A new diagnostic technique is being developed to determine the magnetic field which makes use of Zeeman-effect-produced differences in the line shapes of two fine structure components of a multiplet that are equally broadened by Stark and Doppler effects. This technique has been demonstrated in experiments performed at the Weizmann Institute of Science in plasmas with lower energy densities[1]. We are studying the time integrated and time resolved visible spectra to determine appropriate spectral lines for measuring magnetic field strength, including the Al III 5696Å and the Al III 5722Å transitions used in previous work[1]. Preliminary results will be discussed.

1. E. Stambulchik, K. Tsigutkin, and Y. Maron. Phys. Rev. Lett. **98**, 225001 (2007).

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