

Abstract Submitted  
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**Time-Resolved Plasma Density and Magnetic Field Measurements in a Pulsed Plasma Deflagration** KEITH LOEBNER, MARK CAPPELLI, Stanford University — Simultaneous time-resolved measurements of electron density and azimuthal magnetic field strength within a coaxial electromagnetic plasma accelerator operating in a pulsed deflagration mode are presented. Density measurements are performed via an optical interferometer of the Michelson type, while the Faraday rotation of the polarization plane of the same beam is measured in order to provide the magnetic field strength perpendicular to the direction of beam propagation. Experimental data is compared to magnetohydrodynamic simulation results and prior lower fidelity experimental results. Measurements were carried out over a wide range of operating conditions in order to validate the theoretical models describing the physics of the deflagration acceleration mechanism.

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