

Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Plasma Characterization of a Magnetically Triggered Plasma Opening Switch Using Optical Techniques¹ WAYLON CLARK, University of New Mexico & Sandia National Laboratories, MARK SAVAGE, SNL, MARK GILMORE, ALAN LYNN, NAGA DEVARAPALLI, Univ. of New Mexico, BRIAN STOLTZFUS, SNL — Plasma opening switches have been studied for many years and much is known about them. Interferometry, spectroscopy, etc. are among the many techniques that have been used to quantify characteristics of the plasma. 120GHz microwave and 10.6 μ m laser interferometry techniques are currently being used to characterize the plasma density in the Sandia National Laboratories Magnetically Controlled Triggered Plasma Opening Switch (MCTPOS) experiment. Corroborative density measurements using Moiré deflectometry are planned. Of particular interest are the early time (as compared to $d_{drift}/(\tau_{rise}v_{drift}) \approx 0.5$) density gradients that illustrate the trapping of charged particles into the magnetic field. Methods such as laser Schlieren and Zernike (phase contrast) imaging are planned to illustrate the gradients of the magnetically confined plasma using a 532nm doubled Nd: YAG laser with a pulse width of 5ns. The plasma source itself is a ring of carbon-coated flashboards (16 total, 8 per side) concentrically aligned with a ‘slow’ ($\sim 500\mu$ s) magnetic field coil.

¹Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company for the USDoE’s National Nuclear Security Administration under contract DE-AC04-94AL85000.

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Date submitted: 25 Jul 2006

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