Contribution ID: **1199** Type: **Oral**

ALUMINUM DOUBLE PLANAR WIRE ARRAYS AND DOUBLE PLANAR FOIL LINERS ON THE UNR AND UM PULSED POWER DRIVERS

Wednesday 26 June 2019 10:45 (15 minutes)

In previous studies at the UNR high-impedance Marx bank Zebra generator (1.9 Ω, 1.7 MA, 100 ns), Double Planar Wire Arrays (DPWAs) proved to be excellent radiators, and Double Planar Foil Liners (DPFLs) proved useful for future ICF applications. This presentation will showcase the results of joint UNR/UM experiments with Aluminum (Al) DPWAs and Al DPFLs at the UM low-impedance Linear Transformer Driver (LTD) MAIZE generator (0.1 Ω, 0.6 MA, and 100–250 ns). The DPWAs consisted of two wire planes of micron-scale sized Al wires, while the DPFLs consisted of two planes of micron-scale thickness. Comparisons of the radiative properties and implosion dynamics of Al DPWAs and DPFLs on the MAIZE LTD are discussed, as well as compared to previous results with Al on the Zebra generator. The current pulse of the low-impedance MAIZE LTD is heavily dependent upon the load inductance. Compared to the higher impedance Zebra generator, implosions on the MAIZE LTD are characterized by a longer risetime and lower than expected peak current. Diagnostics in both studies include an absolutely calibrated filtered PCD (>2.4 keV) and Si-diodes (>1.4 keV), x-ray pinhole cameras, spectrometers, and optical shadowgraphy systems. By comparing a simulated current trace to the measured current trace, the inductance over the time of the shot can be predicted, which is then used to calculate the effective radius over time of the current-carrying plasma. The research was supported by the NNSA under DOE grant DE-NA0003047.

Authors: BUTCHER, Christopher (University of Nevada, Reno); Prof. KANTSYREV, Victor (University of Nevada, Reno); SAFRONOVA, Alla (University of Nevada, Reno); Dr SHRESTHA, Ishor (University of Nevada, Reno); ROWLAND, Jeffrey (University of Nevada, Reno); Ms SHLYAPTSEVA, Veronica (University of Nevada, Reno); Dr STAFFORD, Austin (University of Nevada, Reno); CAMPBELL, Paul (University of Michigan); Dr STEINER, A. M. (University of Michigan, Ann Arbor, MI 48109, USA); MILLER, Stephanie (University of Michigan); YAGER-ELORRIAGA, D. A. (University of Michigan, Ann Arbor, MI 48109, USA); JORDAN, Nick (University of Michigan); MCBRIDE, Ryan (University of Michigan); Prof. GILGENBACH, Ronald (University of Michigan)

Presenter: BUTCHER, Christopher (University of Nevada, Reno)

Session Classification: 4.6 Fast Z Pinches I

Track Classification: 4.6 Fast Z Pinches