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Magneto Rayleigh Taylor Diagnostic Experiments on a MA-LTD DAVID CHALENSKI, RONAL GILGENBACH, University of Michigan, JACOB ZIER, Naval Research Labs, YUE YING LAU, SONAL PATEL, ADAM STEINER, ANDREW MCKELVEY, NICHOLAS HOLMES, University of Michigan — Recent work on the 1-MA Michigan Linear Transformer Driver, MAIZE, has focused on the Magneto Rayleigh-Taylor (MRT) instability and validation of analytic theory, developed at UM. MAIZE is a nominal 1-MA, 100 ns, 100 kV driver, capable of driving 0.1 Ω matched loads. We present here the continuing results of diagnostic development on experiments on planar and pseudo-planar foils. Some of the results will include various techniques used to seed the MRT instability on the foil. This work was conducted on 400-nm thick, 1-cm wide aluminum foils placed between two planar or pseudo-planar current return plates. The driver charge was limited to ± 70 kV, giving ~ 700 kA with a risetime of ~ 180 ns. Experiments were performed employing various methods to seed the MRT instability on either the foil (cathode) or return current plates (anode). Cathode seeding was performed by imposing a periodic ripple in the foil. Anode seeding was performed by using electrodes with a periodic structure machined into them. The progress of these experiments is presented here. Analysis of MRT was derived from laser shadowgraphic images, obtained using a sub-ns, frequency-doubled Nd:YAG laser.

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