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Measurement of Linear Magneto-Rayleigh-Taylor Instability Growth in Solid Liners[1] DANIEL SINARS, STEVE SLUTZ, MARK HERRMANN, KYLE PETERSON, ROGER VESEY, Sandia National Laboratories, BRENT BLUE, General Atomics — The magneto-Rayleigh-Taylor (MRT) instability is ubiquitous to pinch plasmas compressed by magnetic pressure, and is an important factor in determining whether a cylindrical liner can reach the axis in a relatively intact form. While there are many RT characterization experiments, there are few well-characterized MRT experiments and none for fast ($\sim$100 ns) z-pinch implosions in which the magnetic pressure quickly dominates over material strength. We present data from an initial series of MRT growth experiments on the 20 MA Z-machine that used solid Al liners with outer radii of 3.16 mm and aspect ratios (radius/thickness) of 10. The MRT instability was seeded with sinusoidal perturbations of 200 and 400 μm and peak-to-valley amplitudes of 5 and 10 μm, respectively. Radiographs showing the evolution of the MRT instability are compared with codes being used to design magnetized liner inertial fusion loads [see S.A. Slutz, "Magnetized liner inertial fusion," this conference.]

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