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Determining Point of Structural Failure of a Foil Liner Under High Magnetic Fields HANNAH MOORE, EMMA BELL, ROBBERT DUGGAN, NATHAN LAMBERT, DANIEL LIANG, LAUREN RANSOHOFF, GRIGORIY TABAK, PIERRE GOURDAIN, WILLIAM POTTER, JOHN GREENLY, Cornell University — At the National Ignition Facility (NIF), the path to nuclear fusion relies on indirect drive, where the fuel capsule is irradiated by x-rays produced by a MJ laser heating the wall of a hohlraum. However laser plasma interactions prevent optimal focusing and the quality of the implosion may suffer from it. One way to mitigate this issue is to impose an external magnetic field on the hohlraum, reducing plasma outflows thereby limiting plasma-laser interaction. While the optimal magnetic field strength is still under debate, one major issue is the effect of the field on hohlraum integrity. Our goal is to study the effect of large magnetic fields (>100 T) on a thin aluminum liner (thickness 10 microns) and identify the maximum magnetic field (<150T) where the liner maintains its structural integrity. In past COBRA experiments using a coaxial coil design, we were able to consistently produce magnetic fields above 150 T. We will use this setup coupled with the liner and use a B-dot probe to measure the field penetration inside of the liner. From laser interferometry and XUV measurements we will also be able to observe how the liner reacts to the different magnetic field strengths.

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