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Progress understanding how hohlraum foam-liners can be used to improve laser beam propagation through hohlraum plasmas[1] ALASTAIR MOORE, N MEEZAN, C THOMAS, K BAKER, T BAUMANN, M BIENER, S BHANDARKAR, C GOYON, W HSING, N IZUMI, O LANDEN, A NIKROO, M ROSEN, J MOODY, Lawrence Livermore National Laboratory — The expansion of a laser-heated hohlraum wall can quickly fill the cavity and reduce or prevent propagation of other laser beams into the hohlraum. To delay such plasma filling, ignition hohlraums have typically used a high-density gas-fill or have been irradiated with a short (¡ 10 ns) laser pulse; the former can cause laser plasma instabilities (LPI), while a short laser pulse limits the design space required to reach symmetric implosions. Foam-liners are predicted to mitigate wall motion in a low gas-fill hohlraum, and so would enable the hohlraum to usefully drive a capsule over a longer duration. On the National Ignition Facility we have been engaged in two types of experiments to study foam-lined hohlraums. The first aims to radiograph the expansion of a foam-lined Au wall in a cylindrical geometry and, using simulation, infer the location of the 1/4 n_{crit} surface. We observe that a 20 mg/cc Ta_2O_5 foam, 200 m thick delays the expansion of Au hohlraum wall by 0.5 - 0.7 ns. The second type introduces a Ta_2O_5 foam-liner into a hohlraum and are designed to measure the effect of the foam-liner on capsule drive.

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