Abstract Submitted
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Measurements of Beryllium Surface Roughening Due to X-Ray Preheating SCOTT GREENFIELD, ERIC LOOMIS, SHENGNIAN LUO, Los Alamos National Laboratory — We have used Transient Imaging Displacement Interferometry (TIDI) and line VISAR to characterize the response of the "ice side" of thin, planar beryllium targets to M-band x-rays. (The ice side is the one opposite from the drive, which in an ICF capsule will be on the inside, with the D-T ice). These x-rays were generated by the interaction of a 1.2 ns, 200 J laser pulse from the TRIDENT laser facility at Los Alamos with a thin gold foil. Anisotropic expansion of the ice side was measured by TIDI as surface roughening. The roughening begins nearly instantaneously (within a nanosecond); i.e., before the effects of loading on the drive side have propagated to the ice side. Several different types of Be targets were used, including standard polycrystalline (PF-60), equal channel angular extruded (ECAE), single crystal, and sputtered (with various levels of Cu doping). The results show a strong dependence of the roughening on the material microstructure. Hydrocode calculations will be compared to experimental velocity profiles. Implications of the results for the National Ignition Campaign will be discussed.

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