Abstract Submitted
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Drive development for an ~10 Mbar Rayleigh-Taylor strength experiment on the National Ignition Facility[1] SHON PRISBREY, HYE-SOOK PARK, CHANNING HUNTINGTON, JAMES MCNANEY, RAYM SMITH, CHRISTOPHER WEHRENBERG, DAMIAN SWIFT, CYNTHIA PANAS, DAWN LORD, ATHANASIOS ARSENLIS, Lawrence Livermore National Laboratory — Strength can be inferred by the amount a Rayleigh-Taylor surface deviates from classical growth when subjected to acceleration. If the acceleration is great enough, even materials highly resistant to deformation will flow. We use the National Ignition Facility (NIF) to create an acceleration profile that will cause sample metals, such as Mo or Cu, to reach peak pressures of ~10 Mbar without inducing shock melt. To create such a profile we shock release a stepped density reservoir across a large gap with the stagnation of the reservoir on the far side of the gap resulting in the desired pressure drive history. Low density steps (foams) are a necessary part of this design and have been studied in the last several years on the Omega and NIF facilities. We will present computational and experimental progress that has been made on the ~10 Mbar drive designs – including recent drive shots carried out at the NIF.

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Shon Prisbrey
Lawrence Livermore National Laboratory

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