

Abstract Submitted
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Designs for Solid-State Rayleigh-Taylor Experiments in Tantalum at Omega¹ STEPHEN POLLAINÉ, BRUCE REMINGTON, HYE-SOOK PARK, SHON PRISBREY, ROBERT CAVALLO, Lawrence Livermore National Laboratory — We have designed an experiment for the Omega - EP laser facility to measure the Rayleigh-Taylor (RT) growth rate of solid-state Ta samples at ~ 1 Mbar pressures and very high strain rates, 10^7 - 10^8 s⁻¹. A thin walled, hohlraum based, ramp-wave, quasi-isentropic drive has been developed for this experiment. Thick samples (~ 50 μm) of Ta, with a preimposed sinusoidal rippled on the driven side, will be accelerated. The ripple growth due to the RT instability is greatly reduced due to the dynamic material strength. We will show detailed designs, and a thorough error analysis used to optimize the experiment, minimize uncertainty, and predict strength model sensitivity.

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