Abstract Submitted
for the DAMOP09 Meeting of
The American Physical Society

Using the harmonic Faraday instability to create fluid targets having application in laser-driven fusion[1] TOM DONNELLY, NATE JONES, AARON GUILLEN, ANDREW BERNOFF, ANDREW HIGGINBOTHAM, Harvey Mudd College — We predict a transition from sub-harmonic to harmonic Faraday waves for a deep, inviscid fluid at sufficiently large excitation amplitudes and frequencies. The transition is observed experimentally in the ultrasonic (MHz) frequency range using piezoelectric oscillators submerged in a water bath to drive the waves. The submerged oscillator atomizes the fluid, creating droplets with submicron radii. The size of the droplets is measured using Mie scattering, and is consistent with the predicted transition from subharmonic to harmonic Faraday waves. These small droplets are used as targets in experiments which demonstrate laser-driven fusion.

[1]This work was supported by the NSF.

Tom Donnelly
Harvey Mudd College

Date submitted: 21 Jan 2009 Electronic form version 1.4