Abstract Submitted
for the DFD07 Meeting of
The American Physical Society

Jetting from parametrically forced gravity waves in a circular cylinder[1] SHYAMA PRASAD DAS, LEGI/UJF, EMIL J. HOPFINGER, LEGI/CNRS — We present results on parametrically forced gravity waves in a circular cylinder of 5cm diameter in the limit of large fluid depth. The stability threshold forcing amplitude and the wave breaking threshold have been determined in a frequency range near the natural frequency of the lowest axi-symmetric wave mode. The wave amplitude response curves of stable wave motions exhibit wave amplitude modulations and bifurcations to other wave modes of frequencies neighbouring the axi-symmetric mode frequency. The amplitude modulations are either on a slow time scale or period tripling and intermittently period tripling without wave breaking. In the unstable regime a finite time singularity occurs with intense geyser or jet formation, a phenomenon demonstrated by Zeff et al. (*Nature* v. 403, 2000) in fluids of high viscosity and large surface tension. Here, this singular behaviour is demonstrated for a low viscosity and low kinematic surface tension liquid. The jet velocity seems to scale with kinematic surface tension and container radius. Especially the importance of the singularity and maximum jet velocity is radius dependent. A correlation containing all the parameters is proposed.

[1]The work was financially supported by contract CNS n 60167 within the COMPERE program.

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Date submitted: 12 Jul 2007 Electronic form version 1.4