

Abstract Submitted  
for the DFD10 Meeting of  
The American Physical Society

**Single cavitation bubble dynamics in micro-channels near free and rigid boundaries** OSCAR ENRIQUEZ, DEVARAJ VAN DER MEER, DETLEF LOHSE, University of Twente, CLAUS-DIETER OHL, Nanyang Technological University — It is well known that cavitation bubbles jet towards a rigid interface and away from a free surface. Yet, cavitation bubbles between a free and a rigid boundary show more complex deformation and the direction of jetting depends on a delicate interplay of attractive and repulsive forces. We re-investigate this regime in the context of microfluidics. We use laser-induced cavitation bubbles and high-speed photography to study their dynamics. The cavitation bubble is located between two channel walls ( $500\mu m$  apart) and a free surface. We vary the distance of both the free interface and the bubble from the walls. In most of the parameter space we observe the expected dynamics. Yet, between these scenarios we find jetting directed towards the liquid-air interface as well as axisymmetric collapse without a jet. Additionally, we find complex dynamics of the free interface.

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Date submitted: 09 Aug 2010

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