

Abstract Submitted
for the DFD14 Meeting of
The American Physical Society

Water Entry by a Train of Droplets CLAUS-DIETER OHL, XIN HUANG, CHON U CHAN, Division of Physics and Applied Physics, School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore, PHILIPP ERHARD FROMMHOLD, Christian Doppler Laboratory for Cavitation and Micro-Erosion, Third Institute of Physics, Georg-August-Universität Göttingen, Germany, ALEXANDER LIPPERT, Lam Research AG, Villach, Austria — The impact of single droplets on a deep pool is a well-studied phenomenon which reveals reach fluid mechanics. Lesser studied is the impact of a train of droplet and the accompanied formation of largely elongated cavities, in particular for well controlled droplets. The droplets with diameters of 20-40 μm and velocities of approx. 20 m/s are generated with a piezo-actuated nozzle at rates of 200-300 kHz. Individual droplets are selected by electric charging and deflection and the impact is visualized with stroboscopic photography and high-speed videos. We study in particular the formation and shape of the cavity as by varying the number of droplets from one to 64. The cavities reach centimetres in length with lateral diameters of the order of 100 of micrometres.

Claus-Dieter Ohl
Division of Physics and Applied Physics, School of Physical and
Mathematical Sciences, Nanyang Technological University

Date submitted: 31 Jul 2014

Electronic form version 1.4