

Abstract Submitted  
for the DFD13 Meeting of  
The American Physical Society

**Propulsion on a superhydrophobic ratchet** PHILIPPE BOURRIANNE, GUILLAUME DUPEUX, CHRISTOPHE CLANET, DAVID QUERE, PMMH, ESPCI / LadHyX, Ecole Polytechnique — As shown by Linke in 2006, an evaporating Leidenfrost drop self-propels on a hot ratchet. Indeed, the vapour flow below the drop can be rectified by the asymmetric teeth of the ratchet and, therefore, entrain the levitating drop by viscosity. This motion is usually observed above the Leidenfrost temperature. We show how the use of a super-hydrophobic ratchet allows us to extend self-propulsion down to the boiling point of water, and even below. We discuss a possible explanation for this “cold regime” of propulsion.

Philippe Bourrienne  
PMMH, ESPCI / LadHyX, Ecole Polytechnique

Date submitted: 26 Jul 2013

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