

Abstract Submitted
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Drops levitated by an air cushion: asymptotic analysis and stability JACCO H. SNOEIJER, Physics of Fluids Group and J. M. Burgers Centre for Fluid Dynamics, University of Twente, P.O. Box 217, 7500 AE Enschede, The Netherlands, PHILLIPPE BRUNET, Laboratoire Matière et Systèmes Complexes UMR CNRS 7057, Batiment Condorcet, 10 rue Alice Domont et L'eonie Duquet 75205 Paris cedex 13, France, JENS EGGERS, Department of Mathematics, University of Bristol, University Walk, Bristol BS8 1TW, United Kingdom — Liquid drops can be kept from touching a plane solid surface by a gas stream entering from underneath, as observed for example for Leidenfrost drops. We discuss the limit of small flow rates, for which the gap between the drop and the substrate becomes very small, to obtain a full analytical description of the drop shapes and their stability. It is found that above a critical drop radius no stationary drops can exist and that unstable drops develop a gas “chimney” that breaks the drop in its middle. We point out similarities with the breakup of drops in a microfluidic T- junctions.

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