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Droplets on inclined super hydrophobic substrates: between "sandwich," free sliding and jumping[1] JULIAN MARTINEZ MERCADO, CLAUS-DIETER OHL, School of Physical and Mathematical Sciences, Nanyang Technological University — We seek to understand the effect of confinement on the transport properties of droplets on super hydrophobic surfaces. In a straightforward experiment, the droplet slides down an incline while being sandwiched between two plates. The dynamics is captured from two views to reveal centre of mass motion and the three dimensional motion. The range of Weber and Reynolds number based on the droplet radius are 0.6-4 and 260-680, respectively. The capillary number is of order 10^{-3}. Three geometries are studied, confined between two plates, droplet release, and droplet capture. For the latter two geometries, some part of the incline consists of lower and upper plates. The experimental observations are that the acceleration of a "sandwiched" droplet is considerably reduced to a free sliding one. Droplets being released jump off the substrate converting considerable amount of the surface energy into potential energy. Droplet capture obeys a limit kinetic energy, below that, they are reflected from the constriction. We hope to present detail of the flow within the sandwiched droplet by the time of presentation.

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