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Walking, Climbing, Bursting, and Shooting : Complex Dynamics in Drops on Vibrated Substrates[1] LYES KAHOUADJI, Imperial College London, SEUNGWON SHIN, Hongik University, South Korea, JALEL CHERGUI, DAMIR JURIC, LIMSI, CNRS, France, RICHARD CRASTER, OMAR MATAR, Imperial College London — We use direct numerical simulations (DNS) to study the phenomena observed in the work of Brunet *et al.* (Phys. Rev. Lett., 99, 144501, 2007). Here a drop can climb up an inclined surface when it is subjected to a vertical oscillation in the presence of a gravity. In this talk, we present a detailed study of these climbing phenomena using DNS with a generalized Navier boundary condition in the context of a front-tracking-based multiphase method. Further detailed numerical simulations in the context of vibrated droplet are extended to different vibration configurations (horizontal, vertical, and oblique) in order to explain how these climbing phenomena occur leading to regimes characterised by droplet 'walking, 'bursting, and 'shooting.

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