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Bouncing and bursting in a wedge ETIENNE REYSSAT, PMMH, ESPCI, CAROLINE COHEN, MSC, Univ. Paris Diderot, DAVID QUERE, PMMH, ESPCI — Placed into an inhomogeneous confined medium, non-wetting drops tend to be expelled from the tightest regions, where their contact with the walls would be maximized. They preferentially explore more open areas which are favorable from the point of view of capillary energy. Following this principle, one may thus use the geometry of confined environments to control fluid droplets in various ways : displacing, filtering, fragmenting... In this communication, we present experimental results on the dynamics of Leidenfrost drops launched into a wedge formed by two quasi-horizontal glass plates. Influenced by the gradient of confinement, these non-wetting liquid pucks approach the apex of the wedge to a minimal distance where they bounce back. At higher impact velocity, we observe that drops tend to penetrate deeper into the wedge but often burst into a large number of small fragments. We also discuss ways to control the deviation of droplets from their initial trajectory. We propose scaling law analyses to explain the characteristics of the observed bouncing and bursting phenomena.

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