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Reducing the residence time of a bouncing drop with spoked macrotexture COLIN PATTERSON, GE Aviation; Boston University, JAMES BIRD, Boston University — Liquid drops can bounce when they impact non-wetting surfaces. Recently, studies have demonstrated that the time that the bouncing drop resides at the surface can be adjusted with the presence of ridged macrotextures. When non-parallel macrotextures are present, they intersect to create spoked junctions. At sufficient velocity, a drop impacting a junction might be expected to breakup into smaller droplets; yet it is unclear how many droplets would be produced and the time for these droplets to clear the surface. Here, we show that the number droplets and overall residence time depends on both the number of spokes and the Weber number. We experimentally demonstrate that the center-assisted recoil framework extends beyond superhydrophobic surfaces to those above the Leidenfrost temperature. Finally, we present a physical model that rationalizes our results.

James Bird
Boston University

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