

Abstract Submitted
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Droplet Dynamics Post Oblique Surface Impact¹ VANESSA KERN, CATHY JIN, PAUL STEEN, Cornell University — Oblique droplet impact onto dry surfaces is ubiquitous in industry and nature, yet scarce in the literature. Here we investigate the post-impact dynamics of capillary water droplets obliquely impacting homogeneous chemically-prepared hydrophilic and hydrophobic surfaces. We analyze high-speed images of the impact event. Pre-impact Weber numbers range from 0-16. Impingement angles range from 0-53°. After impact, the droplet spreads and after spreading the droplet pins. Post-pinning, there is a slow decay to the rest state. During this underdamped decay, the droplet's remaining kinetic energy partitions into a linear combination of axisymmetric and non-axisymmetric vibrational modes corresponding to those predicted by theory for the pinned horizontally-aligned (non-oblique) sessile droplet. The influence of droplet volume, impacting angle, and contact angle on these post-impact dynamics will be discussed.

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Vanessa Kern
Cornell University

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