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Reducing contact time of drops on superhydrophobic surfaces JAMES BIRD, RAJEEV DHIMAN, HYUK-MIN KWON, KRIPA VARANASI, MIT — When water drops impact on to a superhydrophobic surface, the drops can recoil to such an extent that they completely bounce off the solid material. The time it takes for the drop to spread and recoil – the contact time – scales with the hydrodynamic inertial-capillary timescale. However, there is evidence that the coefficient of this scaling depends on surface-structure interactions, such as pinning. Here we investigate how surface interactions can influence droplet contact time, and we compare our results to existing models. We highlight an assumption in the current theory that imposes a lower-bound on the contact time. By designing around this constraint, we demonstrate novel superhydrophobic surfaces on which water droplets impact with shorter contact times than previously thought possible.

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