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Deceleration of free aqueous droplets skirting across the surface of a pool of the same fluid JACOB HALE, CALEB AKERS, DePauw University — The non-coalescence of a free droplet atop a pool of the same fluid can be greatly enhanced when the drop has an initial horizontal velocity relative to the pool surface. The glancing impact and viscous interaction between the droplet and the pool impart a significant rotation to the droplet causing it to roll and thus entraining air between the two fluids. The translational speed of such a droplet is shown to decrease exponentially in time but with a time constant that increases linearly in time. This complex deceleration of the drop is in part due to the drop's rotational deceleration, visualized with suspended, neutrally buoyant microbeads. The observed motion is described in terms of viscous dissipation of the rotating drop and a viscous shear force between the droplet and bath.

Jacob Hale
DePauw University

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