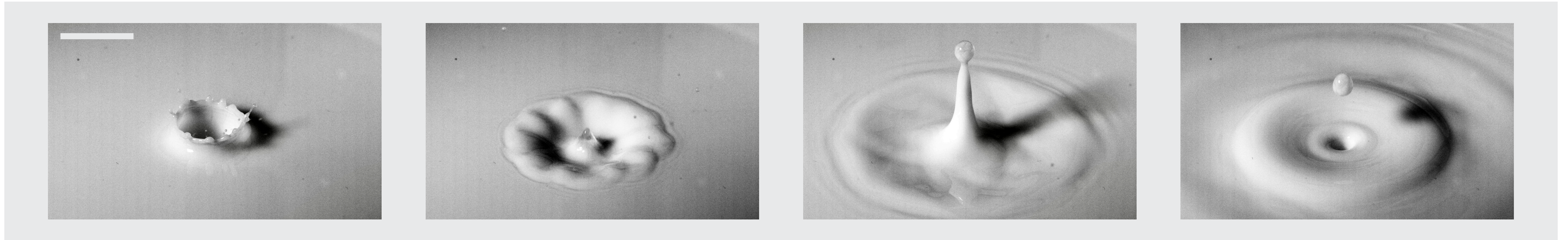


Under the surface: hidden dynamics of drop impact on a liquid pool

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The impact of a droplet on a liquid pool creates a cavity, leading to a jet on the surface and is often followed by secondary droplets. While these visible dynamics have often been reported (as shown above), the effect of the impacting droplet and the subsequent jet have on flow below the surface is harder to quantify.

Using Particle Image Velocimetry, the fluid flow below the surface following the drop impact can be visualized, as illustrated below. The impact causes the formation of a cavity into the pool. The cavity first expands, pushing the fluid downward, and is then rapidly pulled back together, sucking the fluid and creating a jet. As the jet descends back into the pool, it can create a vortex ring that descends vertically downwards (shown below). The pictures illustrate the complexity of the coupling between the surface and subsurface dynamics. Scale bars shown are 1 cm.

