Seeing the invisible - air vortices around a splashing drop
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Air vortices created by the impact and spreading of a drop on a rough surface. We use modified Schlieren optics combined with high-speed imaging to visualize the vortices; contrast is enhanced with smoke and by heating the substrate. Initially the vortices remain bound to the spreading drop, creating a low-pressure zone traveling with the lamella. The vortices eventually detach.

Time after impact: -0.25 ms. 0.25 ms. 0.75 ms. 1.75 ms. 3.25 ms. 4.25 ms
Drop diameter: 2.8 mm. Liquid viscosity: 20 cSt. Impact speed: 3.8 m/s