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Dynamics of the ejecta sheets generated by a drop impact MARIE-JEAN THORAVAL, SIGURDUR T. THORODDSEN, King Abdullah University of Science and Technology, Thuwal 23955-6900, Saudi Arabia — At high Reynolds and Weber numbers, a drop impacting on a liquid layer produces a thin ejecta sheet between the drop and the pool. Ultra-high speed imaging reveals the complex ejecta shapes produced by the impact. We have characterized the evolution of the sheet for different viscosities (mixtures of water and glycerin) and impact velocities. It appears that the relevant parameters are the Ohnesorge number and the splash parameter. For high splash parameters, the ejecta sheet bends toward the pool until it impacts the surface, trapping some air. Then a slingshot mechanism ejects droplets at high velocities from the external part of the sheet. Micro-droplet velocities suggest that the sheet becomes as thin as 100 nm. At intermediate Ohnesorge numbers, some bumps disturb the regularity of the sheet. More complex evolutions can be observed, including folding of the sheet, self-intersecting sheets, waves propagating in the sheet and explosive breakup of the sheet.

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