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Aerodynamic shapes of two-dimensional splashes LIONEL VINCENT, TINGBEN XIAO, DANIEL YOHANN, EVA KANSO, University of Southern California — We investigate experimentally the long-term evolution of a splash induced by the water entry of 90-degree wedge of breadth d and length L such that $L \gg d$. We find that for large speed entry speed V, the splash shows both concave and convex curvature, as opposed to a single concave curvature observed for low speed. This peculiarity is found to be the result of a kink generated by the initial dynamics, the growth of which is favored by aerodynamics efforts ρV^2, where ρ designates the density of air, and inhibited by surface tension effects scaling as σ/d. The transition between simply-curved splash and doubly-curved splash is found to happen for Weber number $\rho V^2 d/\sigma \simeq 1$. Doubly-curved splash sheets undergo significant stretch during their life span, altering the breaking up process.

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