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Microdroplet impact on superheated surfaces: Vapor triggers splashing TUAN TRAN, YOSHIYUKI TAGAWA, Physics of Fluids, University of Twente, YANBO XIE, MESA+ institute for nanotechnology, University of Twente, CHAO SUN, DETLEF LOHSE, Physics of Fluids, University of Twente — In many engineering and technological applications that involve impact of microdroplets on a superheated solid surface, the small size of the droplets and the vaporization of the liquid as the droplets approach the surface pose a challenge to visualize and understand the splash mechanism. In particular, the spontaneously generated vapor contributes to destabilize the spreading stage of the liquid and potentially influences the onset of splash. In this study, we experimentally determine the dependence of the splash transition on the surface temperature. We also provide a model that incorporates the liquid-vapor phase transition to explain this experimentally-observed transition.

Tuan Tran
Physics of Fluids, University of Twente

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