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Splash transition of droplets impacting on heated surfaces HENDRIK J.J. STAAT, TUAN TRAN, BART GEERDINK, CHAO SUN, DETLEF LOHSE, University of Twente — For large enough velocities, droplets impacting on a dry solid surface make a splash. How does the surface temperature affect the transition towards the splashing regime? We answer this questions by high-speed interferometric imaging for millimeter-sized droplets. We find that for moderate surface heating when the droplet still touches the surface, the velocity threshold towards splashing increases with increasing surface temperature. In contrast, for strong surface heating when the droplet is in the Leidenfrost regime and does not touch the superheated surface due to the formation of a vapor layer, the velocity threshold towards splashing is much lower. We theoretically explain both findings within a pressure balance model.

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