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Droplet impact on a liquid pool: air bubble entrainment[1]
TUAN TRAN, University of Twente, Enschede, The Netherlands, HELENE DE MALEPRADE, Ecole Polytechnique, Paris, France, CHAO SUN, DETLEF LOHSE, University of Twente, Enschede, The Netherlands — A range of spectacular phenomena result from impacts of droplets on the surface of a liquid pool, such as splashing, bubble entrapment, or droplet bouncing off from the surface. Here we provide experimental results on the dynamics that precede these striking events, in particular on the entrapment process of an air bubble between the impacting droplet and the pool's surface. We focus on the impact dynamics at early time with an emphasis on the air layer from its formation to its rupture. We identify the dependence of the rupture position on the liquid viscosity and the impact velocity. We show that the volume of the entrapped air under impacting droplets can be related to both that of impacting droplets on solid surfaces and that of impacting rigid spheres on liquid surfaces.

[1]FOM & ERC

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