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Microdroplet impact at very high velocity[1] CLAAS WILLEM VISSER, YOSHIYUKI TAGAWA, CHAO SUN, DETLEF LOHSE, Universiteit Twente, PHYSICS OF FLUIDS GROUP TEAM — At APS-DFD 2011, we presented preliminary data of water microdroplet impact at velocities up to 100 m/s and droplet diameters from 12 to 100 μm. Now we place these results into context and use them to improve understanding of droplet spreading. The parameter range covers the transition from capillary-limited to viscosity-limited spreading of the impacting droplet. The maximum spreading radius is compared to several existing models. The model by Pasandideh-Fard et al. (1996) agrees well with the measured data, indicating the importance of a thin boundary layer just above the surface. Here, most of the viscous dissipation of the spreading droplet takes place. As explained by the initial air layer under the impacting droplet, a contact angle of 180 degrees is used as model input.

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