

Abstract Submitted
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Normal coefficient of restitution of wet particles¹ KAI HUANG, THOMAS MUELLER, INGO REHBERG, Experimentalphysik V, University of Bayreuth — The normal coefficient of restitution (COR) for a spherical particle bouncing on a wet surface is investigated experimentally. The dependence of the COR on the impact velocity and various particle and liquid properties will be presented and discussed in terms of dimensionless numbers that characterize the interplay between inertial, viscous, and surface forces. At a fixed ratio of the liquid film thickness δ to the particle diameter D , the wet COR is found to be inverse proportional to the Stokes number St , which measures the inertia of the particle to the viscous force from the liquid. This relation provides a convenient way of predicting wet COR with two fit parameters. For two different types of particles, we vary systematically the dimensionless film thickness δ/D and discuss its influence on the fit parameters. Finally, we rationalize the observations with a model that considers possible sources of energy dissipation associated with a wet impact.

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