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Some additional considerations on the splashing of droplets GUILLAUME RIBOUX, JOSE GORDILLO, Universidad de Sevilla — When a drop of a low viscosity liquid impacts against a smooth solid substrate at a velocity V, a liquid sheet of thickness very small compare to the drop radius is expelled tangentially to the substrate at high velocity compare to V. If the impact velocity is such that $V > V^*$ with V^* the critical velocity for splashing, the edge of the expanding liquid sheet lifts off from the wall as a consequence of the gas lubrication force at the wedge region created between the advancing liquid front and the substrate. In the present talk, we show that the magnitude of the gas lubrication force is limited by the values of the slip lengths at the gas-liquid interface and at the solid. We demonstrate that the splashing regime changes depending on the value of the ratio of the slip lengths, a fact explaining the spreading-splashing-spreading-splashing transition for a reduced value of the surrounding gas pressure as the drop impact velocity increases. We also provide an expression for V^* as a function of the inclination angle of the substrate, the drop radius, the material properties of the liquid and the gas and the mean free path of gas molecules.

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