# DROPLET SPLASHING

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I will discuss our recent efforts to develop a first principles, theoretical description of the events leading to droplet splashing on a solid surface, by focusing on a peculiar singularity that occurs in the equation of motion before the droplet contacts the substrate. Experiments have long showed that the most violent splashes are preceded by the ejection of a very thin fluid sheet from the vicinity of the contact point, though the fluid mechanical origin of this sheet has been completely unclear. From simulations and a theoretical discussion beginning from the Navier Stokes equation, we demonstrate that the sheet originates before the droplet contacts the solid surface, and give detailed predictions for the characteristics of the sheet (thickness, speed, velocity). For a ~ 1mm droplet thrown at a surface at a few meters per second, the sheet ejects upwards at 100m/sec when the droplet is 10s of nanometers from the solid surface. Recent experiments probing these predictions will also be described.

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