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**Shreyas Mandre\***, 182 Hope Street, Box D, Providence, RI 02912. *The mechanism of a splash.*

Splashing of droplets, due to its ubiquity in natural and technological phenomena and the captivating beauty of the resulting geometrical forms, has inspired many meticulous studies. Yet, a clear theoretical understanding of the mechanism of splashing on dry surfaces has eluded us for more than a century. It was recently discovered that whether a drop splashes or not depends on the surrounding air pressure. Dynamically, the splash originates as a thin liquid sheet ejected near the point of impact. But what causes this sheet to be ejected in the first place?

I will present analysis showing that a micron thick layer of surrounding air gets trapped between the drop and the surface and cushions the impact. A rapid deformation of the interface on a microsecond timescale as a result of the cushioning causes the sheet to be ejected before the drop touches the surface. Quantitative predictions can be made about the precise moment and location of sheet ejection, and the thickness and the speed of the sheet. This information allows us to elucidate the mechanism for the splash and map out the parameters promoting splashing. (Received February 07, 2011)