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Grating droplets with a mesh DAN SOTO, ANTOINE LE HELLOCO, Massachusetts Institute of Technology - MechE, CRISTOPHE CLANET, Ecole Polytechnique - Ladhyx, DAVID QUERE, Espci - Pmmh, KRIPA VARANASI, Massachusetts Institute of Technology - MechE — A drop thrown against a mesh can pass through its holes if impacting with enough inertia. As a result, although part of the droplet may remain on one side of the sieve, the rest will end up grated through the other side. This inexpensive method to break up millimetric droplets into micrometric ones may be of particular interest in a wide variety of applications: enhancing evaporation of droplets launched from the top of an evaporative cooling tower or preventing drift of pesticides sprayed above crops by increasing their initial size and atomizing them at the very last moment with a mesh. In order to understand how much liquid will be grated we propose in this presentation to start first by studying a simpler situation: a drop impacting a plate pierced with a single off centered hole. The study of the role of natural parameters such as the radius drop and speed or the hole position, size and thickness allows us to discuss then the more general situation of a plate pierced with multiple holes: the mesh.

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