

Abstract Submitted
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Dynamics of precursor films MARK FRANKEN, CHRISTIAN POELMA, JERRY WESTERWEEL, Laboratory for Aero & Hydrodynamics, Delft University of Technology — The precursor film, formed ahead of a macroscopic droplet edge during spreading, is studied experimentally using a technique based on Total Internal Reflection Fluorescence Microscopy. This microscopy technique uses an evanescent wave resulting from total internal reflection of incident light to illuminate a fluorescent dye. The technique has sufficient spatial as well as temporal resolution, allowing us to measure the precursor film for different contact line velocities and liquids. We find that the precursor film thickness $h(x)$ scales as $1/\sqrt{x}$ and is independent of contact line velocity (hence capillary number). These results confirm for the very first time the theoretical predictions based on slip at the solid surface.

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