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Influence of Slip on the Rayleigh-Plateau Rim Instability in Dewetting Viscous Films RALF BLOSSEY, CNRS, OLIVER BAEUMCHEN, MPI Göttingen, LUDOVIC MARQUANT, SABRINA HAEFNER, Saarland University, ANDREAS MÜNCH, Oxford University, DIRK PESCHKA, Saarland University, BARBARA WAGNER, Humboldt University Berlin, KARIN JACOBS, Saarland University — A viscous film that retracts from a solid substrate develops a characteristic fluid rim at its receding edge due to mass conservation. In the course of this dewetting process the rim becomes unstable via an instability of Rayleigh-Plateau type. An important difference exists between this classic instability of a liquid column and the rim instability in the liquid film as the growth of the rim is continuously fueled by the receding film. We explain how the development and macroscopic morphology of the rim instability are controlled by the slip of the film on the substrate. Numerical calculations of a single thin-film model capture quantitatively the characteristics of the evolution of the rim observed in our experiments.

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