

Abstract Submitted
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Dewetting of Thin Polymer Films ELIE RAPHAEL, THOMAS VILMIN, PCT ESPCI Paris — We study the dewetting of thin polymer films deposited on slippery substrate. Recent experiments on these systems have revealed many unexpected features. We develop here a model that takes into account the rheological properties of polymer melts, focussing on two dewetting geometries (the receding of a straight edge, and the opening of a hole). We show that the friction law associated with the slippage between the film and the substrate has a direct influence on the dewetting dynamic. In addition, we demonstrate that residual stresses, which can be stored in the films due to their viscoelasticity, are a source of destabilization for polymer films, and accelerate the dewetting process.

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