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The effect of evaporation on fingering instabilities JILL KLENTZ-MAN, MULUGETA MARKOS, VLADIMIR AJAEV, Southern Methodist University — Fingering instability of a moving contact line has been studied extensively for cases when the flow is driven by gravity, thermocapillary stresses, or a combination of the two. However, in many practical applications, evaporation is also present when the contact line becomes unstable. We use a lubrication-type model to incorporate evaporative mass loss into the evolution equation for a two-dimensional liquid film surface and carry out studies of the effect of evaporation on fingering instability in the framework of this model. Furthermore, in order to verify the validity of the lubrication-type approach, we carry out boundary-integral simulations of gravity-driven films and compare the numerical results with the shapes obtained using a thin-film approximation.

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