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Determining the number of fingers in the lifting Hele-Shaw problem[1] JOSE MIRANDA, EDUARDO DIAS, Depto de Fisica - Univ Federal de Pernambuco — The lifting Hele-Shaw cell flow is a variation of the celebrated radial viscous fingering problem for which the upper cell plate is lifted uniformly at a specified rate. This procedure causes the formation of intricate interfacial patterns. Most theoretical studies determine the total number of emerging fingers by maximizing the linear growth rate, but this generates discrepancies between theory and experiments. In this work, we tackle the number of fingers selection problem in the lifting Hele-Shaw cell by employing the recently proposed maximum-amplitude criterion [Dias and Miranda, Phys. Rev. E **88**, 013016 (2013)]. Our linear stability analysis accounts for the action of capillary, viscous normal stresses, and wetting effects, as well as the cell confinement. The comparison of our results with very precise laboratory measurements for the total number of fingers shows a significantly improved agreement between theoretical predictions and experimental data.

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