

Abstract Submitted
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**Contact line instability of gravity-driven flow of power-law fluids:
Comparison of Experiments and Simulations**¹ BIN HU, HENRY CLEVER,
SARAH KIEWEG, University of Kansas — We previously studied the fingering instabilities of power-law fluids using linear stability analysis (LSA). We also developed a 3D FEM model to simulate a constant-volume power-law fluid flowing down an incline. In this study, we try to perform 3D simulations with constant-flux condition and perturbed contact line, and compare the results to LSA. Moreover, we develop a fluid depth measurement experiment based on fluorescence imaging for further comparison to the numerical results. Instead of using laser-induced fluorescence, we try a simple quantitative way of using LEDs, which is much less expensive. The impact of inclination angle, surface tension, and especially shear-thinning effect on contact line instabilities is investigated.

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