Dynamics of surfactant-laden lenses\textsuperscript{1} DAVID BEACHAM, GEORGE KARAPETSAS, RICHARD CRASTER, OMAR MATAR, Imperial College London — We consider the dynamics of lenses of immiscible fluids laden with surfactant. We use lubrication theory to derive equations for the positions of the interfaces and the surfactant concentrations. The surfactant is allowed to exist in the form of monomers as well as micelles and the model accounts for the effects of surfactant on the moving contact line. We use a finite-element formulation to obtain numerical solutions of the evolution equations and carry out a full parametric study. Our results catalogue the various types of behaviour encountered, which range from complete spreading of the lens, to spreading followed by retraction, to sustained oscillations.

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