

Abstract Submitted
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Hole-Closing of a Surfactant Layer on a Thin Fluid Film RACHEL LEVY, MATTHEW HIN, M. RICHARD SAYANAGI, ERIC AUTRY, Harvey Mudd College, JEFFREY WONG, UCLA, KAREN DANIELS, NC State University — The spreading of surfactants on a thin fluid layer has been most commonly studied in an outward-spreading geometry. We perform simulations and experiments on the inverse, the inward spreading of surfactant into a clean disk-shaped region, known as hole-closing. In both cases, we observe that the inward force from the surface tension gradient produces a transient distention, in which the underlying fluid is raised within the closing region. We observe that the height of the distention is controlled by a combination of fluid depth and the surface tension gradient between the two regions. We compare the evolution of the distention height over time to a coupled system of partial differential equations that have been used to model surfactant spreading for more than two decades.

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