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Dewetting of a fluid between parallel plane surface with non-constant forcing PAROUSIA ROCKSTROH[1], Harvey Mudd College, THOMAS WARD[2], University of California - Los Angeles — We examine the effect of applying a nonconstant force to the radial squeezing and de-wetting of a thin film of viscous Newtonian fluid between parallel plane walls. We explore the problem theoretically for gap spacings much smaller than the typical capillary length for air-liquid systems ($<$ O(1) mm). In our model, we parameterize force using a single variable F which is proportional to a constant force F_0 and the height of the gap spacing h to some integer power $n \in \mathcal{Z}^+$. Since there is no known analytic solution for $n > 0$, we analyze the solution of the dewetting problem numerically. Analysis reveals the formation of a singularity, leading to capillary adhesion, as the gap spacing approaches a critical value that depends on F_0, n and a variable C that is analogous to a spring constant.

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