

Abstract Submitted  
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**A Dynamical Model of Molecular Monolayers: Why Tethers Don't Snap** ELIZABETH K. MANN, LU ZOU, Department of Physics, Kent State University, ANDREW BERNOFF, Department of Mathematics, Harvey Mudd College, Claremont, CA 91711 , JAMES ALEXANDER, Department of Mathematics, Case Western Reserve University, J. ADIN MANN, Department of Chemical Engineering, Case Western Reserve University, Cleveland, OH, 44216 — A bola-shaped domain in a Langmuir monolayer at the air/water interface relaxes towards a circular shape under the influence of line tension. The “tether” thickens continuously in this process, in marked contrast to the Hele-Shaw and the three-dimensional cases, where hydrodynamic instabilities lead to the tether snapping. A simplified dynamical model allows us use lubrication theory to explain this without incorporating repulsive forces to stabilize the tether in 2D. The model also allows us to give a better estimate of line tensions from the relaxation rate of such monolayer domains. This material is based upon work supported by the National Science Foundation under Grant No.9984304.

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