

Abstract Submitted
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Reversible Motion of a Contact Line¹ CHARITY LIZARDO, ES-MERALDA OROZCO, AUDREY PROFETA, NATHAN KEIM, Department of Physics, California Polytechnic State University — We study behavior of the liquid-solid-vapor contact line between two solid plates. A syringe pump injects water through one plate which is kept in a narrow gap between the plates, forming the contact line. The pump cyclically injects and withdraws a small, constant volume of water, changing the contact line shape. After each cycle, we take photos of the contact line from above. When we compare subsequent photos, we find that after many cycles the contact line reaches one of two steady states: a reversible steady state, where its shape stops changing, or a fluctuating steady state, where its shape continues to change slightly. Experiments on glass plates show a reversible steady state even at high volumes. However, experiments on acrylic show a fluctuating steady state at high volumes. We investigate the critical volume that marks the transition between low-volume reversible steady states and high-volume fluctuating steady states on acrylic.

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Charity LizarDO
Department of Physics, California Polytechnic State University

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