1035-35-1832   **Rachel Levy*** (`levy@hmc.edu`), 310 N Indian Hill Blvd #314, Claremont, CA 91711. *Flow of a surfactant-laden thin liquid film down an inclined plane.*

Thin films with surfactant can be found in the liquid lining of the lungs. When surfactant is deficient, such as with premature infants, surfactant replacement therapy can greatly reduce respiratory distress. We model the introduction of surfactant to such a film with a scalar fourth-order partial differential equation for the height of the film. A second equation modeling the transport and diffusion of surfactant is coupled to the height equation; the addition of insoluble surfactant to the model dramatically alters the free surface of the film. Using numerical simulations and asymptotics, we explore the dependence of traveling wave solutions on capillary, Peclet and Bond numbers. (Received September 20, 2007)