1135-76-882 **Hangjie Ji***, Department of Mathematics, University of California, Los Angeles, Los Angeles, CA 90095, and **Thomas P Witelski**. *Instability and dynamics of volatile thin films.*

Volatile viscous fluids on partially-wetting solid substrates can exhibit interesting interfacial insta- bilities and pattern formation. We study the dynamics of vapor condensation and fluid evaporation governed by a one-sided model in a low Reynolds number lubrication approximation incorporating surface tension, intermolecular effects and evaporative fluxes. Parameter ranges for evaporation- dominated and condensation-dominated regimes and a critical case are identified. Interfacial insta- bilities driven by the competition between the disjoining pressure and evaporative effects are studied via linear stability analysis. Transient pattern formation in nearly-flat evolving films in the critical case is investigated. In the weak evaporation limit unstable modes of finite amplitude non-uniform steady states lead to rich droplet dynamics, including flattening, symmetry breaking, and droplet merging. Numerical simulations show long time behaviors leading to evaporation or condensation are sensitive to transitions between film-wise and drop-wise dynamics. (Received September 16, 2017)