Paolo Piovano* (ppiovano@andrew.cmu.edu). Evolution of elastic thin films with curvature regularization via minimizing movements.

We consider the evolution equation with curvature regularization that models the motion of a two-dimensional thin film by evaporation-condensation on a rigid substrate. The mismatch between the crystalline lattices of the two materials forces the film to be strained. We prove short time existence, uniqueness and regularity of the solution using De Giorgi’s minimizing movements to exploit the $L^2$-gradient flow structure of the fourth order parabolic equation. This seems to be the first analytical result for the evaporation-condensation case in the presence of elasticity. (Received September 20, 2011)