

1084-35-15

Li Yang* (yangli3@msu.edu), A212 Wells Hall, Math Dept of Michigan State University, East Lansing, MI 48824, and **Keith Promislow** (kpromisl@math.msu.edu), Math Dept of MSU, East Lansing, MI 48824. *Existence of Homoclinic Solutions of The Functionalized Cahn-Hilliard Energy.*

We introduce the functionalized Cahn-Hilliard (FCH) energy, a negative multiple of the Cahn-Hilliard energy balanced against the square of its own variational derivative, as a finite width regularization of the sharp-interface Canham-Helfrich energy. We show the existence of the homoclinic solutions for the functionalized Cahn-Hilliard Energy by two methods, functional analytical method and Lin's method. (Received July 06, 2012)