On the Viscous Allen-Cahn and Cahn-Hilliard systems with Willmore regularization

Ahmad MAKKI, LMA - Université de Poitiers

We consider the viscous Allen-Cahn and Cahn-Hilliard models with an additional term called the nonlinear Willmore regularization. First, we are interested in the well-posedness of these two models. Furthermore, we prove that both models possess a global attractor. In addition, as far as the viscous Allen-Cahn equation is concerned, we construct a robust family of exponential attractors, i.e. attractors which are continuous with respect to the perturbation parameter. Finally, we give some numerical simulations which show the effects of the viscosity term on the anisotropic and isotropic Cahn-Hilliard equation [1][2].

Références

[1] Ahmad Makki, *On the viscous Allen-Cahn and Cahn-Hilliard systems with Willmore regularization*, Applications of Mathematics, 2016.

[2] Ahmad Makki and Alain Miranville, *Existence of solutions for anisotropic Cahn-Hilliard and Allen-Cahn systems in higher space dimensions*, Discrete Contin. Dyn. Syst. Ser. S 9 (2016), 759775.

Ahmad MAKKI, 11 Boulevard Marie et Pierre Curie, Téléport 2 - BP 30179, 86 962 CHASSENEUIL FUTUROSCOPE CEDEX

`ahmad.makki@math.univ-poitiers.fr`