Title : Energy stable finite element/spectral method

for modified higher-order generalized Cahn-Hilliard equations

by

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Abstract: We will study a fully discrete scheme for modified higher-order (in space) anisotropic generalized Cahn-Hilliard models which have extensive applications in biology, image processing, etc. In particular, the scheme is a combination of finite element or spectral method in space and a second-order stable scheme in time. We obtain energy stability results, as well as the existence and uniqueness of the numerical solution, both for the space semi-discrete and fully discrete cases. We also give several numerical simulations which illustrate the theoretical results and, especially, the effects of the higher-order terms on the anisotropy.

This is a joint work with Hongyi Zhu, A. Miranville, S. Peng and Wen Zhang.