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A nonstandard phase field system of viscous Cahn-Hilliard type

A phase segregation model leads to a parabolic system of two partial differential equations, interpreted as balances of microforces and microenergy, for two unknowns: the problem's order parameter and the chemical potential; each equation includes a viscosity term; Neumann homogeneous boundary conditions and initial conditions complement the field equations. The analysis of this system has been made the subject of an ongoing joint research program with G. Gilardi, P. Podio-Guidugli and J. Sprekels. The related model aims at describing two-species phase segregation on an atomic lattice under the presence of diffusion. The existence of a global-in-time solution of the system will be discussed along with other results.