

Convergence of solutions of dynamical systems to equilibria

Hana Petzeltová

We will discuss convergence of solutions of dynamical systems to equilibria, with help of the generalized Łojasiewicz-Simon theory. The theory will be applied to nonlocal phase-field systems. The nonlocal terms can describe the temporal history of the temperature gradient, or we can take into account interactions between states in both short and long scales, which is expressed by a space convolution with a suitable kernel. Solutions of the models in question satisfy the energy inequality, however, in the latter case, the corresponding energy functionals are not twice continuously differentiable on the spaces where compactness of trajectories has been proved. This makes impossible an application of the standard Łojasiewicz inequality, which is commonly used in proofs of convergence of solutions of phase-field systems, and requires to employ a non-smooth version of this inequality.