

# **Numerical Approximation and Uncertainty Quantification for Phase-Field Problems**

Tao Tang (汤涛)

*Southern University of Science and Technology*

We study the numerical approximation of Allen-Cahn and Cahn-Hilliard type equations modeling the motion of phase interfaces. The common feature of these models is an underlying gradient flow structure which gives rise to a decay of an associated energy functional along solution trajectories. In this work, by considering the classical double-well potential model, we provide an alternative framework for stability analysis for the deterministic problems. The present work is also devoted to the development and analysis of numerical methods for the stochastic version of the phase-field equations.