

Scientific Machine Learning for discovery of Phase Field models

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In this work the concepts from scientific machine learning are employed to learn continuum phase field models directly from the experimental data of Scanning Transmission Electron Microscopy (STEM). Currently, we assume the form of the continuum model is known to be as Cahn-Hilliard/Allen-Cahn equations with a prior expression for free energy function. The unknown parameters of the continuum model are estimated using physics-informed neural networks (PINN). First the validation of the PINN approach is carried out on a synthetic dataset coming from a Cahn-Hilliard equation with known parameters. Later, it is applied on raw and noisy experimental data.

Poster title

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