IGA FOR PHASE-FIELD MODELING

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ABSTRACT

In various industrial and scientific domains, interface dynamics play a pivotal role, spanning applications such as crack propagation, multi-phase flows, topology optimization and bio-system growth. The phase-field approach, a robust mathematical framework for systems with evolving interfaces, reframes moving boundary challenges as stationary domain partial differential equations (PDEs), where the interface's evolution is governed by a scalar order parameter — the phase field. This mini-symposium concerns the integration of isogeometric analysis in phase-field methodologies. Through leveraging its inherent smoothness, higher-order nature, and favourable accuracy-per-dof ratio, isogeometric analysis promises enhanced efficiency and accuracy in phase-field models. This symposium explores novel advancements, methodologies, and applications at the "interface" of isogeometric analysis and phase-field modeling.