Modeling and simulation of multiphase flows

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ABSTRACT

Multiphase flows are ubiquitous in engineering, science and medicine. This minisymposium will discuss theoretical and computational innovations that present opportunities for comprehensively and efficiently solving previously intractable problems of enormous importance in the area of multiphase flows. We will place particular emphasis on innovations that involve phase-field modeling [1], the variational multiscale paradigm [2], and Isogeometric Analysis [3], but we also welcome abstracts discussing research on other interface capturing or interface tracking approaches, other discretization techniques, and machine learning. Contributions to this minisymposium can address new method and model development, mathematical analysis, and their application to engineering and science problems that benefit from these novel techniques, such as phase-transforming fluids, multicomponent flows, multiphase flow in porous media, additive manufacturing, cavitation, boiling, geometric flows, foam formation, and others.

REFERENCES

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[3] T.J.R. Hughes, J.A. Cottrell, Y. Bazilevs, *Isogeometric analysis: CAD, finite elements, NURBS, exact geometry and mesh refinement,* 6Computer Methods in Applied Mechanics and Engineering, 194, 39-41, 4135-4195, 2005.