

On energy stable schemes in two-phase flow simulation

Christian Kahle

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We consider the numerical simulation of two-phase flow with the phase field approach. Here a thermodynamically consistent model is used, i.e. the solutions satisfy a physically meaningful energy equality. In situations where such an energy law is available, a numerical approximation should lead to solutions, that obey a corresponding law. In this talk, we briefly introduce the phase field approach for modelling of two-phase systems and consider the particular setting of two-phase fluids. We introduce discretization schemes that guarantee that solutions satisfy a reasonable energy law and apply them to different two-phase flow applications.