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Multi-Phase and Interface Flow Problems

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Modeling of interface dynamics, be it interfaces between two species, interfaces between two phases of the same species, or even interfaces between fluids and solids, is both fascinating and challenging. A whole range of effects offer room for improvement in the state of the art of numerical methods, such as atomization via ligament and droplet formation in spray applications, or contact angle hysteresis in wetting of surfaces. Computational methods for multiphase flows still constitute an incredibly active research topic in computational mechanics. Challenges arise from the phenomena themselves, such as large deformations of the interface which have to be tracked or captured, while preserving accuracy and efficiency of the method, as well as parameters when looking at realistic applications, such as high density ratios, complicated or even moving domains.

We invite contributions about computational methods for tracking/capturing evolving fluid interfaces, e.g. Arbitrary Lagrangian-Eulerian (ALE), Level Set, Front Tracking, and Volume-of-Fluid methods, as well as their hybrids, also emerging techniques such as Phase-Field methods and Lattice-Boltzmann.

We kindly invite researchers to submit contributions with their problems, models, algorithms and (positive or negative) results to foster scientific exchange.

Topics of interest include, but are not limited to:

- Multi-phase and multi-species flow
- Interface tracking/capturing methods
- Interface meshing and discretization methods

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