FEM approximation of Two-Phase Navier–Stokes Flow using DUNE-FEM

Marco Agnese*

October 14, 2018

We propose a novel fitted finite element method for two-phase Navier–Stokes flow problems that uses piecewise linear finite elements to approximate the moving interface. The meshes describing the discrete interface in general do not deteriorate in time, which means that in numerical simulations a smoothing or a remeshing of the interface mesh is not necessary. We present several numerical experiments for our numerical method, which demonstrate the accuracy and robustness of the proposed algorithm. The discretization is implemented within the DUNE-FEM framework.

Link: *http://www2.warwick.ac.uk/fac/sci/maths/research/events/2015-16/ nonsymposium/pde*

References

[1] M. Agnese, R. Nürnberg, Internat. J. Numer. Methods Fluids, *Fitted finite element discretization of two–phase Stokes flow*,(2016), to appear.

*Imperial College London, m.agnese13@imperial.ac.uk