

A Pure Eulerian Scheme for Multimaterial Fluid Flows

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This method named FVCF-NIP is designed to compute multimaterial fluid flows, compressible and non-miscible. Each fluid behaviour is modeled using the compressible eulerian model. We focus on the interface capturing between the fluids, that prevents diffusion of eulerian quantities between fluids through the interface. Moreover, it allows the free sliding of fluids on each others at the interface. The method is locally conservative on each eulerian quantity.

The Finite Volume scheme FVCF by Ghidaglia, Kumbaro and Le Coq (2001) is used on orthogonal fix meshes in 2D/3D. In a mixed cell, i.e. a cell containing two or more fluids, the interface is described by a piece of line that

separate fluids. Thus fluids are pure on both side of the interface. The eulerian quantities evolution is obtained, as in pure cells, by integration of eulerian quantities and fluxes on the cell, taking into account the interface motion and position within the cell.

In the talk, the method algorithm will be described as well as associated numerical studies. Finally, some numerical results wil be shown.