Improving CFD compressible segregated solvers by optimizing updates-equations sequence

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Abstract

Mono-phase and multi-phase compressible solvers in OpenFOAM use both mass flux and volumetric flux through the cell surface to calculate derivative terms. Mass flux depends on the density, and therefore on "how" and "where" it is calculated or updated. Modifying how the density is calculated affects the accuracy and the stability of the solver. This paper deals with how the computational solution changes and which options are the best in order to minimize computational cost and maximize accuracy.

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