FreeVol++: 2D Finite volume solver inside FreeFem++

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Abstract : FreeVol++ is a numerically solver for finite volume method (FVM) on an unstructured grid inside FreeFem++ [1] software dedicated to solve PDE with the finite element method (FEM). We will describe in the sequel, the way to build several fluxes used in the FVM and apply this technique first on the advection 2D equation with the parallel version of the code then on the shallow water system taking to account a new domain adaptation technique defined in [2]. Since we can solve now FVM and FEM inside FreeFem++, we will present a simple way to couple between these two methods.

References

[1] Frédéric Hecht, Olivier Pironneau, Antoine Le Hyaric and Kohji Ohtsuka. Freefem++ Manual, 2012. 1

[2] Georges Sadaka. Generation and propagation of a *Tsunami* wave, to appear 2018. 1

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