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ABSTRACT. *Your abstract in english*

RÉSUMÉ. *Your abstract in frensh*

KEYWORDS: *Keywords in english*

MOTS-CLÉS : *Keywords in frensh*

1. Introduction

Multifluid modeling and numerical simulation have important applications, namely in reactor safety analysis, where effort is being made to better understand and predict two-phase flow behavior.

2. Governing equations

An isothermic two-phase inviscid 2D flow of mixture containing vapor and liquid is described by the conservation equation for mass and momentum

$$\frac{\partial \mathbf{W}}{\partial t} = -\frac{\partial \mathbf{F}}{\partial x} - \frac{\partial \mathbf{G}}{\partial y} + \mathbf{P}, \tag{1}$$

3. Cell-vertex finite volume method based on the Lax-Wendroff scheme

The numerical method scheme described within this section is originally based on the method of Ni [NI 81].
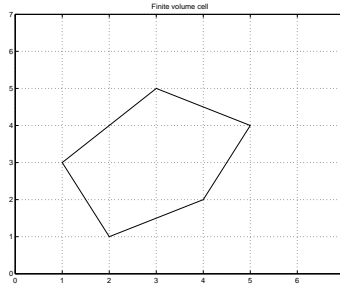

Figure 1. *Finite volumes V and V^**

3.1. *Some analysis*

Let us consider the scheme described above (without an artificial viscosity term), in the case of the simple scalar one dimensional advection equation

THEOREM 3.1 We assume that the nonlinearity satisfies the assumptions. Let $f \in L^{p'}$ and $g \in W^{2p}$ and assume that $U \in W^{2,p}$.

Then there exists a constant C depending on all the problem data $(\|f\|_{L^{p'}}, \|g\|_{W^{2p}}, \alpha, \cdots)$, such that

$$\{ \tag{2}$$

4. Description of test case - Ransom problem

The numerical method was tested on a classical test case - Ransom problem. The computational domain in 2D is a rectangle

4.1. *Numerical results*

5. Conclusions

The numerical method for the solution of two-phase flow equations is presented.

6. Bibliography

[NI 81] Ni R. H., (1981), "A Multiple grid scheme for solving Euler equations", AIAA Journal, Vol. 20, No. 1.

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