



Département de Mathématiques d'Orsay



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Low-order divergence free finite element method in fluid mechanics

Jeudi 19 mars 15 :45-16 :45

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Résumé : In this talk I will review results on a divergence-free reconstruction of the lowest order pair for the Navier-Stokes equation. More precisely, from a stabilised P1xP0 scheme, a divergence-free velocity field is built as the result of a lift of the pressure jumps, and it is then incorporated in the convective term of the momentum equation. This process provides a method that can be proven stable without the need to suppose the mesh refined enough. This idea is applied to problems in Newtonian and non-Newtonian fluid mechanics. In particular, we approximate a generalised Bous-sinesq system, and a steady Non-Newtonian flow.

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