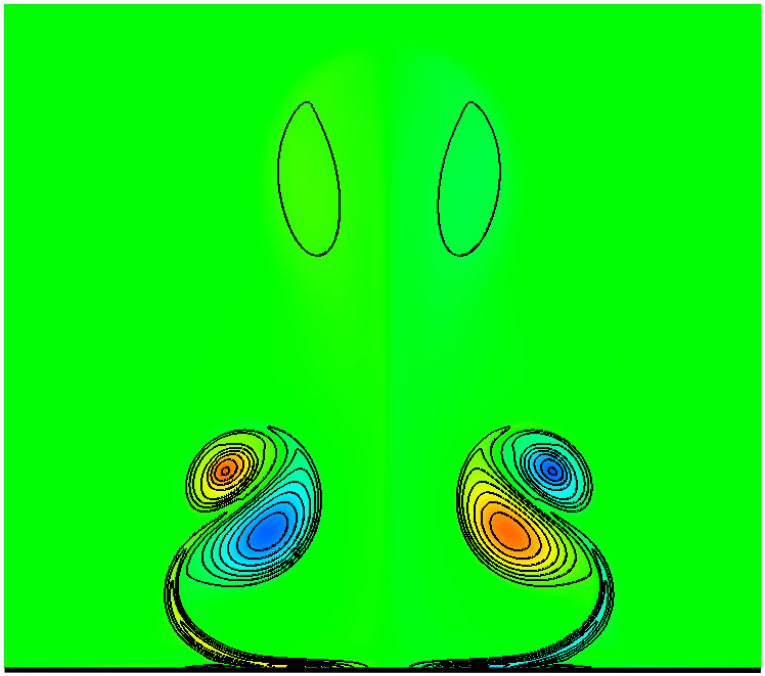
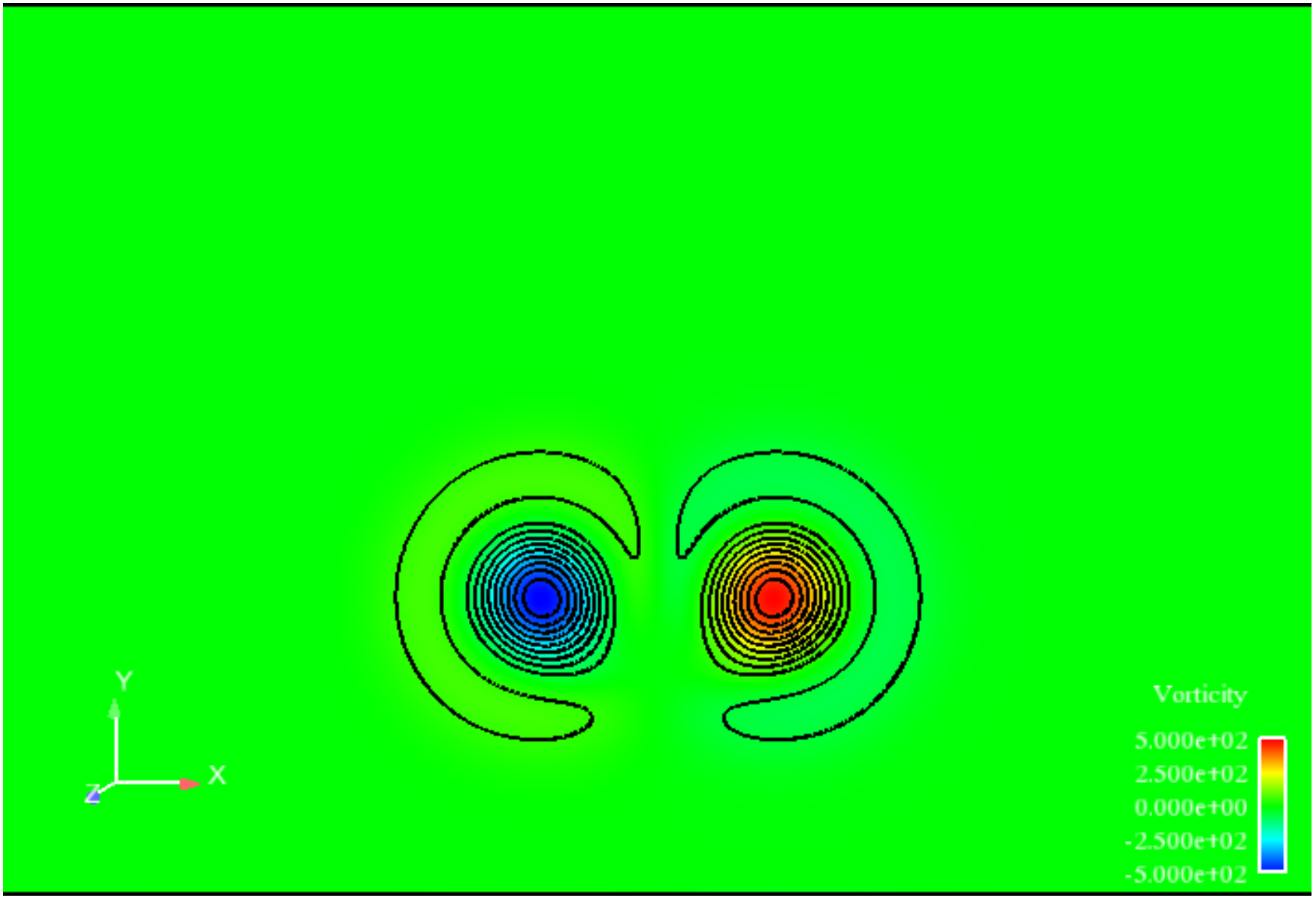
Benchmark
Interaction paire de vortex / mur

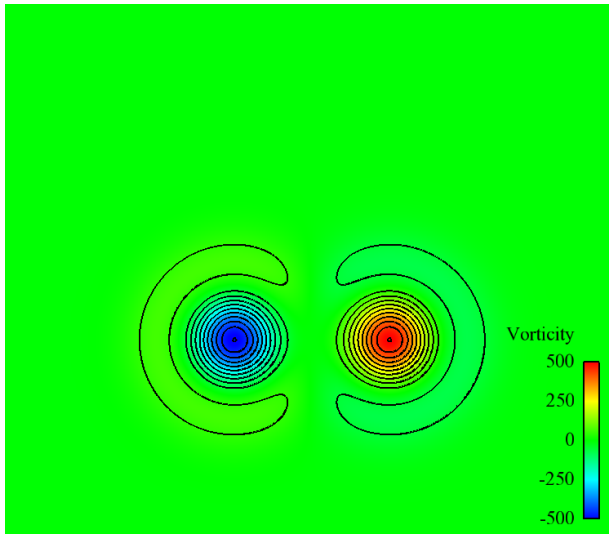


P. Cayot
O. Vermorel
Y. Cheny

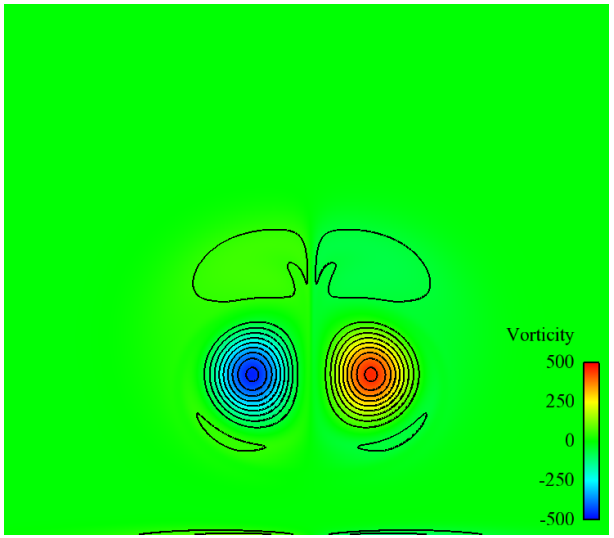
Maillage M4 (AVBP) – Champ de vorticité



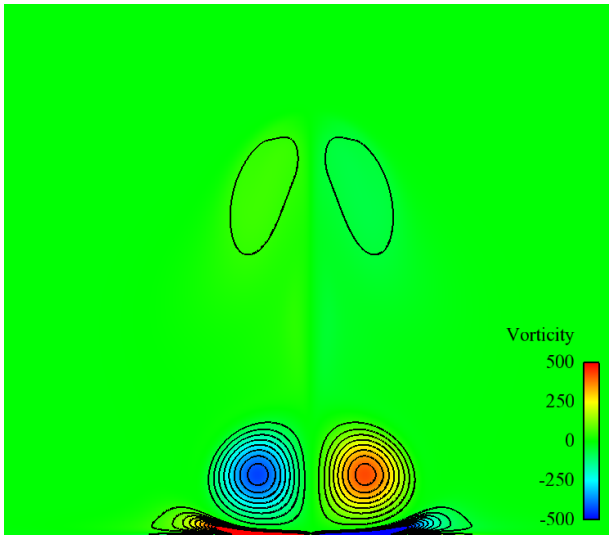
Maillage M4 (AVBP) – Champ de vorticité



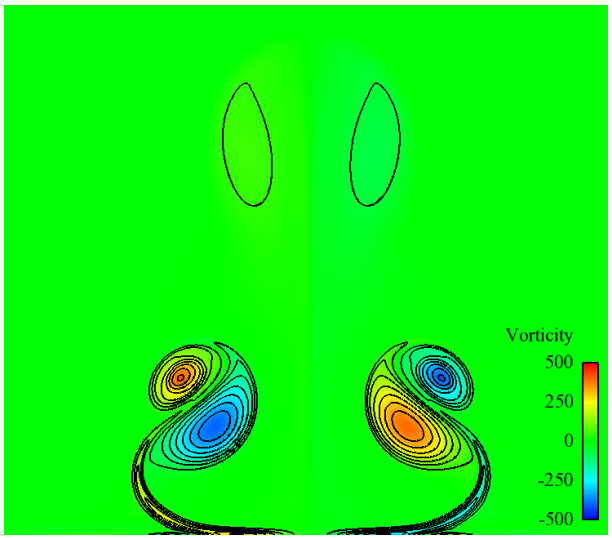
t=0



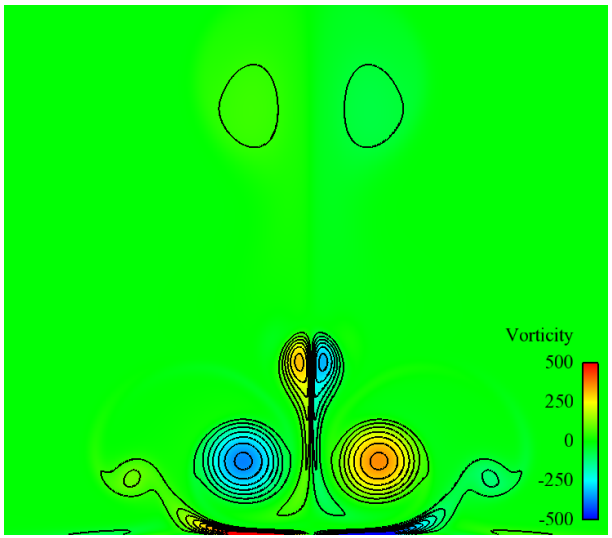
t=80ms



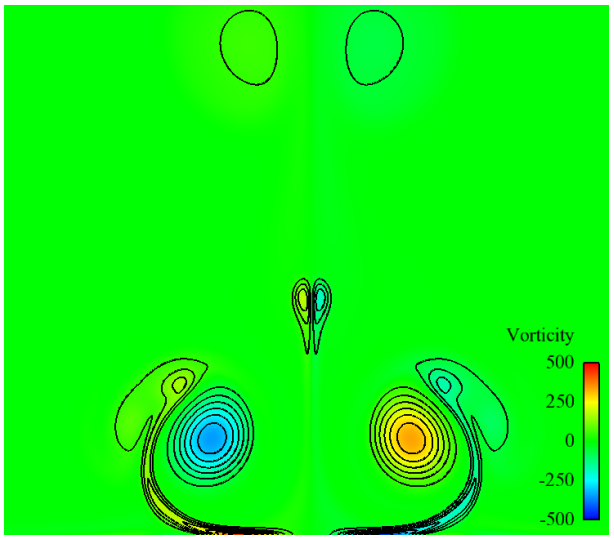
t=160ms



t=240ms



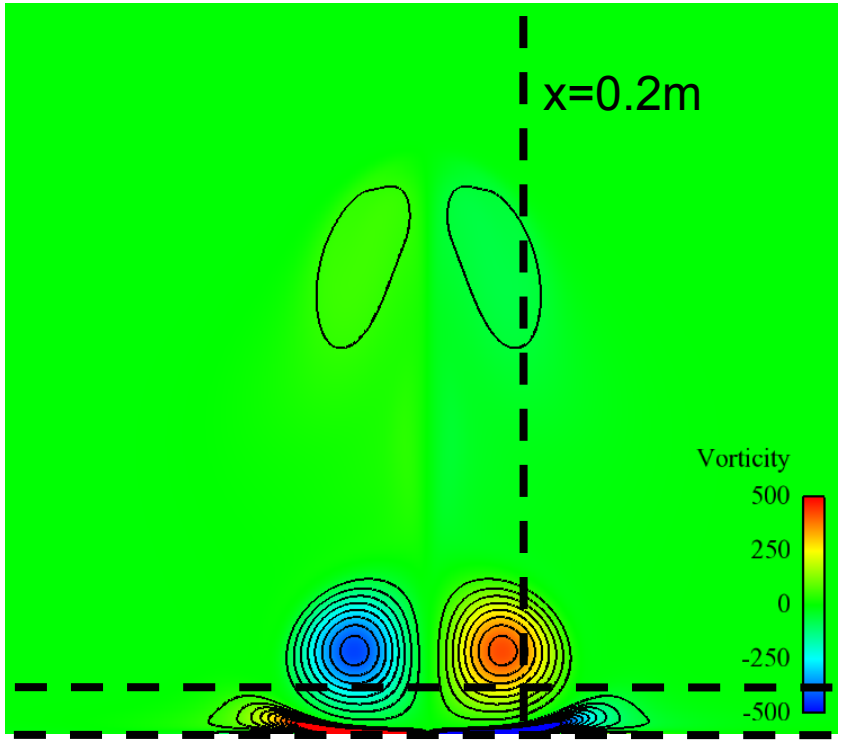
t=320ms



t=400ms

Convergence en maillage AVBP / NTMIX / elsA

- Étude effectué à = 160ms, i.e. au moment où le pic de vorticité est atteint.



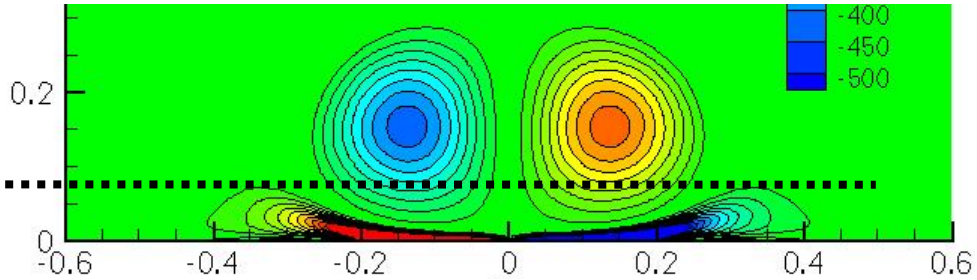
Profils comparés le long de 3 coupes:

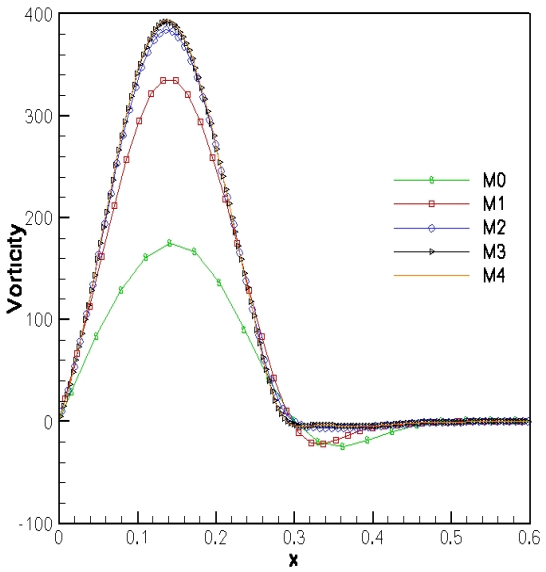
- y=0.125m
- y=0.m (i.e sur le mur)
- x=0.2m

- Étude instationnaire de la trajectoire du vortex primaire

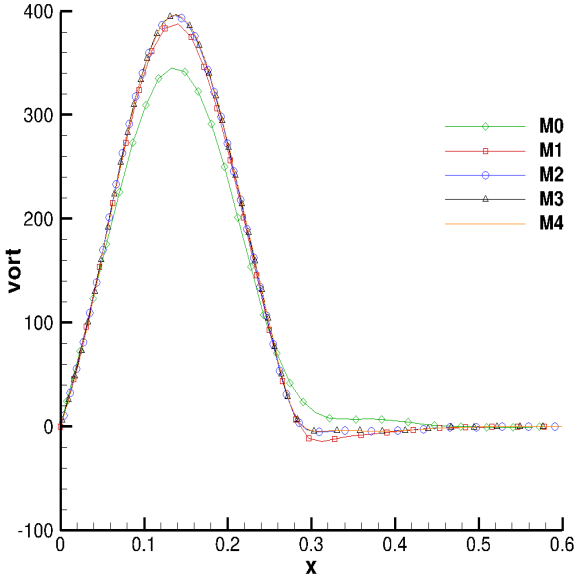
Convergence en maillage – Vorticité

t=160ms
y=0.125m

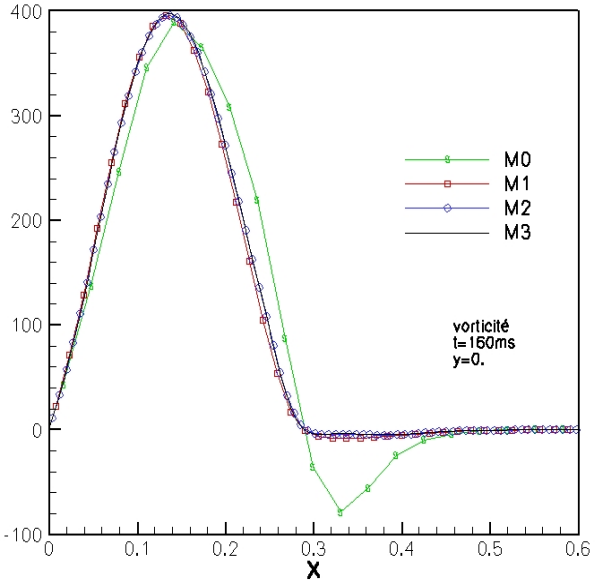




AVBP TTG4A



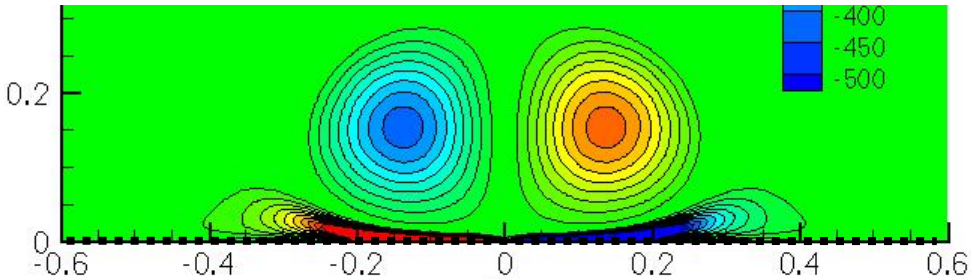
elsA

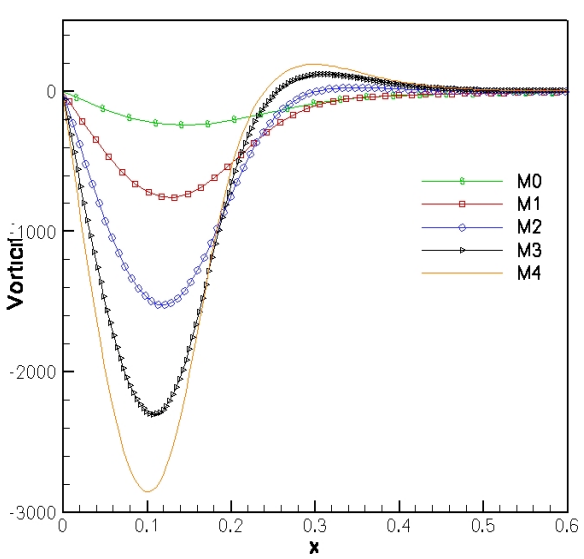


NTMIX

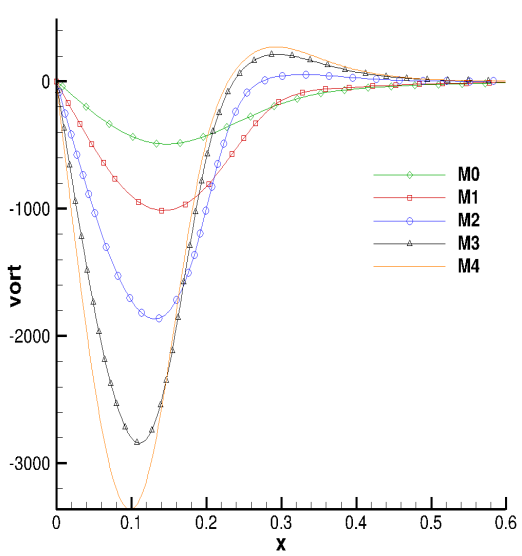
Convergence en maillage – Vorticité

t=160ms
y=0.m

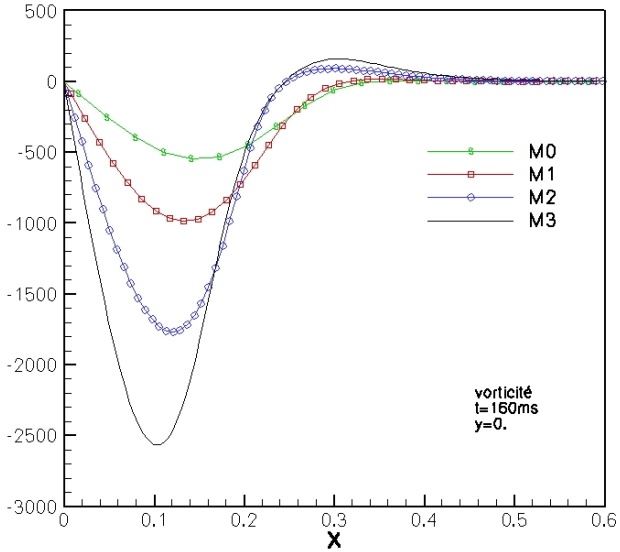




AVBP TTG4A



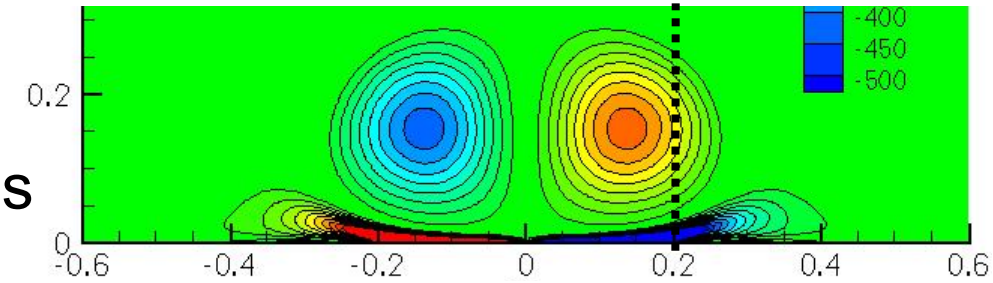
elsA

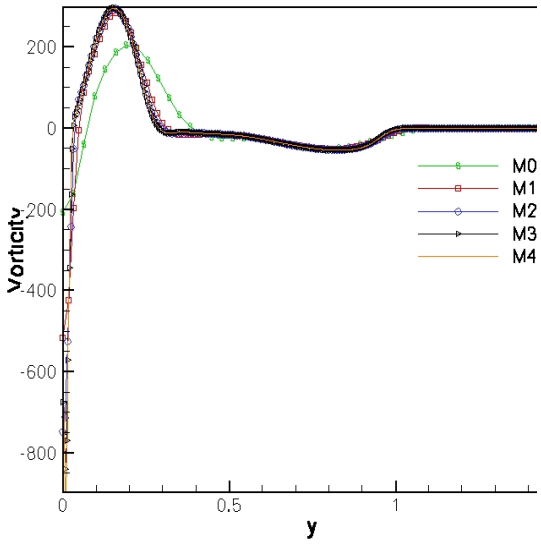


NTMIX

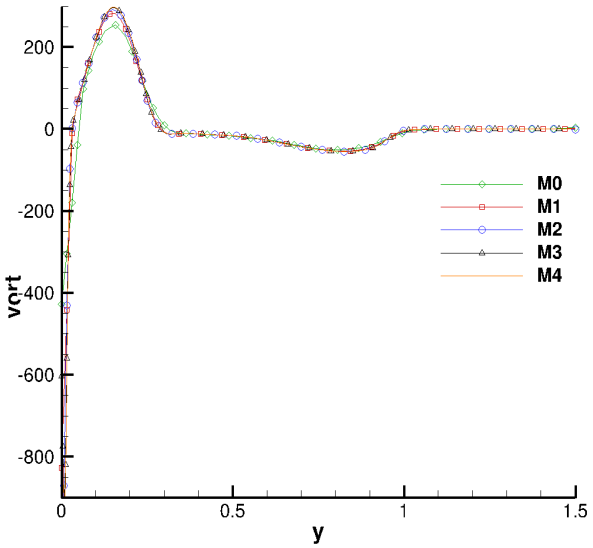
Convergence en maillage – Vorticité

t=160ms

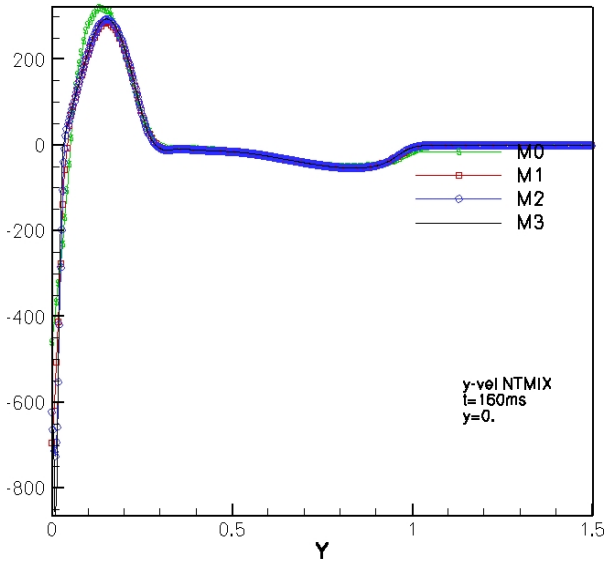




AVBP TTG4A



elsA

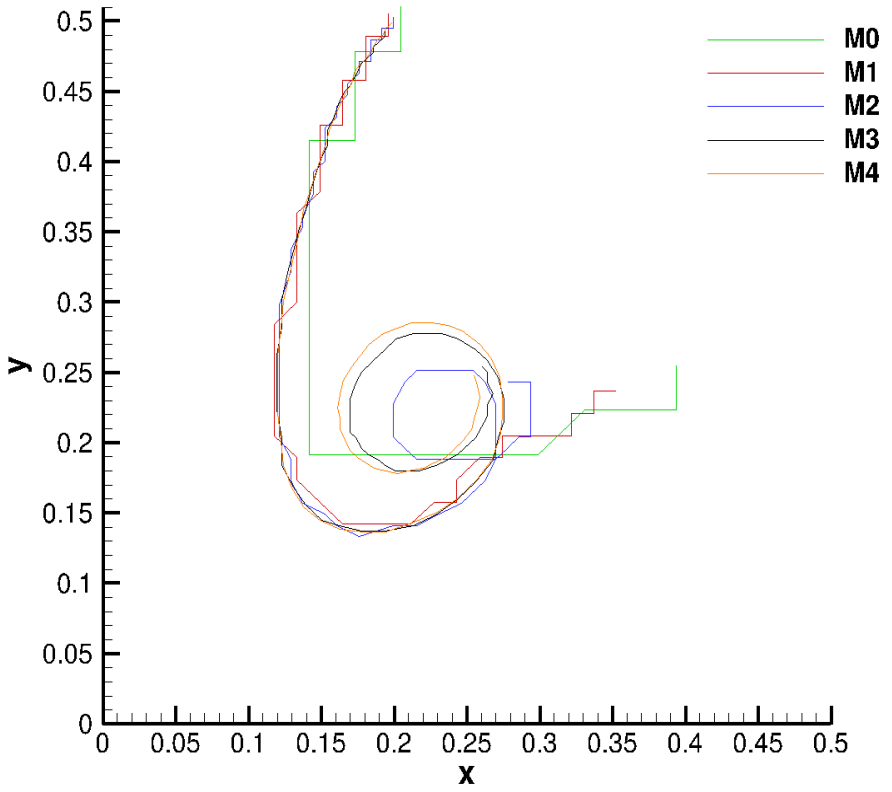


NTMIX

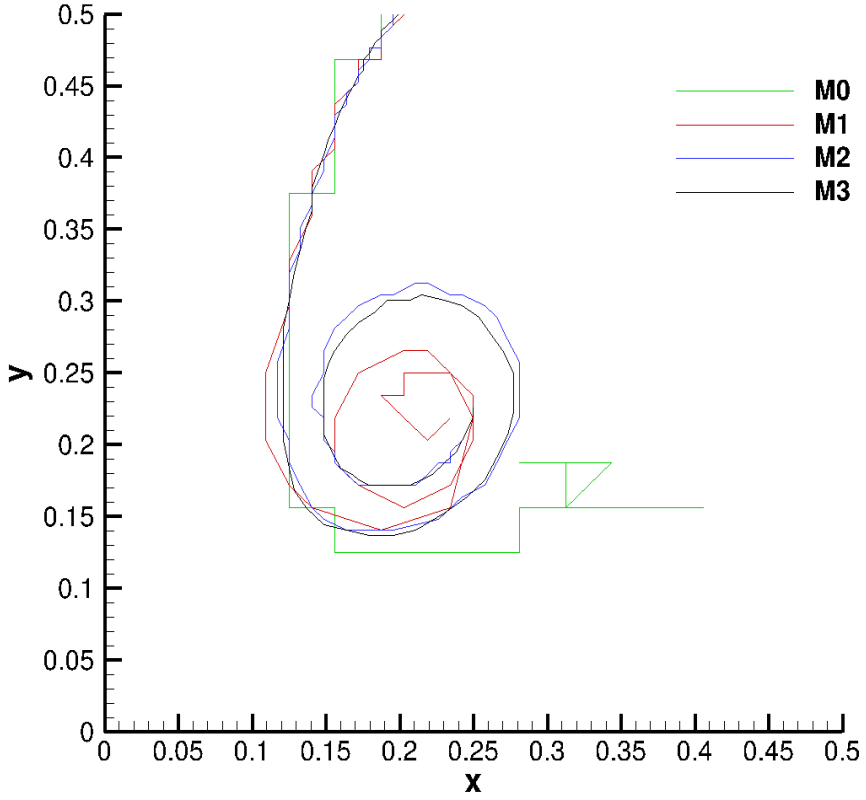
Convergence en maillage AVBP / elsA

Trajectoire du vortex primaire pour les différentes configurations

AVBP



elsA

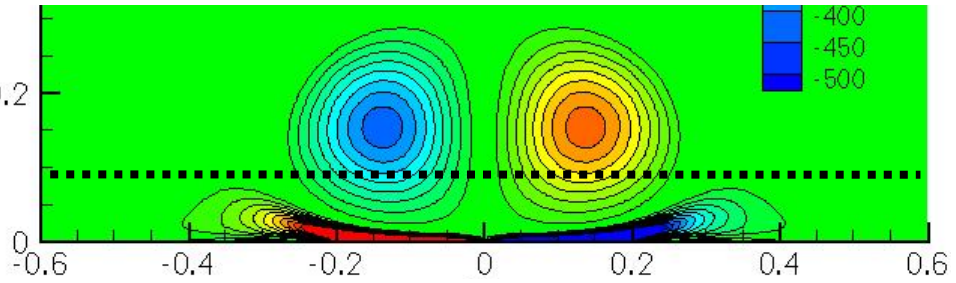


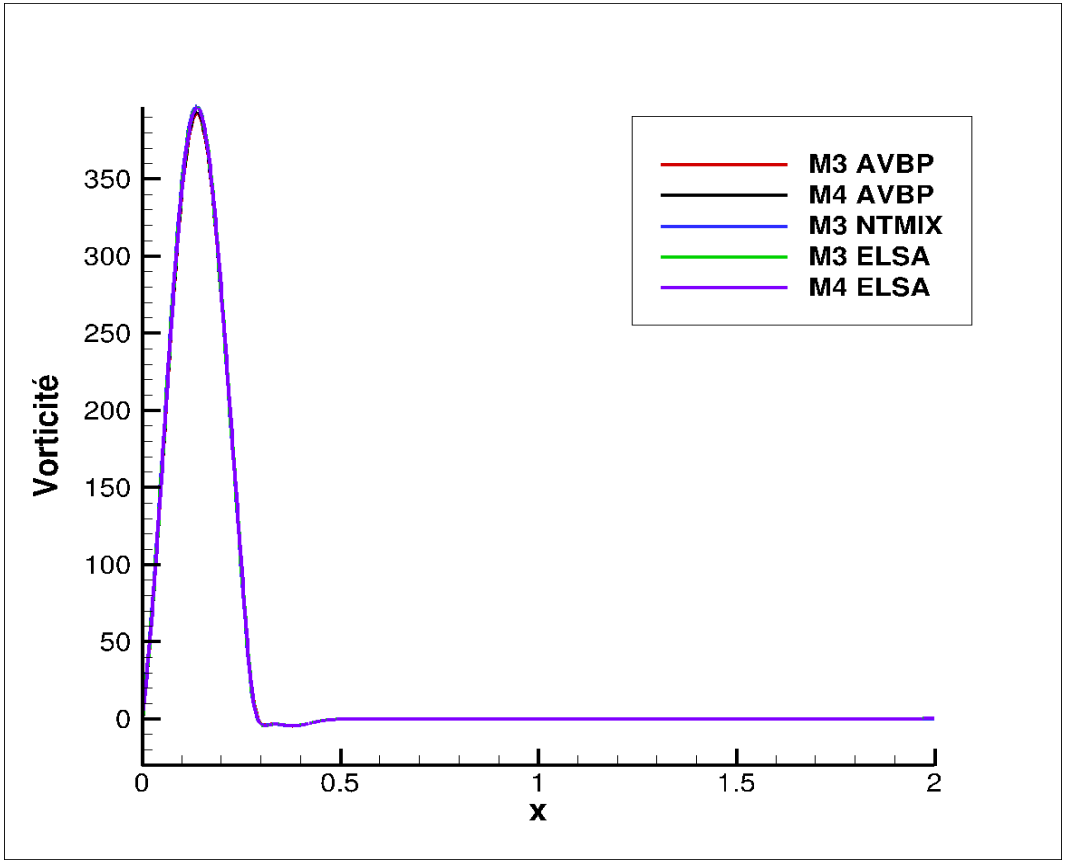
Comparaison AVBP / NTMIX / elsA à t=160ms sur:

•le maillage le plus raffiné (M3 NTMIX – M3 / M4 AVBP et elsA)

Comparaison AVBP/NTMIX/elsA sur le maillage le plus raffiné – Vorticité

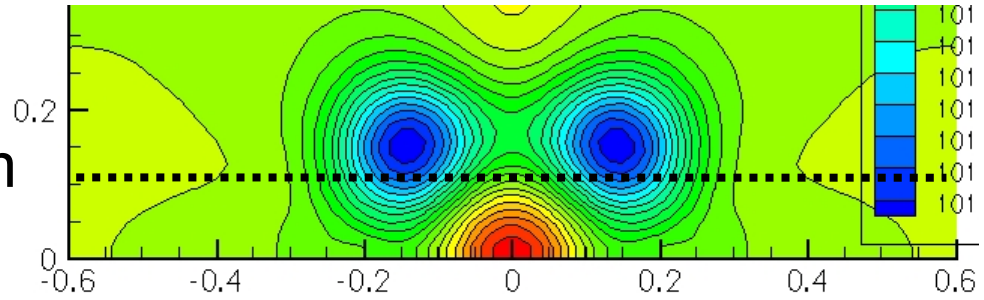
t=160ms
y=0.125m

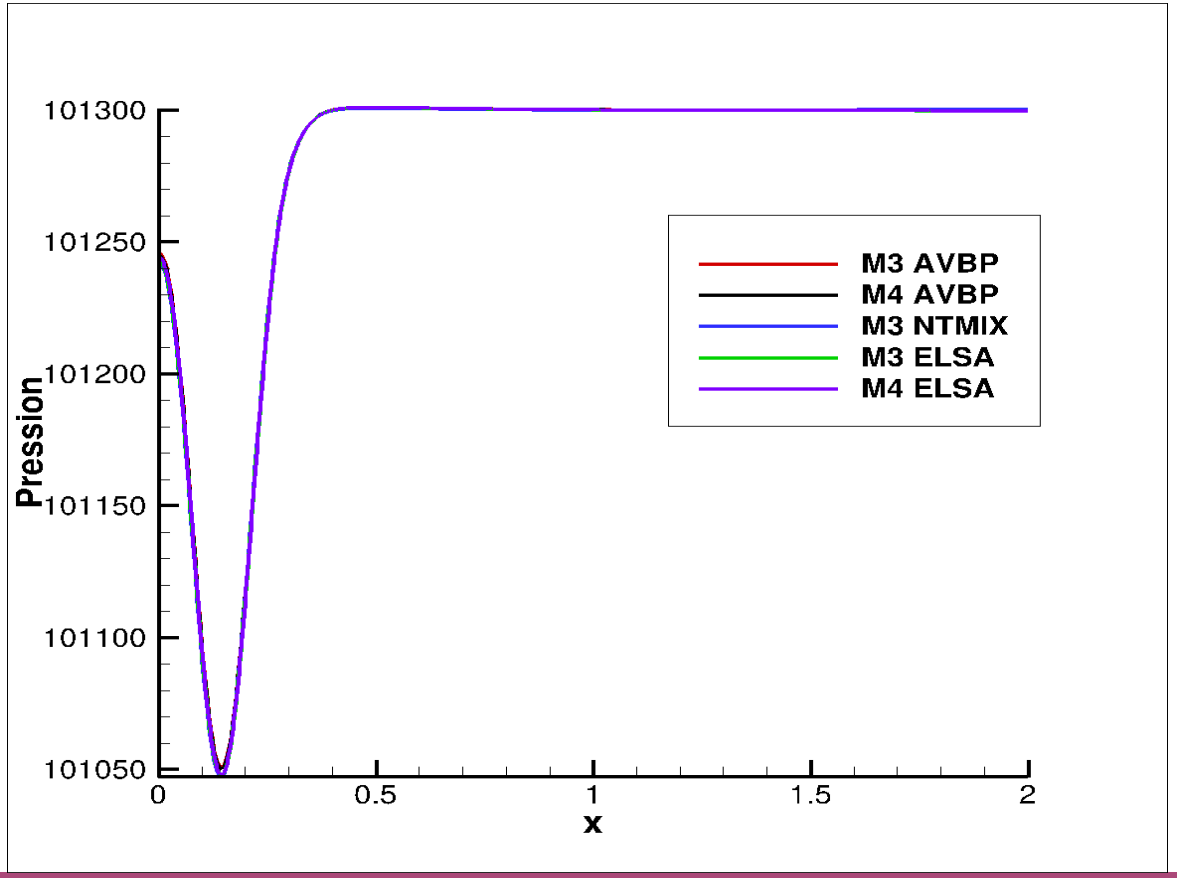




Comparaison AVBP/NTMIX/elsA sur le maillage le plus raffiné – Pression

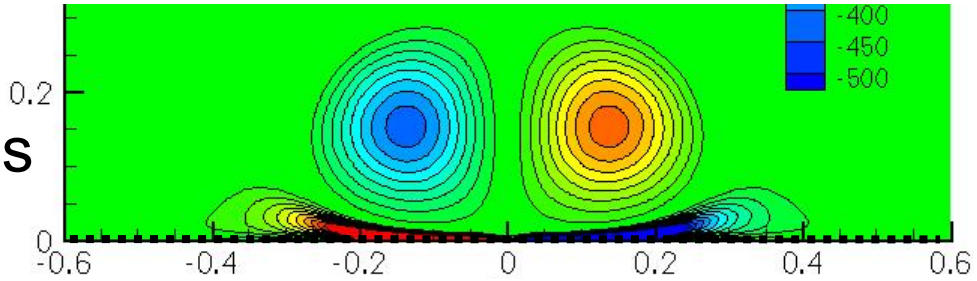
t=160ms
y=0.125m

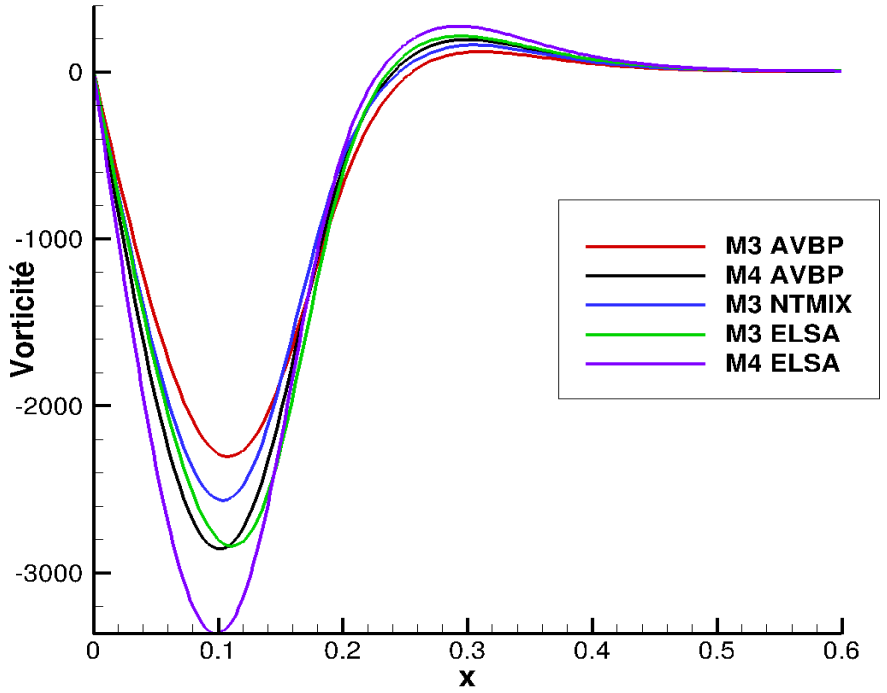




Comparaison AVBP/NTMIX/elsA sur le maillage le plus raffiné – Vorticité

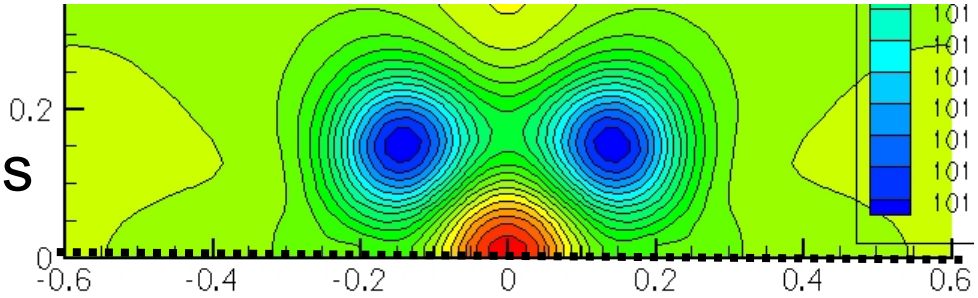
t=160ms
y=0.m

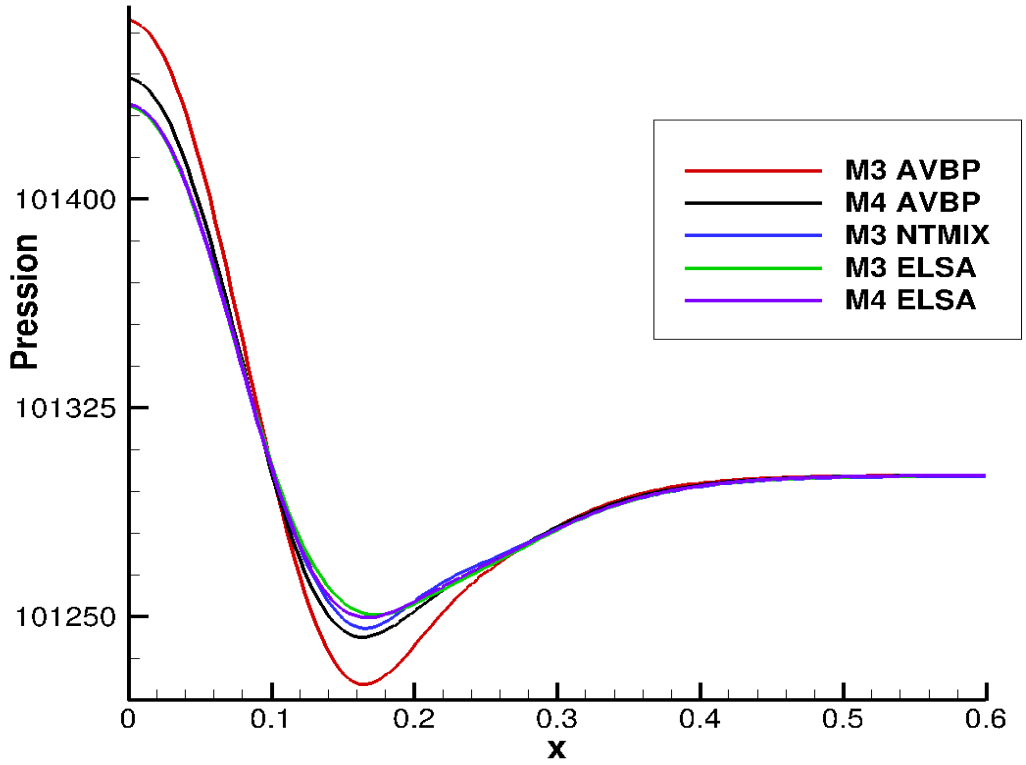




Comparaison AVBP/NTMIX/elsA sur le maillage le plus raffiné – Pression

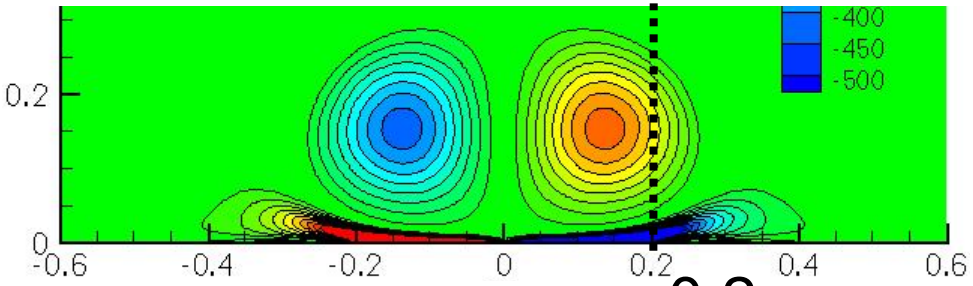
t=160ms
y=0.m



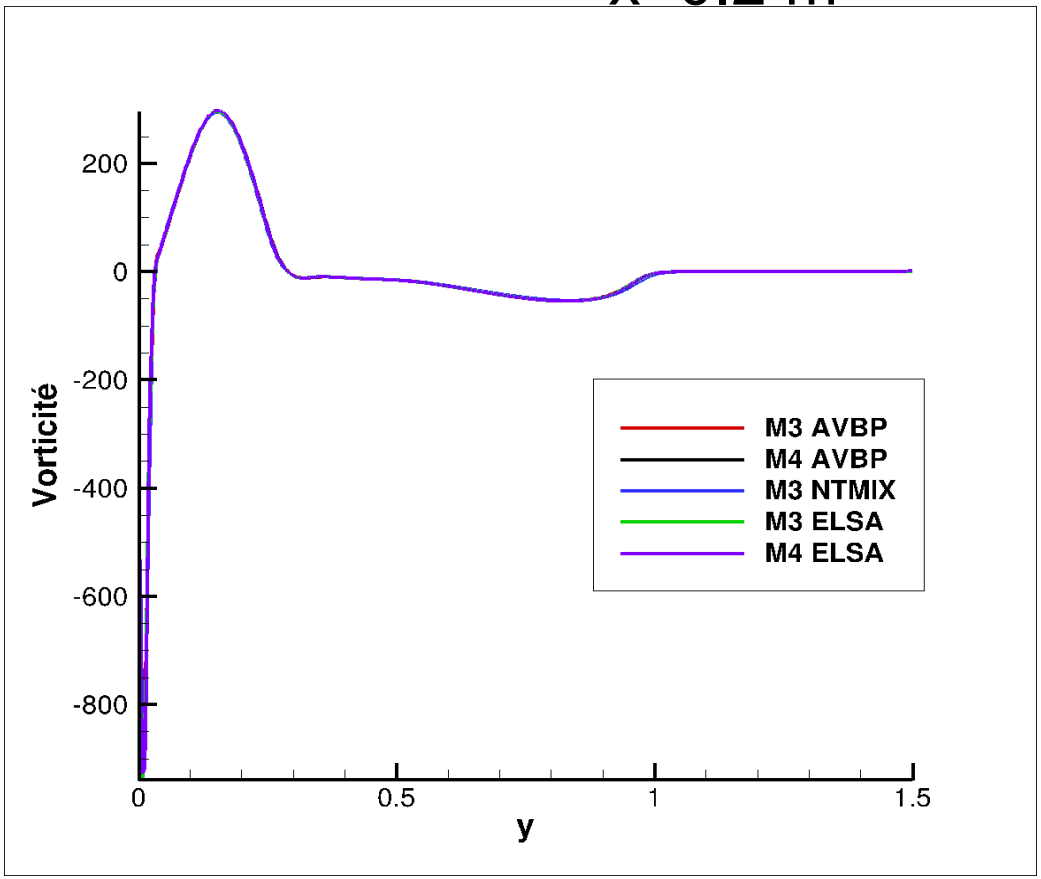


Comparaison AVBP/NTMIX/elsA sur le maillage le plus raffiné – Vorticité

t=160ms

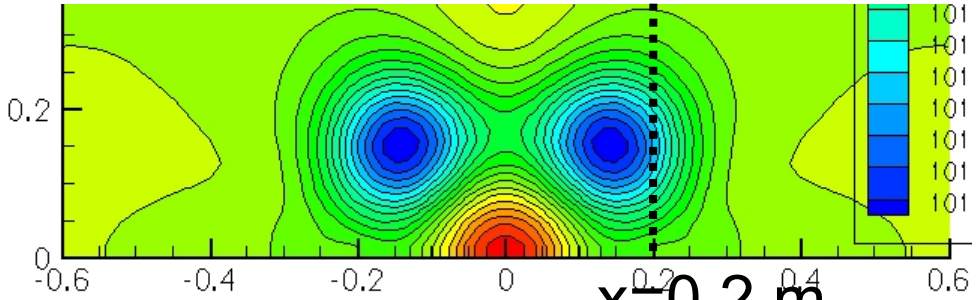


x=0.2 m

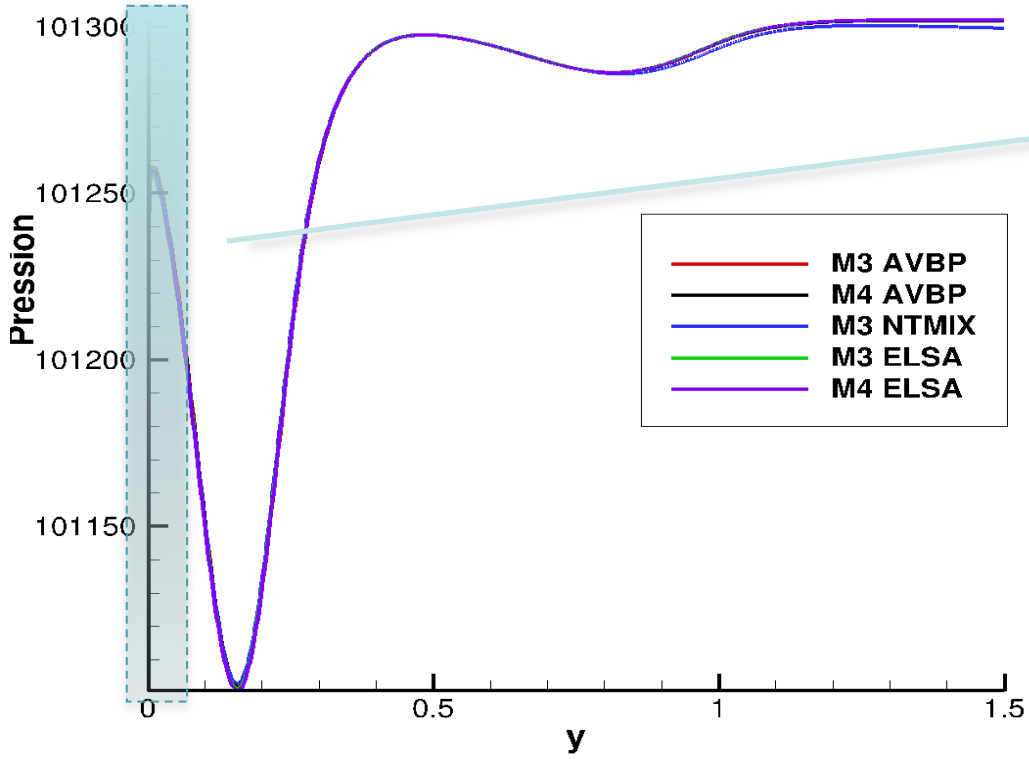


Comparaison AVBP/NTMIX/elsA sur le maillage le plus raffiné – Pression

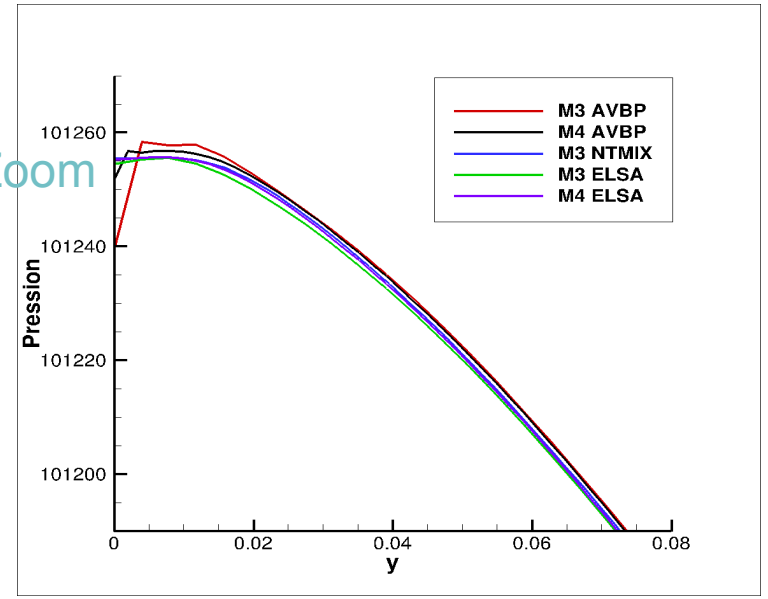
t=160ms



x=0.2 m

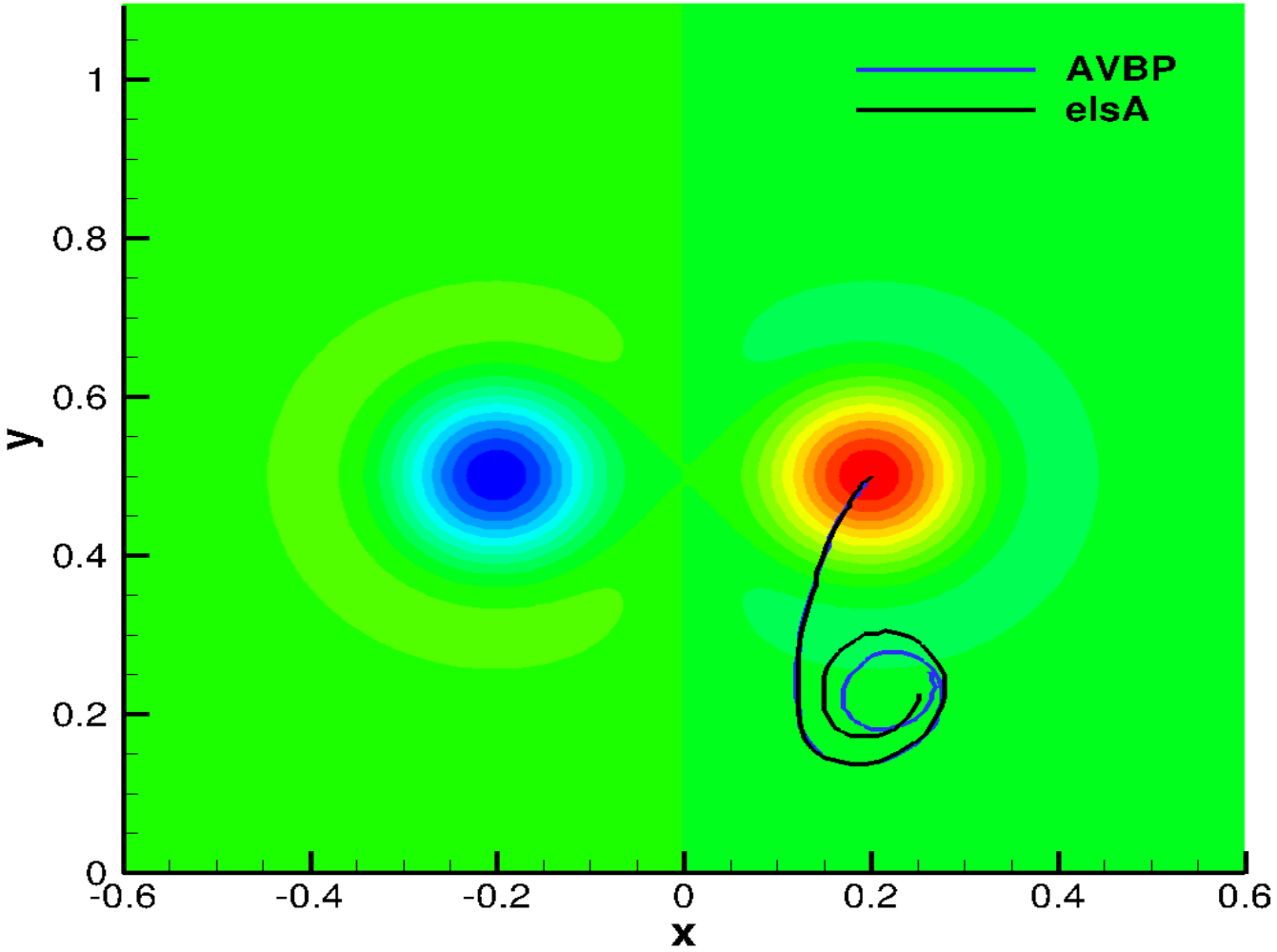


Zoom



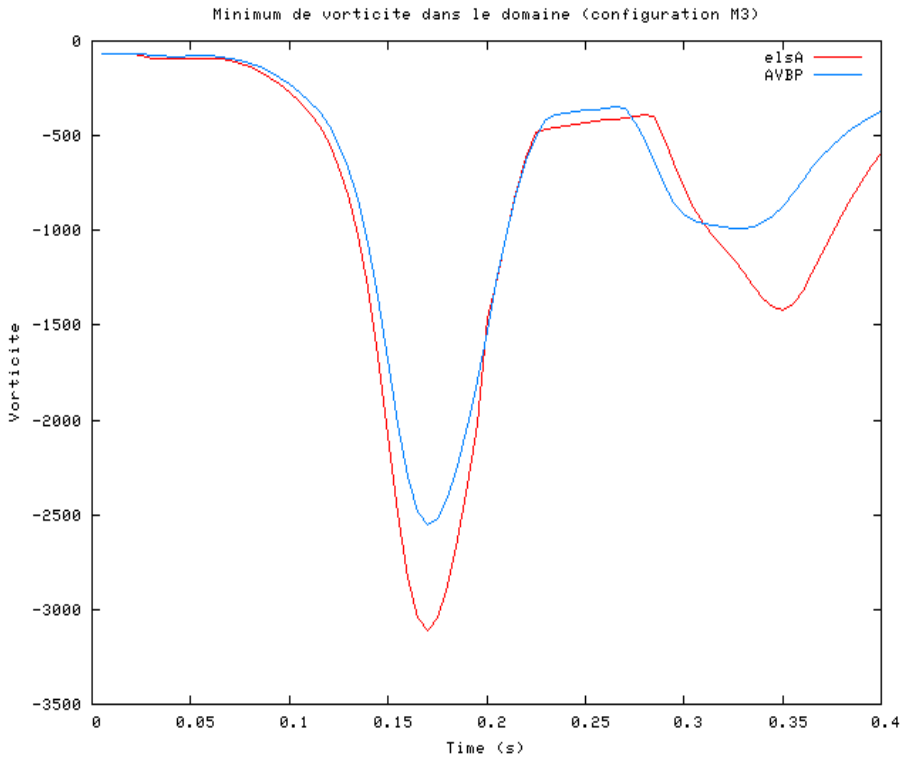
Grad P non nul avec AVBP à la paroi!

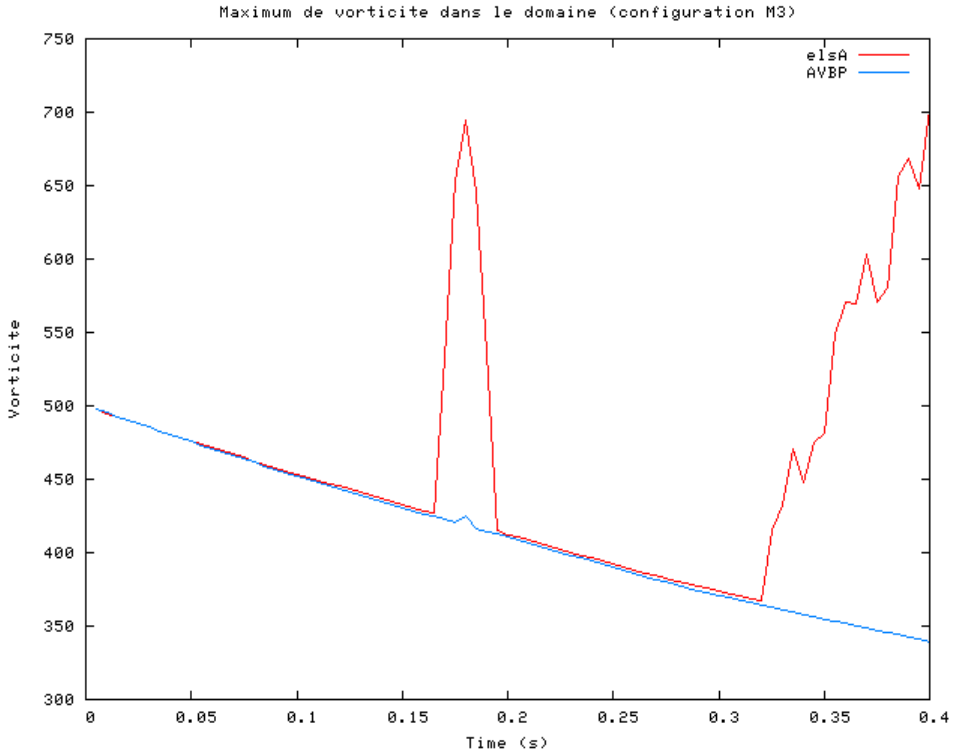
ElsA / AVBP – Trajectoire du vortex primaire



ElsA/AVBP – Vorticité au cours de la simulation

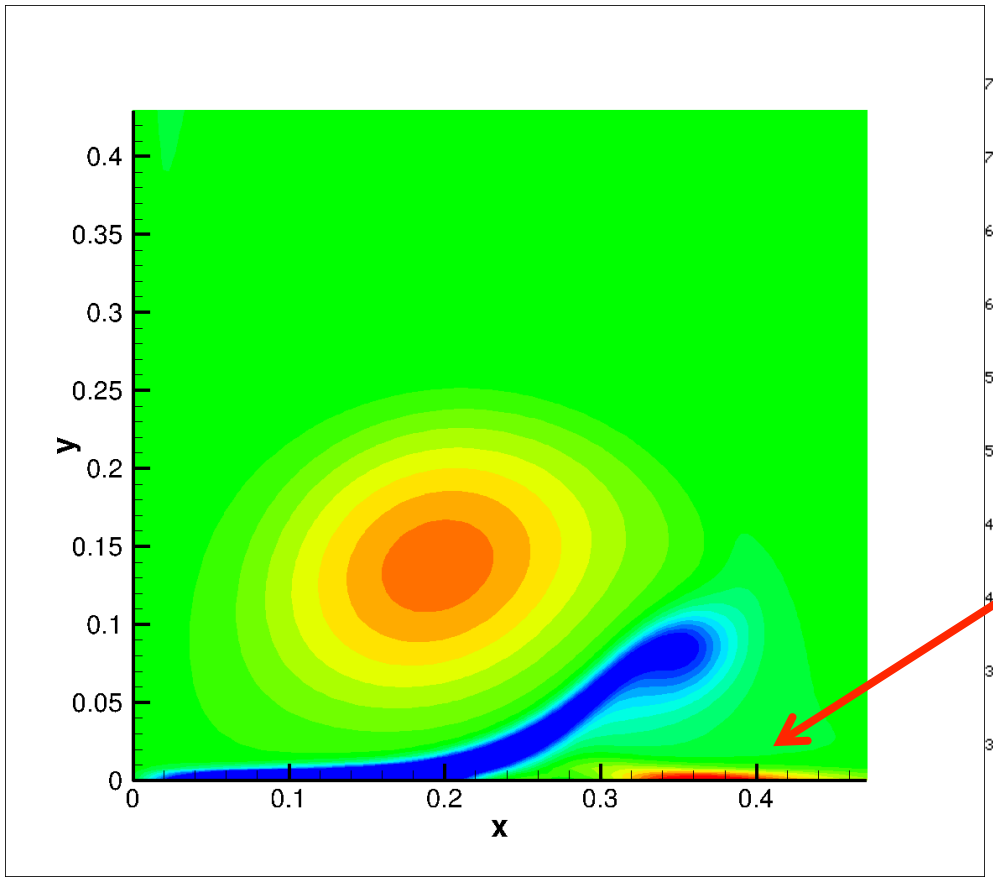
Maximum et minimum de vorticité sur la moitié du domaine

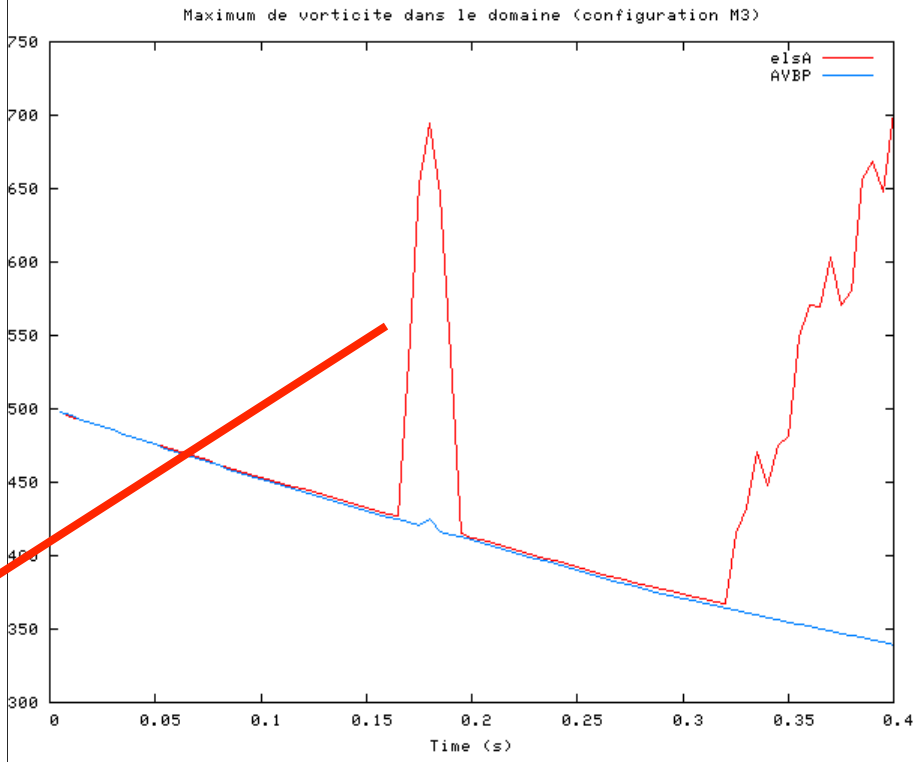




ElsA/AVBP – Vorticité au cours de la simulation

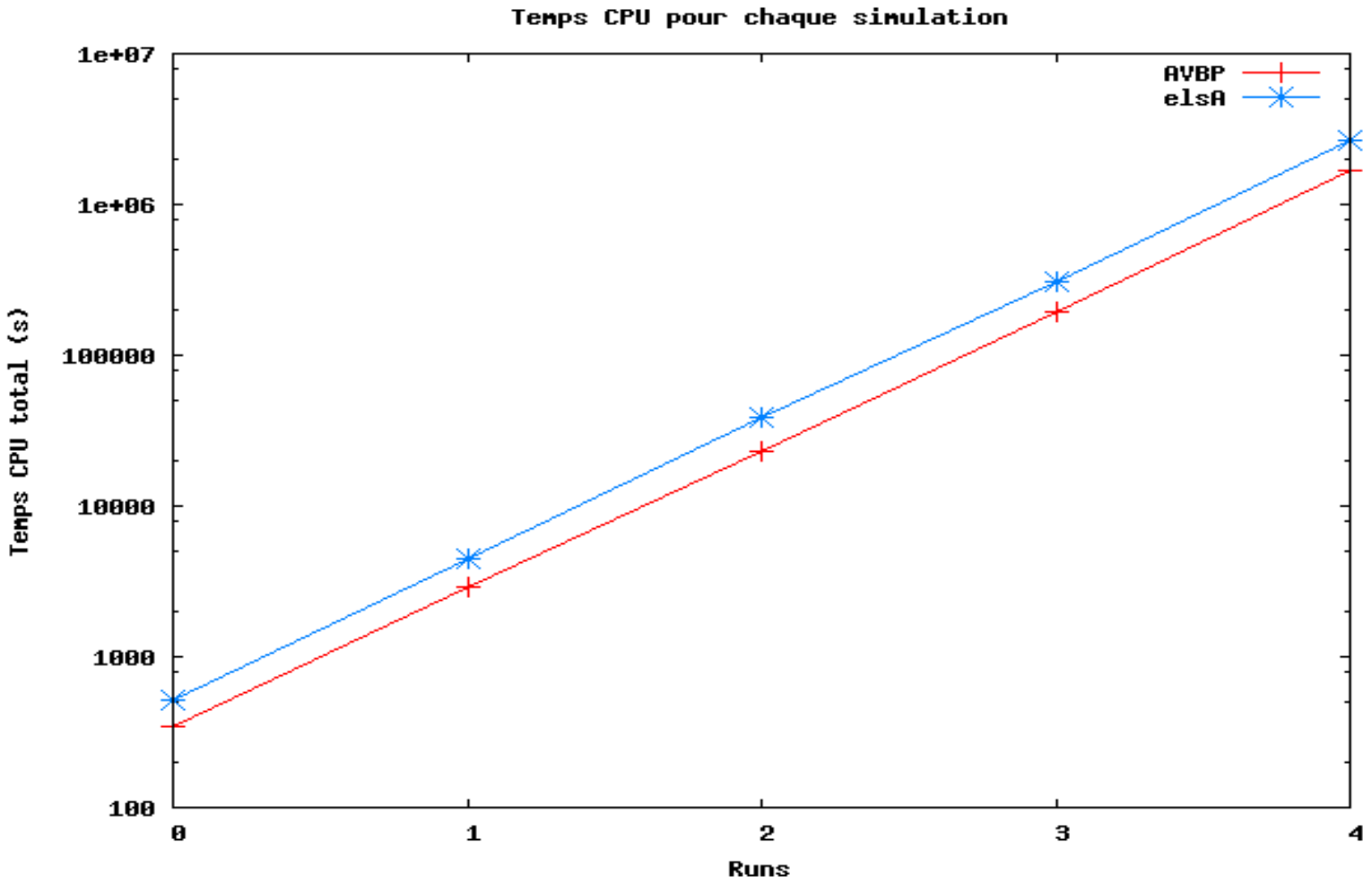
Maximum et minimum de vorticité sur la moitié du domaine





AVBP / ElsA – Informations CPU

Simulations effectuées sur IBM iDATAPLEX Octopus



Annexes

-Trajectoire des vortexs primaires et secondaires (elsA)

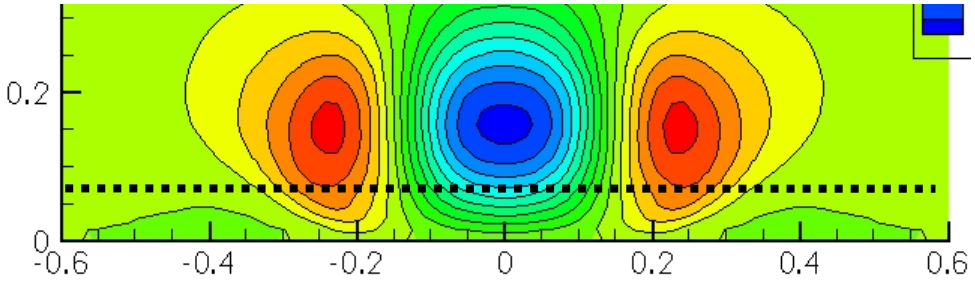
- Convergence en maillage (Pression et vitesse)

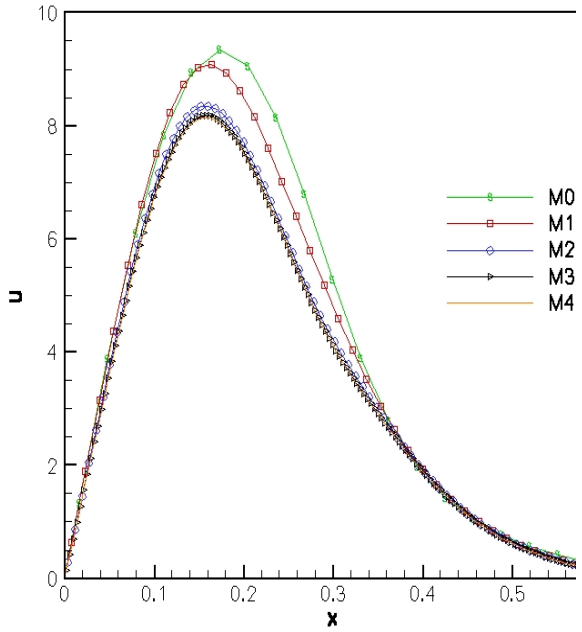
- Comparaison AVBP/NTMIX/elsA pour le maillage M1

- Tests AVBP

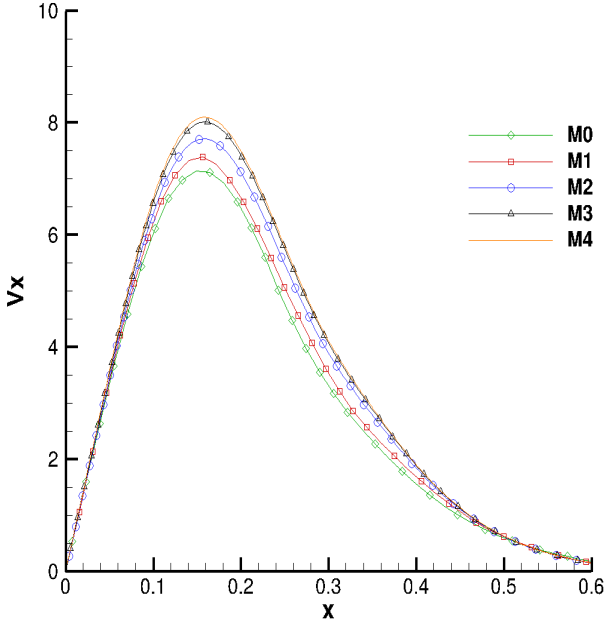
Convergence en maillage - X-velocity

t=160ms
y=0.125m

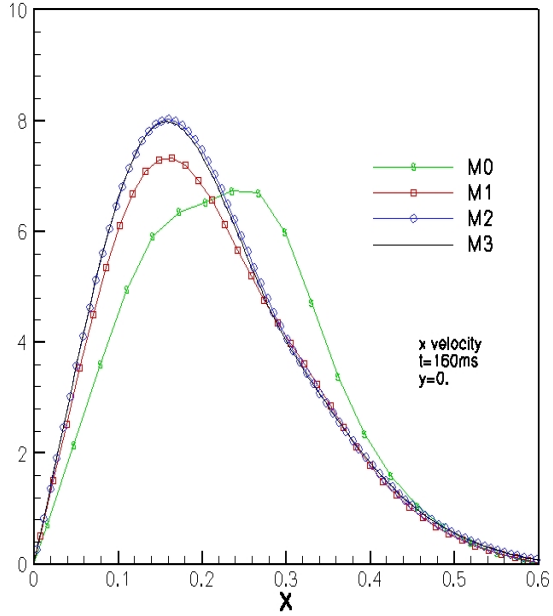




AVBP TTG4A



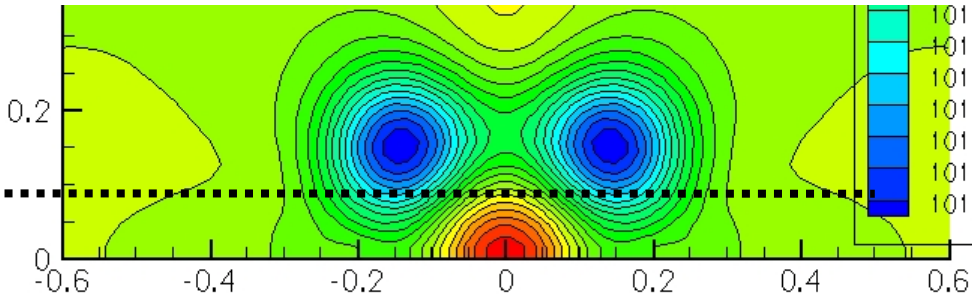
elsA

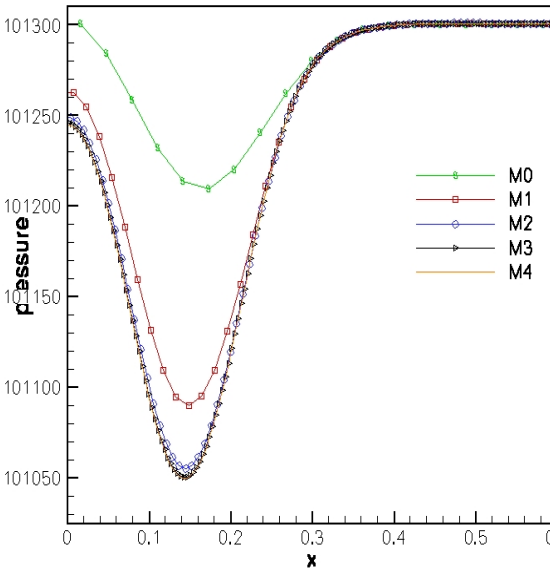


NTMIX

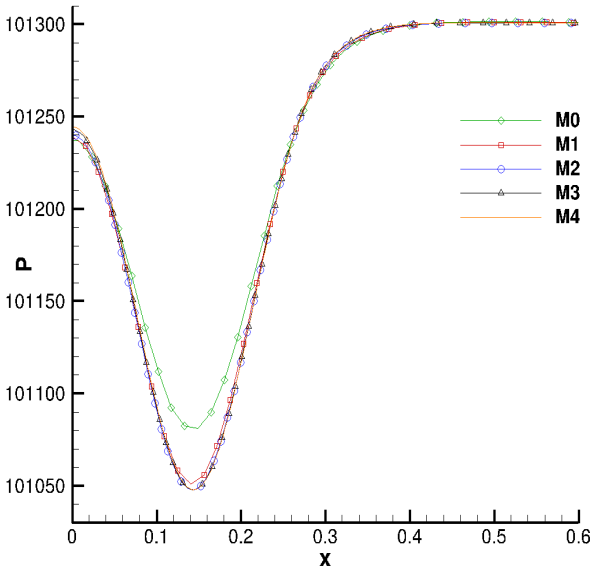
Convergence en maillage – Pression

t=160ms
y=0.125m

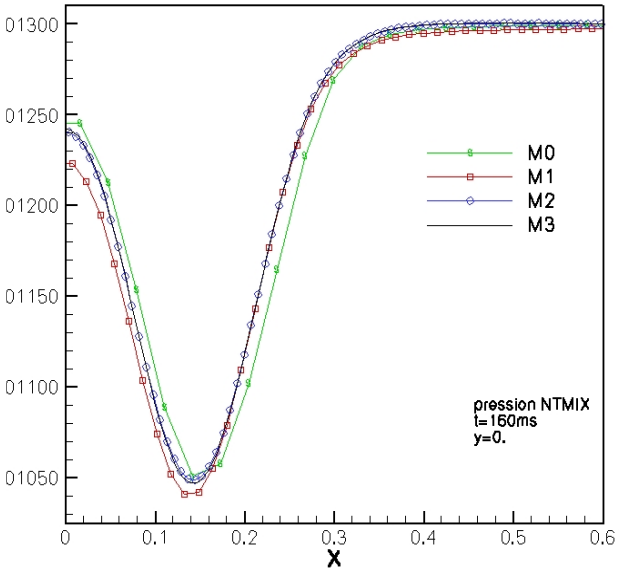




AVBP TTG4A



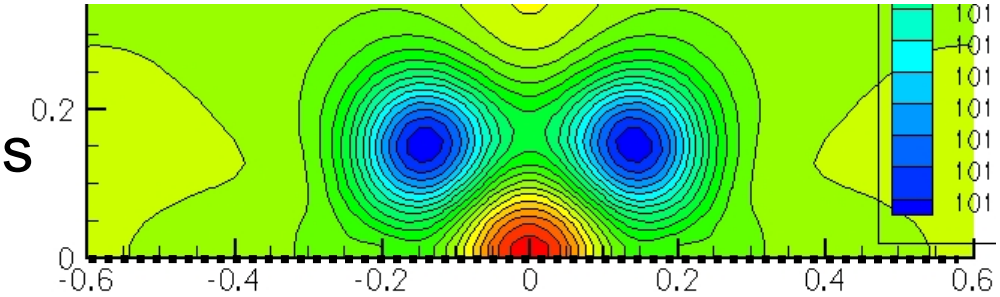
elsA

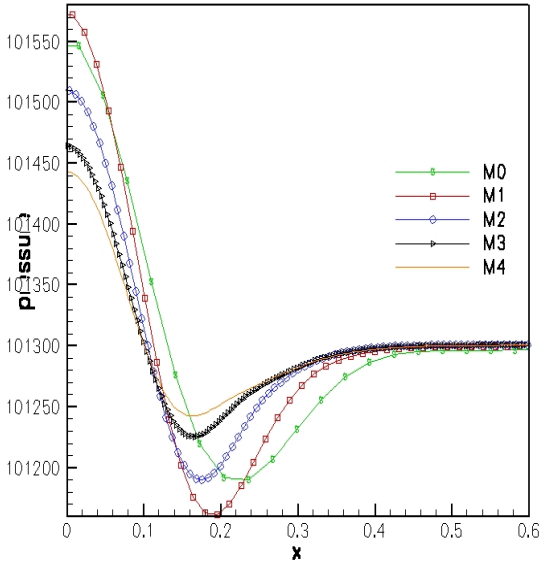


NTMIX

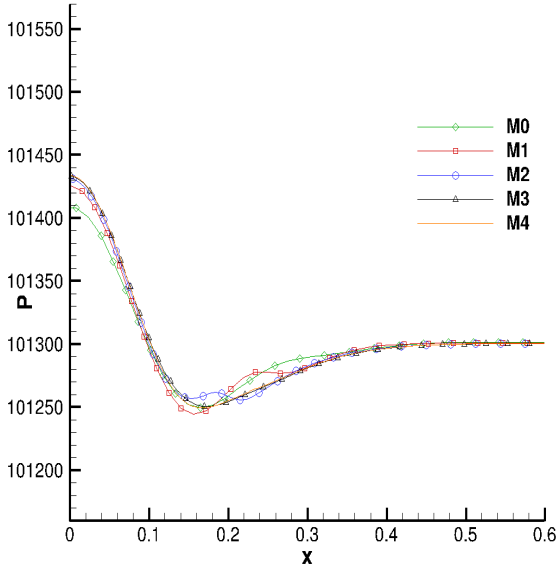
Convergence en maillage – Pression

t=160ms
y=0.m

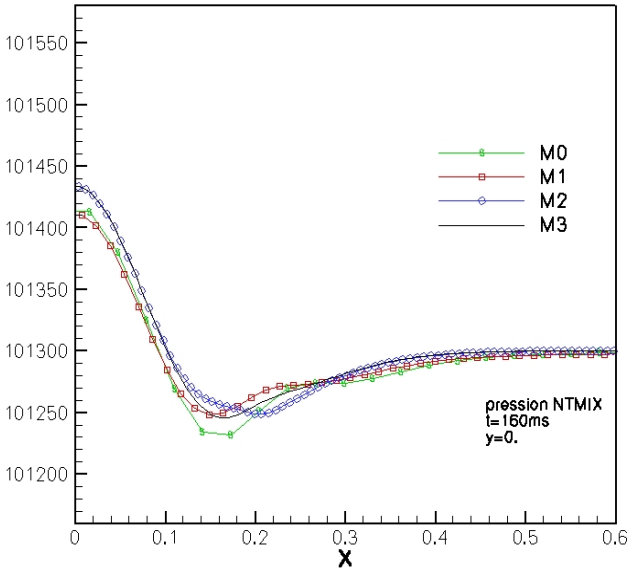




AVBP TTG4A



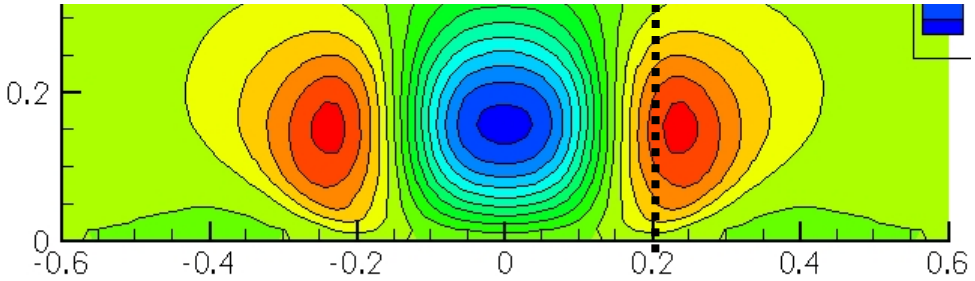
elsA

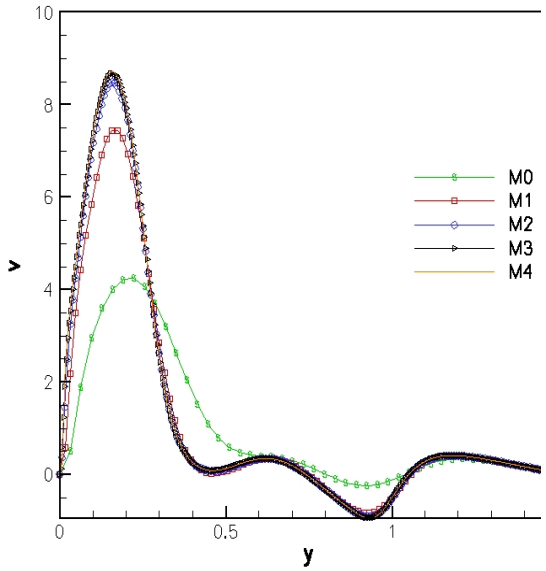


NTMIX

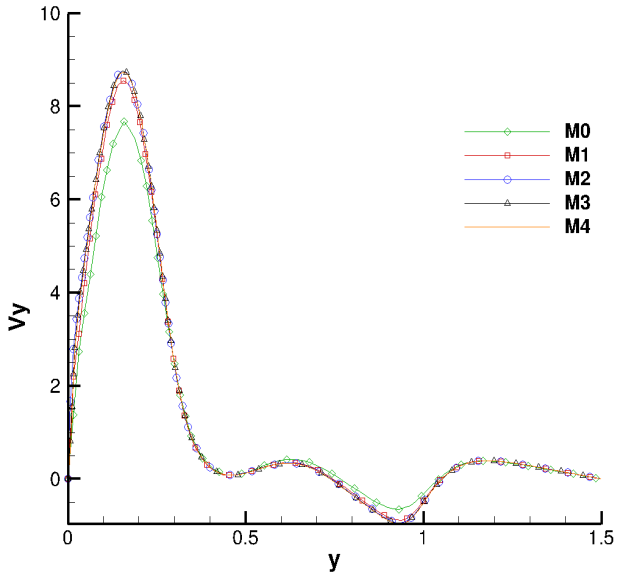
Convergence en maillage - X-velocity

t=160ms

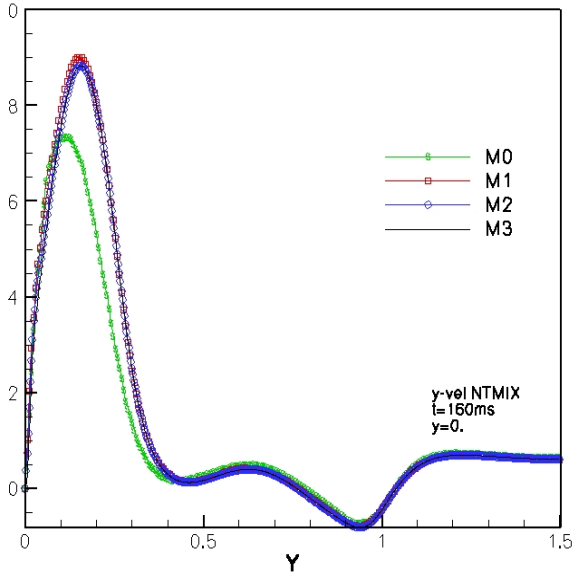




AVBP TTG4A



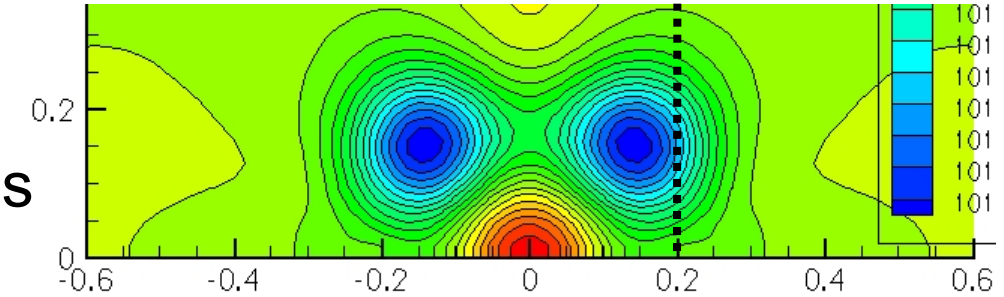
elsA

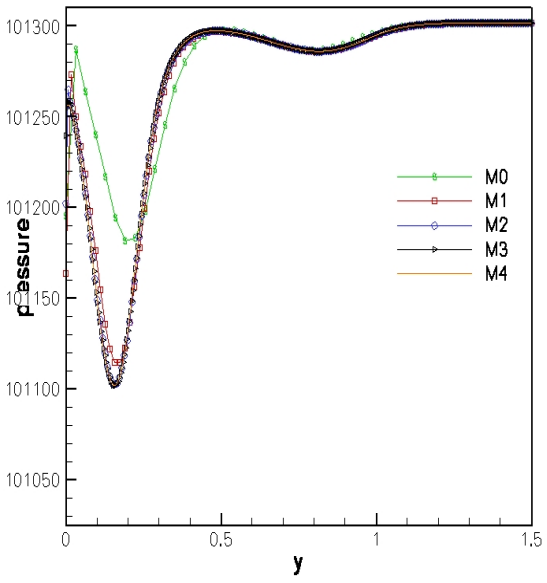


NTMIX

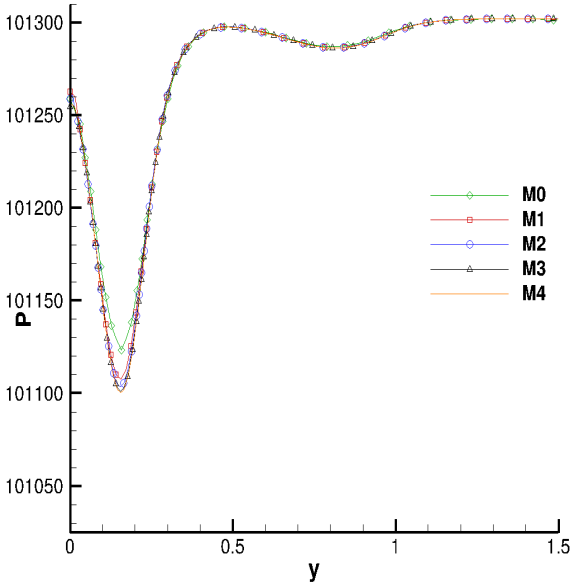
Convergence en maillage – Pression

t=160ms

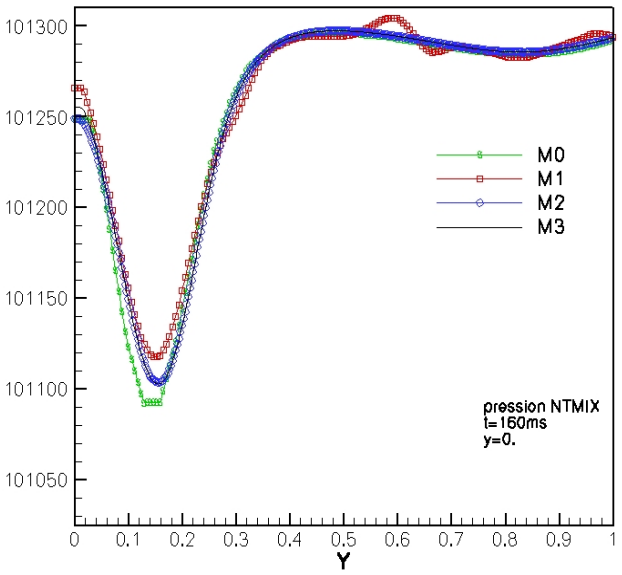




AVBP TTG4A



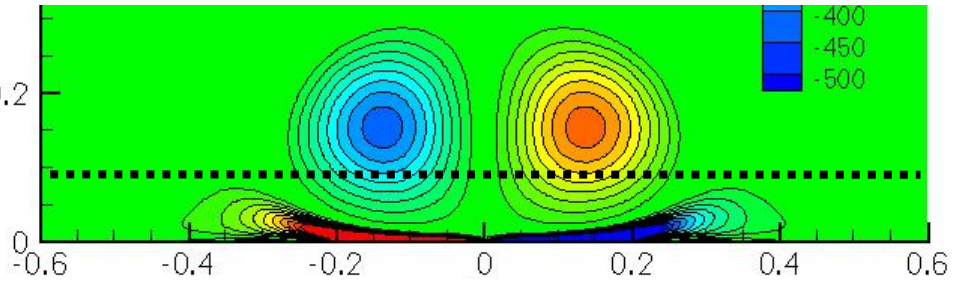
elsA

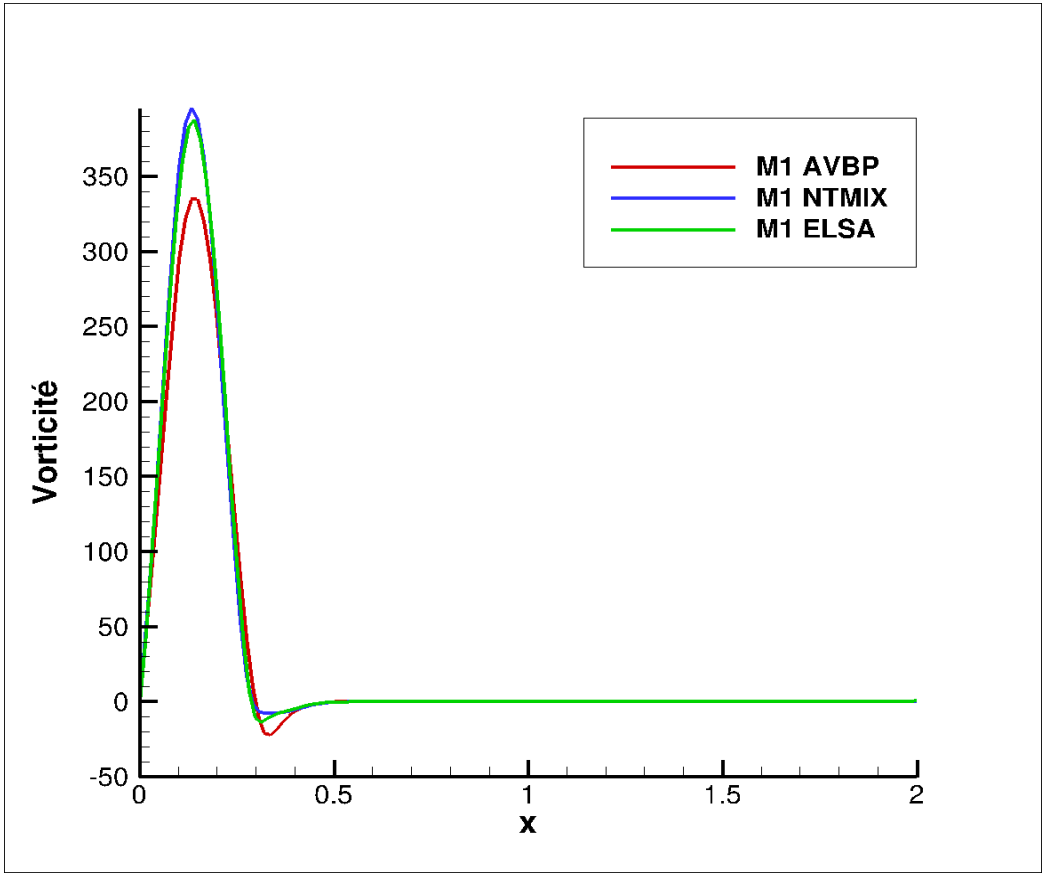


NTMIX

Comparaison AVBP/NTMIX/elsA sur le maillage type COVO – Vorticité

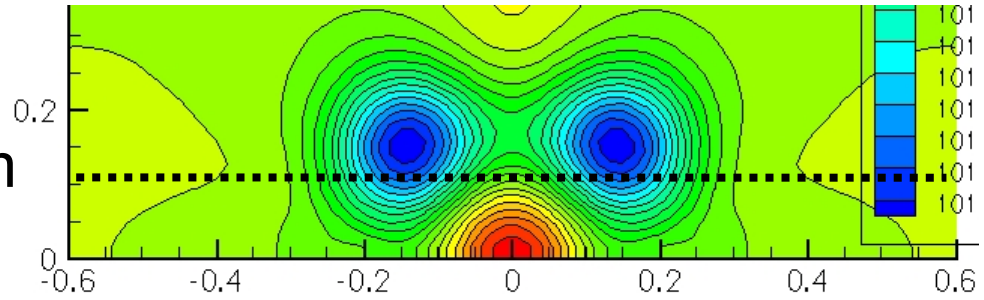
t=160ms
y=0.125m

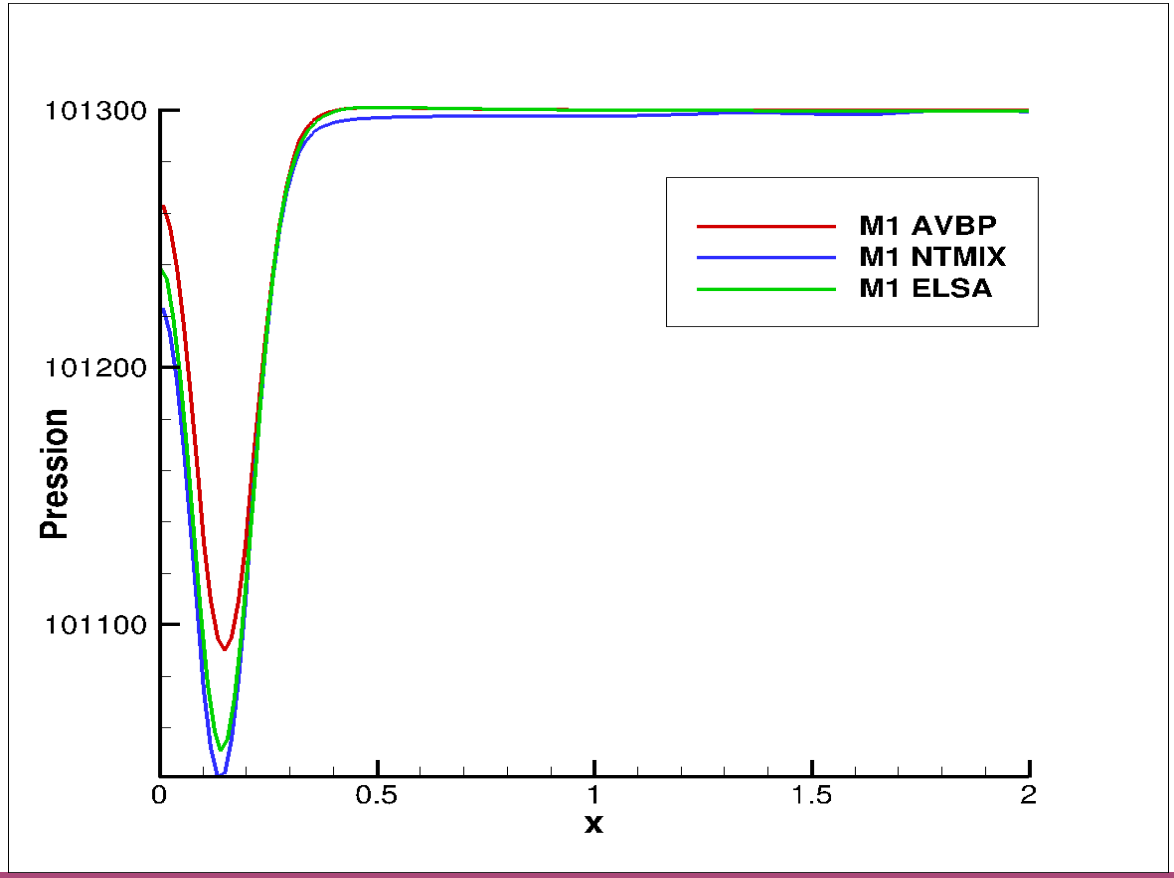




Comparaison AVBP/NTMIX/elsA sur le maillage type COVO – Pression

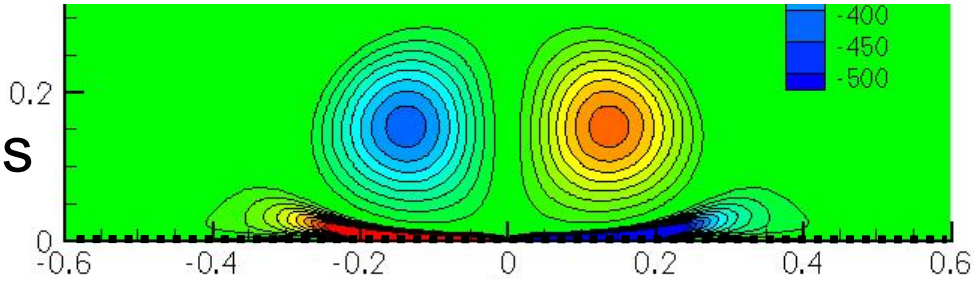
t=160ms
y=0.125m

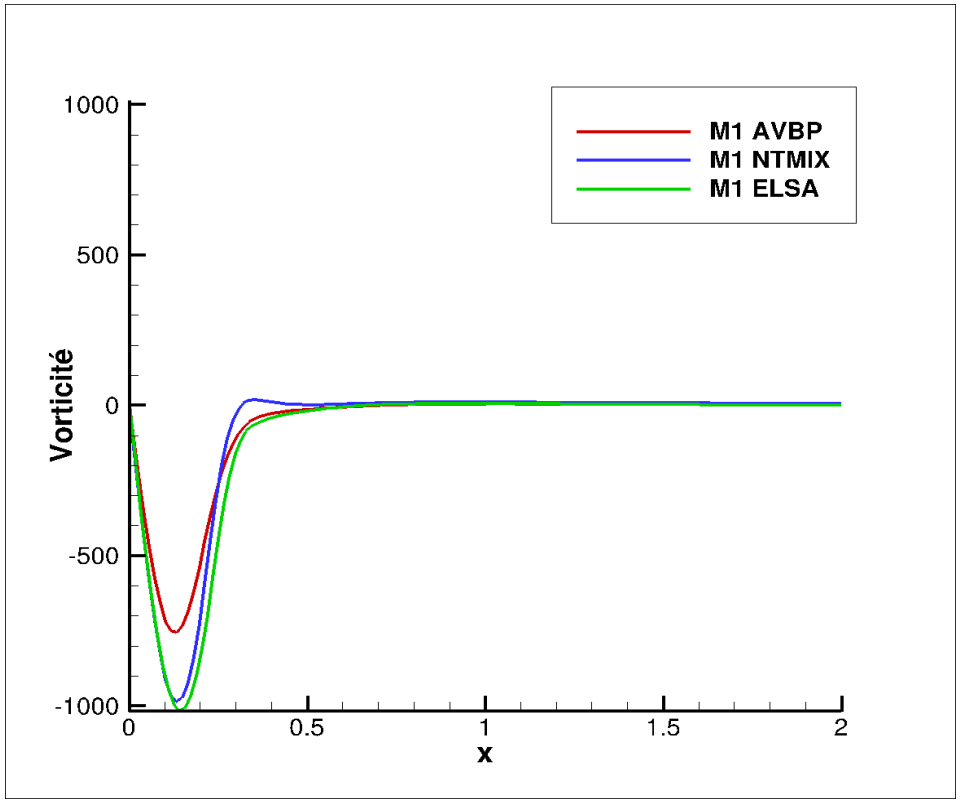




Comparaison AVBP/NTMIX/elsA sur le maillage type COVO – Vorticité

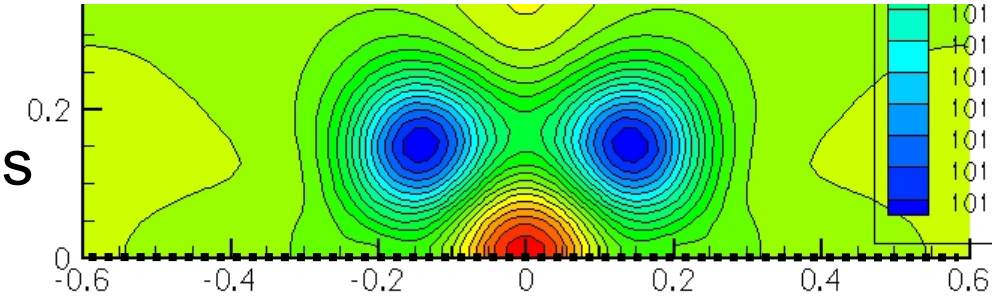
t=160ms
y=0.m

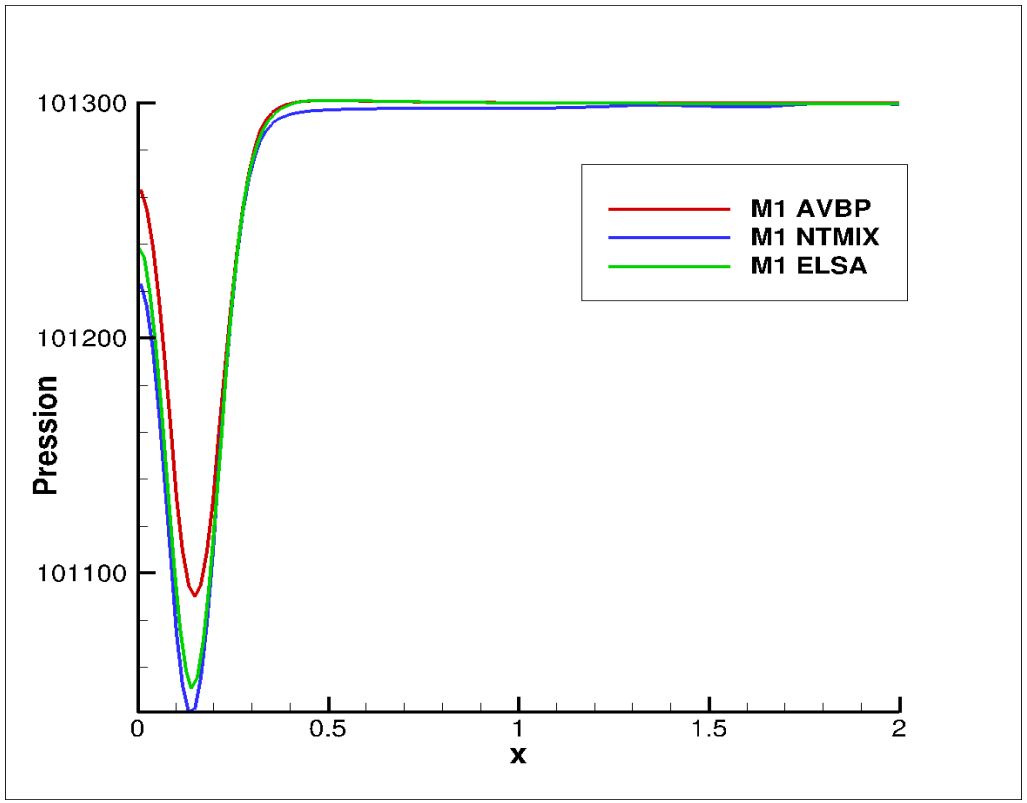




Comparaison AVBP/NTMIX/elsA sur le maillage type COVO – Pression

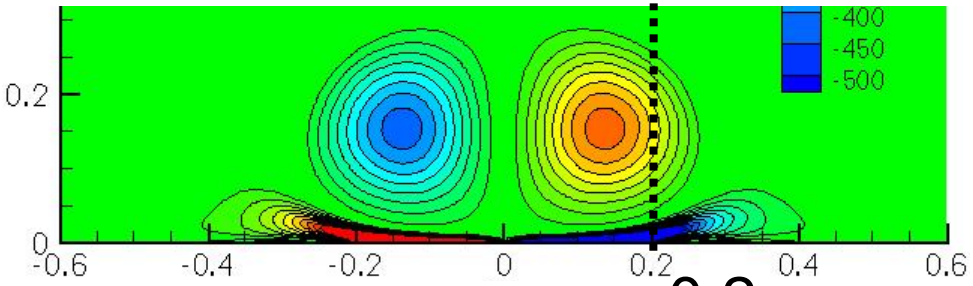
t=160ms
y=0.m



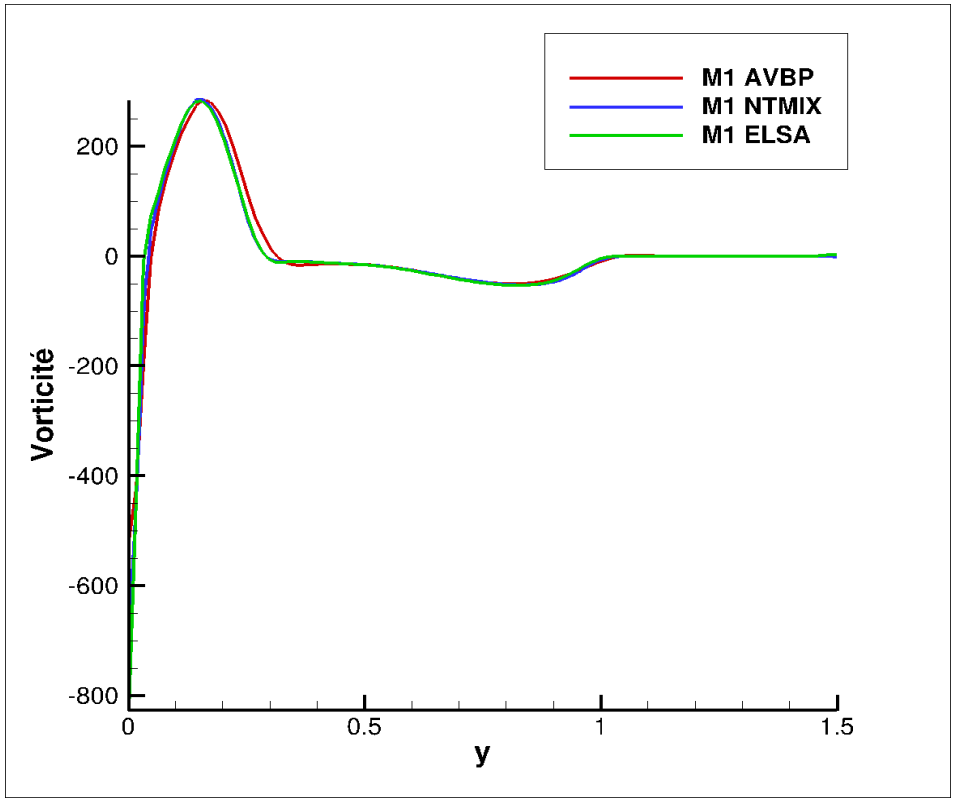


Comparaison AVBP/NTMIX/elsA sur le maillage type COVO – Vorticité

t=160ms

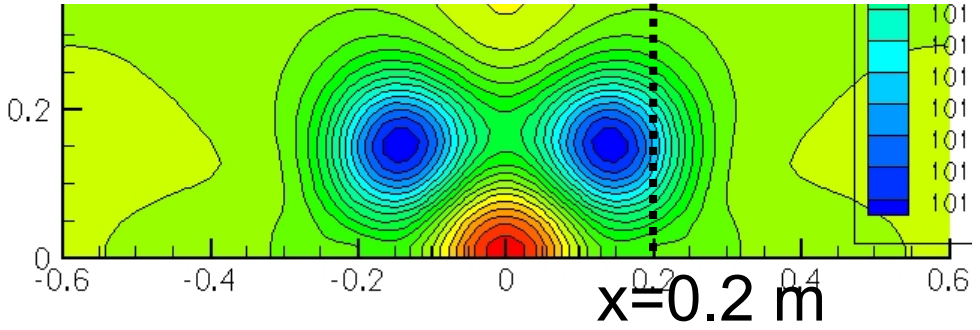


x=0.2 m



Comparaison AVBP/NTMIX/elsA sur le maillage type COVO – Pression

t=160ms



x=0.2 m