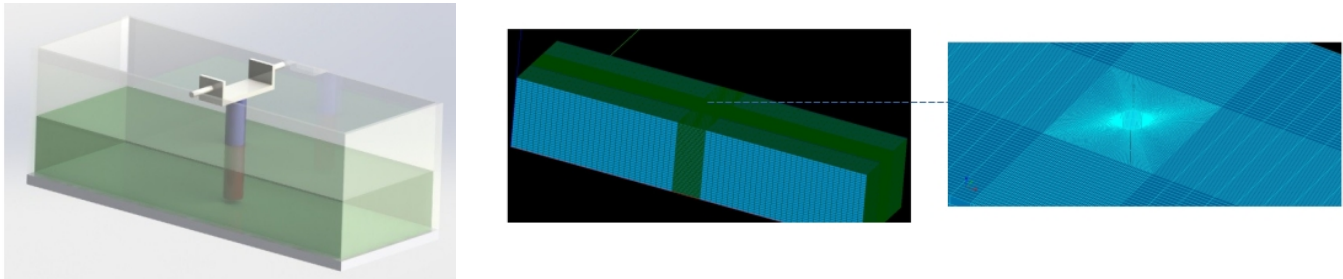


For memory my goal is to simulate (velocity and pressure) of a cylinder (diameter 4 cm) which is immersed in the center of a square canal : 0.5 m width 0.4 height 2m length



Firstable about the definition of reference values :

-Their goal is to predict the tubulence initials values through the knowledge of U_{ref} and al_{max} with the following formula : $k = 1.5(0.02 u_{ref})^2$ and $w = k^{(0.5)} \frac{1}{al_{max}}$. I choose $u_{ref} = u_{inlet} = 1.6 \text{ m/s}$ (equal to inlet velocity boundary condition) and dor al_{max} i wondering if i should choose a value depending on the canal size ($al_{max} \approx volume^{\frac{1}{3}}$) or depending on the obstacle size $al_{max} \approx diameter$

Secondly i have chosen the EBRSM turbulence model for accuracy reasons an tha bility to compute untill walls without wall laws

Concerning volume condition initialisation i set all cells velocity equal to 0, but sould i have to define a group of cells corresponding to the inlet boundary face and set the here the velocity to inlet velocity 1.6 m/s

About the numerical parameters i have chosen an iterative handling of non orthogonalities for accuracy, Neumann for pressure gradient boundary, and ignore relaxation of pressure by setting it to one.

To accelerate computation i have choosen a solver precision of $1e^{-05}$, let the solver choice to automatic (cause i don't know how to choose a model) , put the scheme at upwind for pressure and centered for velocity and the others terms

at least for the time stepping if have calculate the current and fourrier numbers for my refined meshes :

Cells size	current	fourrier
10	$dt = \frac{5 \cdot X_{cell}}{U_{\infty}} = 0,03$	$v \frac{dt}{dx^2} = 10^{-4}$
0.0125	$dt = \frac{5 \cdot X_{cell}}{U_{\infty}} = 4 \cdot 10^{-5}$	

I chose 0.03 and for the total time (100. 1.25=125 secondes)

But when i visualize my results on paraview i don't observe a sub critiq regim as it should appear with a 6400 reynolds number

I think that i have badly configured some parameters