

Turbulence Review

Your Name

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Definition 1. *Equation de Navier-Stokes*

$$\frac{\partial \rho}{\partial t} + \vec{\nabla} \cdot (\rho \vec{\nabla}) = 0 \quad \text{Equation de continuité} \quad (1)$$

$$\frac{\partial(\rho \vec{V})}{\partial t} + \vec{\nabla} \cdot (\rho \vec{V} \vec{V}) = \vec{\nabla} \cdot \mathbf{P} + \rho \vec{g} \quad (2)$$

Definition 2. *Kolmogorov microscales Kolmogorov microscales are the smallest scales in turbulent flow. They are defined by*

$$\eta = \left(\frac{\nu^3}{\varepsilon} \right)^{1/4} \quad \text{length scale} \quad (3)$$

$$\tau_\eta = \sqrt{\frac{\nu}{\varepsilon}} \quad \text{time scale} \quad (4)$$

$$u_\eta = (\nu \varepsilon)^{1/4} \quad \text{velocity scale} \quad (5)$$

where ε is the average rate of dissipation of turbulence kinetic energy per unit mass and ν is the kinematic viscosity of the fluid

References