Fluid Dynamics

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1 Physical Properties of Fluids

Definition 1.1. *Martial derivatives [1]:*

$$\frac{D}{Dt} = \frac{\partial}{\partial t} + \boldsymbol{u} \cdot \nabla = \frac{\partial}{\partial t} + [u_1, u_2, \ldots, u_n] \begin{bmatrix} \frac{\partial}{\partial x_1} \\ \frac{\partial}{\partial x_2} \\ \vdots \\ \frac{\partial}{\partial x_n} \end{bmatrix} = \frac{\partial}{\partial t} + \sum_{i=1}^{n} u_i \frac{\partial}{\partial x_i} \tag{1.1}$$

Assumption 1.1. *Volumn of deformed fluid under any force = C*

References

[1] George Keith Batchelor. *An introduction to fluid dynamics*. Cambridge university press, 2000. ISBN: 1-139-64346-0.