CFD 101

Elements of solvation!

1.

Physics equation

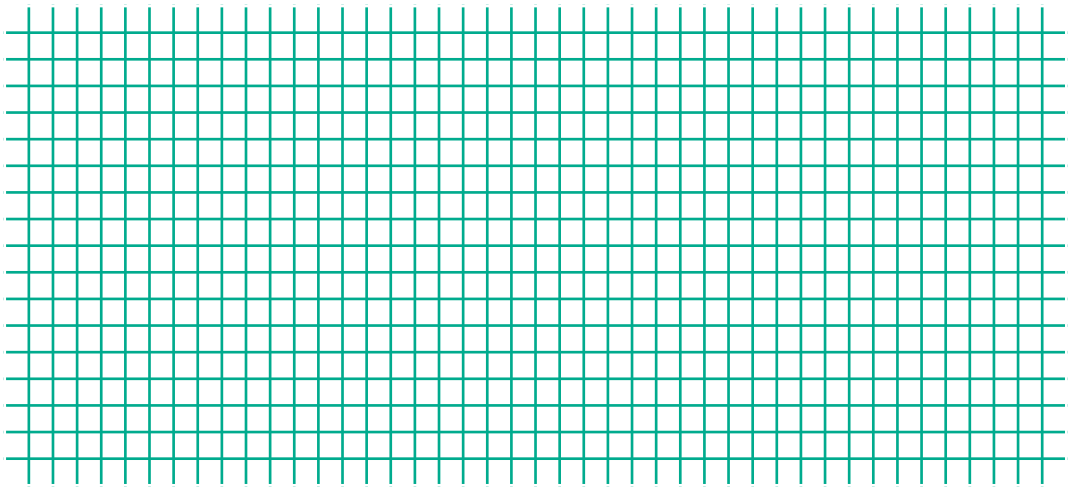
Describing the phenomenon we'd like to isolate. Usually intractable as-is, we make hypothesis on the fluid properties to limit the complexity

$$\rho\left(\frac{\partial \mathbf{u}}{\partial t} + \mathbf{u}\cdot\nabla\mathbf{u}\right) = -\nabla p + \nabla\cdot\mathbf{T}_{\mathrm{D}} + \mathbf{f}$$

2.

Discretization

Over a usually unstructured mesh, constructed by exploiting from remarkable symmetries of the system, strong hypothesis, and non-linear transforms



3.

Method

For solving the equation

* **Finite Difference Method (FDM)**
* **Finite Volume Method (FVM)**
* **Finite Element Method (FEM)**
* **Lattice Boltzmann Method (LBM)**

...

3

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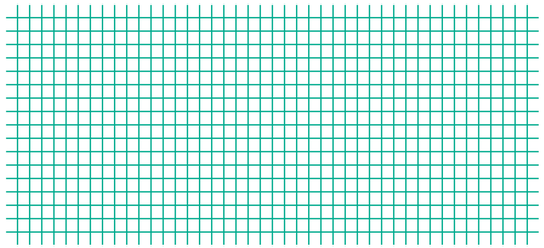

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A Simple Idea

Known Limitations