

Governing equations

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graph TD; GE[Governing equations] --> HE[Heat equation]; GE --> ME[Momentum equation]; GE --> CE[Continuity equation]; ME --> EE[Euler equation]; ME --> NSE[Navier-Stokes equation]; ME --> CAE[Cauchy equation];
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Heat equation

$$\nabla \cdot (\rho c_p \mathbf{u} T) + \nabla \cdot (-\kappa \nabla T) = 0$$

Momentum equation

Continuity equation

$$\nabla \cdot \mathbf{u} = 0$$

Euler equation

$$\nabla \cdot (\rho \mathbf{u} \otimes \mathbf{u}) = -\nabla \cdot (p \mathbf{I})$$

Navier-Stokes equation

$$\nabla \cdot (\rho \mathbf{u} \otimes \mathbf{u}) - \mu \nabla \cdot \nabla \mathbf{u} = -\nabla \cdot (p \mathbf{I})$$

Cauchy equation

$$\nabla \cdot (\rho \mathbf{u} \otimes \mathbf{u}) = -\nabla \cdot (p \mathbf{I}) + \nabla \cdot \boldsymbol{\tau}$$