

$$\begin{array}{l} \text{?}\\ \text{?}\\ \partial_t U + \nabla \cdot \vec{F}^c - \nabla \cdot \vec{F}^v = Q in \Omega, t > 0, \end{array}$$

$$\begin{array}{l} (1) \quad U \\ \vec{F}^c \\ \vec{F}^v \\ Q \\ \rho \\ \rho u_1 \\ \rho u_2 \\ \rho u_3 \\ \rho c_P T \\ \vec{F}^c = \\ \rho \dot{u}_i \\ \rho u_i u_1 + \\ P \delta_{i1} \\ \rho u_i u_2 + \\ P \delta_{i2} \\ \rho u_i u_3 + \\ P \delta_{i3} \\ \rho u_i c_P T, \vec{F}_i^v = \\ T_{i1} \\ T_{i2} \\ T_{i3} \\ \kappa \nabla T. \\ \text{?}\\ \text{?} \end{array}$$

$$\begin{array}{l} \vec{v} = \\ (u_1,u_2,u_3) \\ \rho \\ P \\ \tau_{ij} = \\ \mu_{tot}(\partial_j v_i + \\ \partial_i v_j - \\ \frac{2}{3} \delta_{ij} \nabla \cdot \\ \vec{v}) \\ \mu_{tot} \\ \mu_{dyn} \\ \mu_{tur} \\ c_P \\ T \\ k \\ \text{?}\\ \dot{\rho} = \\ p_0/RT \\ R \\ p_0 \\ \text{?}\\ \dot{V} = \\ \{p,\vec{v},T\} \\ \Gamma = \\ \frac{1}{\beta^2} 000 \rho T \\ \frac{u}{\beta^2} \rho 00 \rho T \\ \frac{v}{\beta^2} 0 \rho 0 \rho T \\ \frac{w}{\beta^2} 00 \rho \rho T \\ \frac{c_P T}{\beta^2} 000 \rho c_p + \\ \rho T c_P T \end{array}$$

$$\begin{array}{l} \Gamma \partial_t V + \nabla \cdot \vec{F}^c - \nabla \cdot \vec{F}^v = Q in \Omega, t > 0. \\ (2) \end{array}$$

$$\begin{array}{l} \text{?}\\ \text{?}\\ \text{?}\\ \text{?}\\ \text{?}\\ \Omega \\ \int_{\Omega} \Gamma \frac{\partial V}{\partial t} d\Omega + \int_{\Omega} \nabla (\vec{F}^c - \vec{F}^v) d\Omega = \int_{\Omega} Q d\Omega, \end{array}$$

$$\begin{array}{l} (3) \quad \int_{\Omega} \Gamma \frac{\partial V}{\partial t} d\Omega = -R(V). \end{array}$$

$$\begin{array}{l} (4) \quad R(V) = \\ \sum (F^c - \\ \vec{F}^v) \Delta S + \\ Q |\Omega| \\ \vec{F}^c \\ \vec{F}^v \\ \Delta S \\ |\Omega| \\ f \\ \text{?}\\ F^c \\ F^c_{ij} = \left(\frac{\vec{F}^c_i + \vec{F}^c_j}{2} \right) . \vec{n}_{ij} - \frac{1}{2} \Gamma P |\Lambda_{\Gamma}| P^{-1} (V_i - V_j). \end{array}$$

$$\begin{array}{l} (5) \quad \vec{v} \end{array}$$