

## 3D Steady-State Problems

PDEs:

$$\begin{aligned} F_1(x, y, z, U_1, U_{1x}, U_{1y}, U_{1z}, U_{1xx}, U_{1yy}, U_{1zz}, U_{1xy}, U_{1xz}, U_{1yz}, U_2, \dots) &= 0 \\ &\cdot &= \cdot \\ &\cdot &= \cdot \\ F_N(x, y, z, U_1, U_{1x}, U_{1y}, U_{1z}, U_{1xx}, U_{1yy}, U_{1zz}, U_{1xy}, U_{1xz}, U_{1yz}, U_2, \dots) &= 0 \end{aligned}$$

Boundary conditions:

$$\begin{aligned} G_1(x, y, z, U_1, U_{1x}, U_{1y}, U_{1z}, \dots, U_N, U_{Nx}, U_{Ny}, U_{Nz}) &= 0 \\ &\cdot &= \cdot \\ &\cdot &= \cdot \\ G_N(x, y, z, U_1, U_{1x}, U_{1y}, U_{1z}, \dots, U_N, U_{Nx}, U_{Ny}, U_{Nz}) &= 0 \end{aligned}$$

(Periodic and “no” boundary conditions are also permitted.)