Spatiotemporal Modeling and Simulation

05 :: Conservation laws and control volumes

**Topic**
Conservation laws and control volumes

**Program**
Euler vs. Lagrange
Transport theorem for integral quantities
Infinitesimal control volumes and PDEs
Example: the diffusion equation
Self-test questions

**Learning goals**
Know the Eulerian and Lagrangian description.
Know material derivatives by heart.
Be able to define intensive and extensive properties.
Know the Reynolds transport theorem.
Be able to apply Reynolds and conservation laws to derive PDEs.