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.