

Einladung zum Vortrag

Predictability and Uncertainty in Large-Scale Simulations

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In many simulations in fluid and solid mechanics but also in molecular simulations there are many sources of uncertainty, e.g. associated with boundary conditions, material properties or equations of state and constitutive laws. These uncertainties may contribute to large errors in the simulation, typically much larger than the spatio-temporal discretization errors, leading to erroneous dynamics or performance predictions.

In this talk, we will present several such examples from fluid mechanics but also across various disciplines and subsequently we will discuss different probabilistic and deterministic numerical approaches to quantify the effect of such uncertainties. Such stochastic simulations also serve for a better validation with the experiments but also through sensitivity analysis they can steer the experimental effort to a more effective sets of measurements.

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