SALZBURG MATHEMATICS COLLOQUIUM
Winter 2024/25

Thomas Wick (Leibniz Universität Hannover)
„Space-time goal-oriented a posteriori error control and adaptivity for discretization errors, iteration errors, and incremental POD-based ROM"
October 10, 2024

Abstract:

In this presentation, we discuss recent progress and ongoing open questions in space-time modeling, their space-time Galerkin finite element discretization and numerical solution of coupled problems.

Under the terminology coupled problems, we understand nonstationary, nonlinear, coupled PDE system and variational inequalities (CVIS). First, we have made progress in goal-oriented a posteriori error control and adaptivity with the dual-weighted residual method for incompressible flow (Navier-Stokes equations), fluid-structure interaction, and phase-field fracture.

In the second part, we extend those concepts to space-time goal-oriented model order reduction with incremental proper orthogonal decomposition with application to porous media problems, as for instance benchmarks such as Mandel's problem and a spatially three-dimensional footing problem.

Thursday, **15:00-15:45**
Hörsaal 414, 1. Stock