

Austrian Numerical Analysis Day 2026

A Space-Time Finite Element Method for the Stokes System on simplicial meshes

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In this talk, we consider a space-time finite element method for the time-dependent Stokes system. While classical approaches rely on time-stepping schemes, we propose a fully space-time variational formulation in the Bochner setting. We first study the formulation on tensor-product space-time meshes and then extend it to completely unstructured meshes, allowing for a unified treatment of spatial and temporal discretization. Numerical experiments on arbitrary space-time meshes illustrate the flexibility and effectiveness of the proposed approach.