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

Tobias Kaltenbacher[1] Olaf Steinbach[2]

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.

[1]Graz University of Technology, Institute of Applied Mathematics, Graz, Austria
tobias.kaltenbacher@tugraz.at

[2]Graz University of Technology, Institute of Applied Mathematics, Graz, Austria
o.steinbach@tugraz.at