A Space-Time Tensor-Product Finite Element Method for the Stokes System

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In this talk, we consider the time-dependent Stokes system in a space-time setting. While the stationary Stokes system yields a symmetric saddle point system, we demonstrate that in a space-time setting this is not the case. However, one can still achieve a system with off diagonal blocks being adjoint to one another by considering the velocity as well as the pressure in anisotropic Sobolev spaces. The presentation will comprise theoretical considerations as well as numerical results. The occurring finite element matrices of the anisotropic setting are realized using a modified Hilbert transform.

References:

[1] https://epub.oeaw.ac.at/?arp=0x003b6473

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