NEXT-GENERATION NUMERICAL METHODS FOR COUPLED MULTIPHYSICS PROBLEMS

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MINISYMPOSIUM

The proposed minisymposium aims to bring together experts with diverse backgrounds in the construction and analysis of novel discretization techniques for multiphysics models. One example is the intricate interplay between fluid and poroelastic structures arising in a vast diversity of applications in biomedicine and engineering. Our session focuses on the rigorous analysis of solvability and stability of saddle-point and nonlinear problems, a priori and a posteriori error estimation, as well on the design of robust solvers. The session also provides a platform for contributions that delve into the application of cutting-edge methodologies (including computational approaches leveraging on neural networks and learning algorithms to accelerate and generalize established methods) in the solution of coupled models arising in, e.g., brain tissue dynamics, blood and arterial wall couplings, cardiac electromechanics, geophysical flows, filter design, and other types of fluid-poromechanical interaction multiphysics problems.