

ADAPTIVE HIGH-ORDER METHODS FOR PDE APPROXIMATION: A YOUNG RESEARCHERS' MINISYMPOSIUM

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ABSTRACT

Adaptive high-order methods provide a powerful framework for the accurate and efficient numerical approximation of partial differential equations and associated eigenvalue problems, particularly in the presence of singularities, localized features, complex geometries, or multiple spatial scales. This minisymposium aims to bring together young researchers working on theoretical, computational, and practical aspects of adaptive numerical methods across a broad range of approximation frameworks, including finite element methods, space-time approaches, and other high-order techniques. Particular emphasis will be placed on a posteriori error estimation, reliability and efficiency analysis, convergence and optimality of adaptive algorithms, and mesh and polynomial degree refinement strategies. By presenting complementary approaches and recent developments, the minisymposium seeks to promote scientific exchange among early-career researchers, strengthen existing scientific connections, and foster new collaborations.

SPEAKERS

1. Tim Van Beeck (University of Göttingen, Germany): An embedded Trefftz DG approach for adaptive least-squares methods
2. Nis-Erik Bohne (University of Zurich, Switzerland): Adaptivity for high-order Crouzeix-Raviart FEM

3. Maximilian Brodbeck (Universität Stuttgart, Germany): Higher order Least-Squares based Error Estimates for Nonlinear Problems: On a Unified Framework and its Application to Poro-Elasticity
4. Tugay Dağlı (Chemnitz University of Technology, Faculty of Mathematics, Germany): Weakly symmetric mixed finite elements for the Stokes problem: a priori and a posteriori error analysis under minimal regularity
5. Dario Ferloni (University of Twente, Netherlands): Optimal complexity of adaptive linearized FEM for nonlinear PDEs driven by non-residual estimators
6. Paula Hilbert (TU Wien, Austria): Optimal multigrid solver for the integral fractional Laplacian on locally refined meshes
7. Zakaria Kassali (Chemnitz University of Technology, Faculty of Mathematics, Germany): Adaptive Least-Squares FEM for Interface Eigenvalue Problem.
8. René Köhle (Eindhoven University of Technology, Netherlands): An adaptive algorithm for an optimal transport problem
9. Harald Monsuur (University of Twente, Netherlands): An ultra weak space-time method for the wave equation
10. Karen Petersen (University of Bonn, Germany): A posteriori error estimates for the mixed linear elasticity eigenvalue problem
11. Lukas Renelt (Inria Paris, France): Optimal AFEM including data oscillations arising from nonlinear numerical fluxes for degree $p > 1$
12. Celina Teke (University of Bonn, Germany): The virtual method for elasticity
13. Aditi Tomar (TU Wien, Austria)
14. Benjamin Zurich (Inria Paris, France): Contraction of an iteration dependent dual residual norm error in the context of adaptive methods for strongly monotone elliptic PDEs