

HIGH-ORDER SPACE-TIME METHODS

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ABSTRACT

Evolutionary Partial Differential Equations (PDEs) are of primary relevance: they arise pervasively in nature and, consequently, they are present in a wide range of problems in engineering and applied physics. The numerical approximation of their solutions is a challenging task that has always attracted interest within the scientific community. This minisymposium is devoted to novel and advanced high-order space–time methods for computing accurate and efficient numerical approximations of the solutions of evolutionary PDEs. Its main goal is to bring together experts in numerical analysis from different international research groups to discuss the most recent advances and the open challenges. Topics of interest include, but are not limited to, conforming discretizations, least-squares formulations, *hp*-convergence, a priori and a posteriori error estimates, stability, structure-preserving methods, optimal control, and isogeometric discretizations, with applications to parabolic, hyperbolic, and dispersive problems.

SPEAKERS

1. Matteo Ferrari (University of Pavia): Stability of space–time discretizations via a matrix-based analysis.
2. Gregor Gantner (University of Twente): Aubin–Nitsche-type estimates for space–time FOSLS for parabolic PDEs.
3. Michael Karkulik (Universidad Técnica Federico Santa María): Space–time finite elements for the exact control of the wave equation.

4. Giancarlo Sangalli (University of Pavia): Space–time with isogeometric analysis.
5. Christoph Schwab (ETH Zurich): Exponential Convergence of hp -time discretizations of wave equations in HUM.
6. Olaf Steinbach (TU Graz): Higher-order space–time discretizations for parabolic problems.
7. Zuodong Wang (Eastern Institute of Technology, Ningbo): High-order space-time structure-preserving methods for quasi-linear parabolic problems.
8. Marco Zank (University of Vienna): Space-time methods for the linear time-dependent Schrödinger equation.