

Space-time methods for evolutionary PDEs

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Short Description

This mini-symposium is about modern space-time discretization methods such as finite and boundary elements for time-dependent initial-boundary value problems of parabolic and hyperbolic type. Space-time methods are characterized by a uniform view on space and time, meaning the time direction is treated as an additional spatial coordinate. Compared to classical timestepping schemes, simultaneous space-time methods are much better suited for a massively parallel implementation, allow for local refinements in space and time, and produce numerical approximations from the employed trial spaces that are quasi-optimal. Recent years have seen very active research on various space-time discretization techniques. We witness a growing mathematical understanding of space-time methods and the application of these methods to a variety of PDEs. Topics that will be discussed are stable formulations, error estimates, adaptivity in space and time, efficient solution algorithms, parallelization, and applications in science and engineering.