

TOPIC 11 - PARALLEL NUMERICAL METHODS AND APPLICATIONS

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DESCRIPTION

The need for high-performance computations is driven by the need for large-scale simulations and data analysis in science and engineering, finance, life sciences, etc. This demand requires to design highly scalable numerical methods and algorithms that are able to efficiently exploit modern computer architectures. The scalability of these algorithms and methods and their suitability to efficiently utilize the available high-performance, but in general heterogeneous, computer resources, is a key point to improve the performance of Computational Science and Engineering applications.

This conference topic aims at providing a forum for presenting and discussing recent developments in parallel numerical algorithms and their implementation on current parallel architectures, including many-core and hybrid architectures. We encourage submissions that address algorithmic design, implementation details, performance analysis, as well as integration of parallel numerical methods in large-scale science and engineering applications.

Focus

The focus is on, but not limited to, the following topics:

- Numerical linear algebra for dense and sparse matrices
- Partial/ordinary and differential algebraic equations
- Optimization and non-linear problems
- High-dimensional problems and reduction methods
- Numerical methods for large-scale data analysis
- Uncertainty quantification
- Applications of numerical algorithms in science and engineering

