

HPC aspects of domain decomposition and other numerical methods

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Abstract

The almost exponential growth in computing power of the largest supercomputers has been maintained for the last decade mainly by increasing concurrency at different hardware levels, especially increasing core counts of CPUs and incorporating accelerators, such as GPUs. These hardware developments pose new challenges to numerical algorithms and their massively parallel implementations.

In domain decomposition methods, for example, one of the main issues we are facing is solving coarse problems in a scalable way to exploit the mathematical scalability of the algorithms. Numerical methods tailored to GPU accelerators are also of major interest.

The minisymposium brings together researchers working on parallel implementations of hybrid and multilevel domain decomposition methods for symmetric and nonsymmetric problems, and on GPU acceleration of numerical methods. An emphasis is put on high-performance computing (HPC) implementations of the methods and applications to large-scale problems.

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