

A tutorial on elliptic PDE solvers and their parallelization

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Abstrak

This compact yet thorough tutorial is the perfect introduction to the basic concepts of solving partial differential equations (PDEs) using parallel numerical methods. In just eight short chapters, the authors provide readers with enough basic knowledge of PDEs, discretization methods, solution techniques, parallel computers, parallel programming, and the run-time behavior of parallel algorithms to allow them to understand, develop, and implement parallel PDE solvers. Examples throughout the book are intentionally kept simple so that the parallelization strategies are not dominated by technical details.

A Tutorial on Elliptic PDE Solvers and Their Parallelization is a valuable aid for learning about the possible errors and bottlenecks in parallel computing. One of the highlights of the tutorial is that the course material can run on a laptop, not just on a parallel computer or cluster of PCs, thus allowing readers to experience their first successes in parallel computing in a relatively short amount of time.