

The sourcebook of parallel computing

Dongarra, Foster

ISBN: 9781558608719

Table of contents

I. Parallelism

1. Introduction
2. Parallel Compute Architectures
3. Parallel Programming Considerations

II. Applications

4. General Application Issues
5. Parallel Computing in CFD
6. Parallel Computing in Environment and Energy
7. Parallel Computational Chemistry
8. Application Overviews

III. Software technologies

9. Software Technologies
10. Message Passing and Threads
11. Parallel I/O
12. Languages and Compilers
13. Parallel Object-Oriented Libraries
14. Problem-Solving Environments
15. Tools for Performance Tuning and Debugging
16. The 2-D Poisson Problem

IV. Enabling Technologies and Algorithms

17. Reusable Software and Algorithms
18. Graph Partitioning for Scientific Simulations
19. Mesh Generation
20. Templates and Numerical Linear Algebra
21. Software for the Scalable Solutions of PDEs
22. Parallel Continuous Optimization
23. Path Following in Scientific Computing

24. Automatic Differentiation

V. Conclusion

25. Wrap-up and Features