










4-Day-Course — ZIH, TU Dresden — 1st day

Message Passing Interface (MPI-1, part 1)

- 8:30 Registration
- 9:00 Introduction [1] (talk) 
- 9:10 Parallel Architectures and Programming Models [2] (talk) 
- 10:10 Coffee
- 10:25 MPI-1 – Introduction to the Message Passing Interface [3+3a] (talk) 
- 10:25 Chap. 1 MPI Overview (talk) 
- 10:45 Chap. 2 MPI Process model (talk+practical) 
- 12:00 Lunch
- 13:00 Chap. 3 Messages and Point-to-Point Communication (talk+practical) 
- 14:15 Coffee
- 14:30 Chap. 4 Non-Blocking Communication (talk+practical) 
- 15:45 Introduction and First Experience with VAMPIR [17a] (talk+practical) 
- 16:15 Coffee
- 16:30 Chap. 5 Derived Datatypes (talk+practical) 
- 17:30 End
















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4-Day-Course — ZIH, TU Dresden — 2nd day

Message Passing Interface (MPI-1, part 2) and OpenMP

- 8:30 Access to the federal high-performance computing-centers [9] (talk)   
- and Computing Resources at ZIH, TU Dresden [9a] (talk)
- 9:00 Chap. 6 Virtual Topologies [3, continued] (talk+practical) 
- 10:10 Coffee
- 10:25 Chap. 7 Collective Communication (talk+practical) 
- 11:00 Coffee
- 11:15 Chap. 8 Other MPI-1 features (talk) 
- 11:40 Heat conduction program, a parallelization example with MPI [6] (talk)  
- 12:00 Lunch
- 13:00 OpenMP – Overview and execution model [7+7a] (talk+practical) 
- 14:00 Coffee
- 14:15 OpenMP – Work sharing directives (talk+practical) 
- 15:15 OpenMP – Data environment (talk+practical) 
- 16:00 Coffee
- 16:15 OpenMP – Summary and Pitfalls (talk) 
- 16:45 OpenMP – Heat example (practical) 
- 17:30 End



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4-Day-Course — ZIH, TU Dresden — 3rd day

MPI-2 and PETSc

- 8:30 **Parallelization of Explicit and Implicit Solvers** [38a] (talk)
- 9:45 **Coffee**
- 10:00 **MPI-2 overview** [10] (talk)
- 10:20 **MPI-2 one-sided communication** [12] (talk)
- 11:00 **Parallel file I/O (basics)** [11] (talk+practical)
- 12:00 **Lunch**
- 13:00 **Parallel file I/O (fileviews)** (talk+practical)
- 14:00 **Parallel file I/O (access methods)** (talk)
- 14:30 **Coffee**
- 14:45 **Parallel programming models on hybrid systems / MPI+OpenMP** [23] (talk)
- 15:45 **Coffee**
- 16:00 **PETSc Tutorial** [41] (talk)
- 16:45 **Laplace-Example with PETSc** [42a+c] (talk+practical)
- 17:30 **End**



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H L R I S

1st day

4-Day-Course — ZIH, TU Dresden — 4th day

Tools for Parallel Programming

- 8:30 **Parallel Debugging** [5] (talk+practical)
- 9:45 **Marmot** [5a] (talk+practical)
- 10:15 **Coffee**
- 10:30 **Verifying an OpenMP Parallelization with the Intel Thread Checker** [8a] (talk)
- 12:00 **Lunch**
- 13:00 **Parallel performance analysis and profiling, an overview** [16] (talk)
- 14:00 **Performance Analysis with VAMPIR** [17b] (talk+practical)
- 15:00 **Coffee**
- 15:15 **Performance Tuning and OpenMP** [22] (talk+practical)
- 16:30 **End**



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