







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

Message Passing Interface (part 1)












- 8:30 **Registration**
- 9:00 **Introduction** [1] (talk)
- 9:15 **Parallel Architectures and Programming Models** [2] (talk) 
- 10:15 **Coffee**
- 10:30 **MPI – Introduction to the Message Passing Interface** [3+3a] (talk)
- 10:45 **Chap. 1 MPI Overview** (talk)     
- 11:15 **Chap. 2 MPI Process model** (talk+practical)
- 12:30 **Lunch**
- 13:30 **Chap. 3 Messages and Point-to-Point Communication** (talk+practical)
- 15:00 **Coffee**
- 15:15 **Chap. 4 Non-Blocking Communication** (talk+practical)
- 16:30 **Coffee**
- 16:45 **Chap. 6 Collective Communication** (talk+practical)
- 17:45 **Chap. 7 Error handling** (talk)
- 18:00 **Chap. 5 The new Fortran module mpi_f08** (talk – only for Fortran participants)
- 18:30 **End**

Introduction Rolf Rabenseifner
[1] Slide 9 (4days)

18:40 **Firat Kebap Haus, Bergstr. 68, (5 Min. Fußweg, auf „Schmidt“ reserviert)**
<http://www.firat-dresden.com/14/ueberuns.html>

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

Message Passing Interface (part 2) and OpenMP

- 8:30 **Access to the federal high-performance computing-centers** [9] (talk)  **9**
- and **Computing Resources at ZIH, TU Dresden** [9a] (talk)
- 9:00 **Parallelization of Explicit and Implicit Solvers** [38a] (talk) 
- 9:45 **Coffee**
- 10:00 **Parallelization of Explicit and Implicit Solvers** [38a] (talk, continued)  **5-9**
- 10:30 **Chap. 8 Groups & Communicators, Environment Management** (talk / no prac.)
- 11:15 **Short Break**
- 11:30 **OpenMP – Overview and execution model** [7+7a] (talk+practical 15min) 
- 12:30 **Lunch**
- 13:30 **OpenMP – Work sharing directives** (talk+practical 25 min) 
- 14:30 **OpenMP – Data environment** (talk+practical 10min) 
- 15:15 **Coffee**
- 15:30 **OpenMP – Summary and Pitfalls** (talk) 
- 16:45 **OpenMP – Heat example** (talk+homework) 
- 17:15 **Coffee**
- 17:30 **OpenMP- 4.0 Extensions** [7a] (talk)  **7A**
 **900**
 **400**
- 18:30 **End**

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[1] Slide 10 (4d)

19:15 **Treffpunkt Reiterstandbild vor der Semperoper – Führung durch die Altstadt**
20:15 **Ende der Stadtführung an der Frauenkirche**

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

Message Passing Interface (part 3)



- 8:30 **Chap. 9-(1) Virtual Topologies** [3, continued] (talk+practical)
- 9:30 **Chap. 9-(2) Neighborhood Collective Communication** (talk / no practical)
- 9:45 **Coffee**
- 10:00 **Chap. 10 One-sided Communication** (talk+practical 35min)
- 11:15 **Coffee**
- 11:30 **Chap. 11-(1) Shared memory one-sided communication** (talk+practical)
- 12:30 **Lunch**
- 13:30 **Chap. 11-(2) Memory models and synchronization rules** (talk / no practical)
- 14:15 **Coffee**
- 14:30 **Chap. 12 Derived Datatypes – Part 1** (talk+practical)
- 15:45 **Coffee**
- 16:00 **Chap. 12 Derived Datatypes – Part 2 – Resizing, long counts...** (talk / no prac.)
- 16:30 **Chap. 14 MPI and Threads** (talk)
- 16:40 **Chap. 15 Probe, Persistent Requests, Cancel** (talk)
- 16:50 **Chap. 16 Process Creation and Management** (talk)
- 17:00 **End**







Introduction Rolf Rabenseifner
[1] Slide 11 (4d)

18:10 Treffpunkt: Mitte vor der Semperoper – (Öffnung: Haus 18:00, Saal 18:30)
19:00-22:00 Semperoper – Wolfgang Amadeus Mozart: Die Zauberflöte

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

MPI (part 4) & Performance Tools for Parallel Programming [P..]



- 8:30 **Parallel programming models on hybrid systems / MPI + OpenMP** [23] (talk)
- 10:00 **Coffee**
- 10:15 **Chap. 13, Block 1 Parallel file I/O (basics)** [3, 11] (talk+practical 10min) 
- 11:15 **Chap. 13, Block 2 Parallel file I/O (fileviews)** (talk+practical 30min)
- 12:00 **Coffee**
- 12:15 **Chap. 13, Block 3 Parallel file I/O (access methods)** (talk)
- 12:45 **Chap. 17 Other MPI features** (talk)
- 13:00 **Chap. 18 Best practice / Summary** (talk)
- 13:30 **Lunch**
- 14:30 **Introduction to Performance Engineering [P1]** (talk) 
- 15:00 **Score-P: A Joint Performance Measurement Run-Time Infrastructure [P2]** (talk+practical) 
- 15:30 **Profile examination with CUBE [P3]** (talk+practical) 
- 16:00 **Coffee**
- 16:15 **Automatic Trace Analysis with Scalasca [P4]** (talk+practical) 
- 17:00 **Interactive Trace Analysis with Vampir [P5]** (talk+practical) 
- 18:30 **End**



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[1] Slide 12 (4d)



5-Day-Course — ZIH, TU Dresden — 5th day

Debugging Tools for Parallel Programming [D..]

08:30 **Typical Bugs in parallel Programs** [D1] (talk) 

09:00 **Verifying an OpenMP Parallelization with the Intel Inspector XE** [D2]  
(talk+practical)

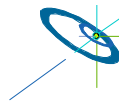
09:40 **Heat Demo Intro** [D3] (talk+practical) 

10:00 **Coffee**

10:15 **MPI Correctness Checking with MUST** [D4] (talk+practical) 

11:15 **Parallel Debugging with Alinea DDT** [D5] (talk+practical) 

12:30 **End**



Introduction
[1] Slide 13 (4d)

Rolf Rabenseifner

5th
day