





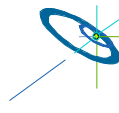


5-Day-Course — ZIH, TU Dresden — 1st day

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 **End**












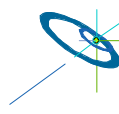
Introduction Rolf Rabenseifner
[1] Slide 9 (4days)

19:00 **Kronentor des Zwingers (Nähe Postplatz) – kleine kostenfreie Führung d. die Altstadt**
20:30 **Augustinern an der Frauenkirche (auf „Schmidt“ reserviert, auf Selbstkostenbasis)**

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) 
- 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) 
- 10:30 **Chap. 8-(1) Groups & Communicators, Environment Management** (talk/no prac.)
- 10:45 **Short Break**
- 11:00 **OpenMP – Overview and execution model** [7+7a] (talk+practical 15min) 
- 12:00 **OpenMP – Work sharing directives** (talk+...) 
- 12:30 **Lunch**
- 13:30 **OpenMP – Work sharing directives** (...+practical 25 min)
- 14:00 **OpenMP – Data environment** (talk+practical 10min) 
- 14:45 **Coffee**
- 15:00 **OpenMP – Summary and Pitfalls** (talk) 
- 16:15 **OpenMP – Heat example** (talk+homework) 
- 16:45 **Coffee**
- 17:00 **OpenMP- 4.0 and 4.5 Extensions** [7a] (talk) 
- 18:00 **End**



Introduction Rolf Rabenseifner
[1] Slide 10 (4d)

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-(1) Derived Datatypes** (talk+practical)
- 15:45 **Coffee**
- 16:00 **Chap. 12-(2) Derived Datatypes – Resizing, long counts...** (talk / no prac.)
- 16:30 **Chap. 14 MPI and Threads** (talk)
- 16:40 **Chap. 15 Probe, Persistent Requests, Cancel** (talk)
- 17:00 **End**

18:10 Treffpunkt: Mitte vor der Semperoper – (Öffnung: Haus 18:00, Saal 18:30)
19:00-21:25 Semperoper – Tosca, von Puccini

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[1] Slide 11 (4d)

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



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

- 8:30 **Chap. 5 The new Fortran module mpi_f08** (talk – only for Fortran participants) 
- 9:00 **Parallel programming models on hybrid systems / MPI + OpenMP** [23] (talk)
- 10:30 **Coffee**
- 10:45 **Chap. 13 Parallel file I/O (fileviews)** (short tour) 
- 11:10 **Chap. 8-(2) Re-numbering on a cluster, ...** (talk/no prac.) 
- 11:30 **Coffee**
- 11:45 **Chap. 9-(3) Optimization through reordering** (talk / no practical)
- 12:15 **Additional MPI practical, e.g., 9-(3)** (practical)
- 12:30 **Lunch**
- 13:30 **Chap. 16 Process Creation and Management** (talk)
- 13:45 **Chap. 17 Other MPI features** (talk)
- 14:00 **Chap. 18 Best practice / Summary** (talk)
- 14:30 **Coffee**
- 14:45 **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) 
- 18:15 **End** 


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

Debugging Tools for Parallel Programming [D..]

08:30 **Introduction to Parallel Debugging** [D1] (talk) 

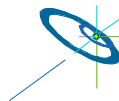
09:15 **Verifying an OpenMP Parallelization with the Intel Inspector XE** [D2]  
(talk+practical)

10:00 **Coffee**

10:15 **MPI Correctness Checking with MUST** [D3] (talk+practical) 

11:15 **Parallel Debugging with Allinea DDT** [D4] (talk+practical) 

12:30 **End**



Introduction
[1] Slide 13 (4d)

Rolf Rabenseifner

5th
day