3-Day-Course — TUHH Hamburg-Harburg — 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 – 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 Coffee
16:00 **Chap. 5 Derived Datatypes** (talk+practical)
17:00 **Parallel debugging** [5] (talk) Shrt
17:50 End

3-Day-Course — TUHH Hamburg-Harburg — 2nd day

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

Repeat MPI-1

8:30 **Access to the federal high-performance computing-centers** [9] (talk) 9 8
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 features** (talk)
11:40 **Heat conduction program, a parallelization example with MPI** [6] (talk) Shrt
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)
17:15 **Verifying an OpenMP parallelization with the Intel Inspector XE** [8a] (talk)
18:15 End

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3-Day-Course — TUHH Hamburg-Harburg — 3rd day

MPI-2, PETSc and Performance Analysis

8:30 **MPI-2 overview** [10] (talk) med
9:15 **One–sided communication**
9:45 + **Practical** [12] (talk+pr.)
10:15 Coffee
10:30 **Parallelization of Explicit and Implicit Solvers** [38a] (talk)

optional
8:30 **MPI-2 overview** [10] (talk) med
8:50 **One–sided comm.** [12] (talk)
9:20 **Parallel file I/O**
- Basics [11] (talk+practical)
10:15 Coffee
10:30 **- Fileviews** (talk+practical)
11:30 **- Access methods** (talk)

12:00 Lunch
13:00 **Parallel programming models on hybrid systems / MPI+OpenMP** [23] (talk) 12
14:00 Coffee
14:15 **PETSc Tutorial** [41] (talk) 221
15:00 **Laplace-Example with PETSc** [42a+c] (talk+practical)
15:45 **Parallel performance analysis and profiling** [16] (talk)
16:30 End

optional
14:15 **MPI-3.0 Overview** [10a] (talk)
15:30 Coffee