

**Day 1**

- 08:30 Begin
- 08:30 Registration
- 09:00 **Introduction**
- 09:15 **Parallel Architectures and Programming Models**
- 10:15 Coffee break
- 10:30 **Message Passing Interface (MPI), Introduction**
- 10:40 Overview
- 11:15 Process Model
- 11:55 Process Model (practical)
- 12:45 Lunch
- 13:45 Messages and Point-to-point Communication
- 14:25 Messages and Point-to-point Communication (practical)
- 15:15 Coffee break
- 15:30 Nonblocking Communication
- 16:15 Nonblocking Communication (practical)
- 16:45 Coffee break
- 17:00 Collective Communication
- 17:45 Collective Communication (practical)
- 18:00 End

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**Day 2**

- 08:30 Begin
  - 08:30 **Shared Memory Parallelization with OpenMP**
  - 08:30 Overview
  - 09:00 Execution model
  - 09:30 Overview and execution model (practical)
  - 09:50 Coffee break
  - 10:05 Worksharing directives (29 slides + 4 skipped slides)
  - 10:55 Worksharing directives (practical)
  - 11:20 Coffee break
  - 11:35 Data environment
  - 11:55 Data environment (practical)
  - 12:05 Heat example
  - 12:25 Heat example (homework)
  - 12:25 Summary
  - 12:45 Lunch
  - 13:45 Pitfalls
  - 14:55 Coffee break
  - 15:10 **Verifying an OpenMP Parallelization with the Intel Inspector XE**
  - 15:45 Verifying an OpenMP Parallelization with the Intel Inspector XE (practical)
  - 16:10 Coffee break
  - 16:25 **OpenMP-4.0 Extensions**
  - 17:10 **Message Passing Interface (MPI) - continued**
  - 17:20 The New Fortran Module mpi\_f08
  - 18:00 End
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## Agenda, ETH Zürich

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### Day 3

- 08:30 Begin
- 08:30 **Parallelization of Explicit and Implicit Solvers**
- 09:45 Coffee break
- 10:00 **Message Passing Interface (MPI) - continued**
- 10:00 Error Handling
- 10:15 Groups & Communicators
- 10:35 Groups & Communicators (practical)
- 11:00 Coffee break
- 11:15 Virtual Topologies
- 11:45 Virtual Topologies (practical)
- 12:15 Short break
- 12:20 Derived Datatypes
- 12:55 Derived Datatypes (practical)
- 13:05 Lunch
- 14:05 Derived Datatypes (practical) (CONTINUED))
- 14:35 **PETSc Tutorial**
- 15:20 Coffee break
- 15:35 **Laplace-Example with MPI and PETSc**
- 15:35 Introduction
- 15:45 Laplace-Example with PETSc
- 16:10 Laplace-Example with PETSc (practical)
- 16:20 Coffee break
- 16:35 One-sided Communication
- 17:20 One-sided Communication (practical)
- 18:00 End

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### Day 4

- 08:30 Begin
  - 08:30 **Message Passing Interface (MPI) - continued**
  - 08:30 Shared Memory One-sided Communication
  - 09:15 Shared Memory One-sided Communication (practical)
  - 09:45 Coffee break
  - 10:00 **Parallel programming models on hybrid systems / MPI + OpenMP**
  - 11:30 Coffee break
  - 11:45 Re-numbering on Clusters, Inter-Communicators, ...
  - 12:15 Re-numbering on Clusters (practical)
  - 12:35 Derived Datatypes - Resizing, long counts, ... (short talk - 1 slide)
  - 12:40 Parallel File I/O (short tour - title + 5 slides)
  - 12:45 MPI and Threads (short tour - title + 1 slides)
  - 12:50 Probe, Persistent Requests, Cancel (short tour - title + 3 slides)
  - 12:55 Process Creation and Management (short tour - title + 3 slides)
  - 13:00 Lunch
  - 14:00 Collective Communication, advanced topics
  - 14:25 Collective Communication, advanced topics (practical)
  - 14:45 Coffee break
  - 15:00 Memory Models and Synchronization Rules
  - 15:40 Memory Models and Synchronization Rules (short practical)
  - 15:55 Coffee break
  - 16:10 Virtual Topologies, Neighborhood-communication
  - 16:20 Virtual Topologies, Neighborhood-communication (2nd+3rd practical)
  - 16:50 Other MPI features (short tour - title + 4[all] slides)
  - 17:00 MPI-Summary
  - 17:05 Summary, Q&A
  - 17:15 End
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