Agenda ETH Zürich

Day 1: 8:45 - 17:00 (18:00)

08:45 Login to ZOOM (and establishing the break-out rooms)
09:00 Welcome by Thomas Wüst, SIS
09:15 Lectures and exercises on MPI (including some breaks)
13:00 Lunch break
14:00 Lectures and exercises on MPI (including some breaks)
17:00 Additional slot for self-studying, further exercises, Q&A, ...
18:00 Final end

Day 2: 8:45 - 17:00 (18:00)

08:45 Login to ZOOM (and establishing the break-out rooms)
09:00 Lectures and exercises on OpenMP (including some breaks)
13:00 Lunch break
14:00 Lectures and exercises on OpenMP (including some breaks)
17:00 Additional slot for self-studying, further exercises, Q&A, ...
17:15 For Fortran participants only:
         Additional lecture + exercises on the mpi_f08 module/interface
18:00 Final end

Day 3: 8:45 - 17:00 (18:00)

08:45 Login to ZOOM (and establishing the break-out rooms)
09:00 Lectures and exercises on intermediate MPI (including some breaks)
13:00 Lunch break
14:00 Lectures and exercises on intermediate MPI (including some breaks)
17:00 Additional slot for self-studying, further exercises, Q&A, ...
18:00 Final end

Day 4: 8:45 - 17:00 (18:00)

08:45 Login to ZOOM (and establishing the break-out rooms)
09:00 Lectures and exercises on advanced MPI (including some breaks)
13:00 Lunch break
14:00 Lectures and exercises on advanced MPI (including some breaks)
17:00 Additional slot for self-studying, further exercises, Q&A, ...
18:00 Final end

Content (preliminary, the numbers refer to MPI course chapters)

Day 1: MPI on beginners' level

1. MPI Overview
2. Process model and language bindings
3. Messages and point-to-point communication
4. Nonblocking communication
6. Collective communication

Day 2: Shared memory parallelization with OpenMP

Shared Memory Parallelization with OpenMP
  Overview
  Execution model
  Worksharing directives
  Data environment
  Heat example (homework)
  Summary
  Pitfalls
  Verifying an OpenMP Parallelization with the Intel Inspector XE
  OpenMP-4.0 Extensions
Message Passing Interface (MPI) - continued:
5. The New Fortran Module mpi_f08

Day 3: MPI on intermediate level

7. Error handling
8. Groups & Communicators, Environment Management
   (1) MPI_Comm_split, intra- & inter-communicators
9. Virtual topologies
   (1) A multi-dimensional process naming scheme
12. Derived datatypes
   (1) transfer any combination of typed data
10. One-sided Communication
(If there is room, we may already look at topics of Day 4)

Day 4: Advanced MPI

11. Shared Memory One-sided Communication
  (1) MPI_Comm_split_type & MPI_Win_allocate_shared
  (2) MPI memory models and synchronization rules
Short tour through
    12.(2) Advanced topics on derived datatypes
    13. Parallel File I/O
    14. MPI and Threads
    15. Probe, Persistent Requests, Cancel
    16. Process Creation and Management
    17. Other MPI features
8.(2) Advanced topics on communicators
9.(2) Neighborhood communication + MPI_BOTTOM
9.(3) Optimization through reordering
Summary