

[ONLINE] Parallel Programming Workshop @ BSC

Tuesday, October 13, 2020 - Thursday, October 22, 2020

Agenda

All times are 14:00 to 17:30 with two breaks of 15'

Tuesday 13/10/2020

1. Introduction to parallel architectures, algorithms design and performance parameters
2. Introduction to the MPI programming model
3. Practical: How to compile and run MPI applications

Wednesday 14/10/2020

1. Introduction to Paraver: tool to analyze and understand performance
2. Practical: Trace generation and trace analysis

Thursday 15/10/2020

1. MPI: Point-to-point communication, collective communication
2. Practical: Simple matrix computations
3. MPI: Blocking and non-blocking communications
4. Practical: matrix computations with non-blocking communication

Friday 16/10/2020

1. MPI: Collectives, Communicators, Topologies
2. Practical: Heat equation example

Monday 19/10/2020

1. OpenMP Fundamentals: the fork-join model (lecture)
2. OpenMP Fundamentals: the fork-join model (hands-on)
3. OpenMP Fundamentals: the data environment (lecture)
4. OpenMP Fundamentals: the data environment (hands-on)

Tuesday 20/10/2020

1. OpenMP Work-sharing: distributing work among threads (lecture)
2. OpenMP Work-sharing: distributing work among threads (hands-on)
3. OpenMP Work-sharing: loop distribution (lecture)
4. OpenMP Work-sharing: loop distribution (hands-on)

Wednesday 21/10/2020

1. OpenMP Tasking model: basics (lecture)
The task construct
The taskwait
2. OpenMP Tasking model: basics (hands-on)
3. OpenMP Tasking model: intermediate (lecture)
4. OpenMP Tasking model: intermediate (hands-on)

Thursday 22/10/2020

1. Hybrid MPI+OpenMP
Standard (threading level, synchronous/asynchronous MPI)
TAMPI
2. Practical: Heat, nbody

End of Course

