AGENDA - Advanced School on HPC Computing with GPU Accelerators

Monday, 20 November 2023 09:30 to Friday, 24 November 2023 17:30

ONLINE EDITION

TEACHERS: Luca Ferraro, Sergio Orlandini, Laura Bellentani, Nitin Shukla, Giorgio Amati, Matteo Turisini, Alessandro Masini, Michael Redenti

Day 1
Morning: 9:30-12:30
- Introduction to modern HPC Accelerated Cluster Architectures
- GPU Architectures
- Leonardo Architecture

Afternoon: 14:30-17:30
- Intro to OpenX offloading (the OpenMP/OpenACC approach)
- Examples/Exercises

Day 2
Morning: 9:30-12:30
- More on OpenX offloading

Afternoon: 14:30-17:30
- Profiling MPI/GPU Applications
- Examples/Exercises

Day 3
Morning: 9:30-12:30
- Introduction to CUDA C/Fortran

Afternoon: 14:30-17:30
- CUDA execution model
- Examples/Exercises
Day 4  
Morning: 9:30-12:30  
  • CUDA Asynchronous operations, streams, multi-GPU  
  • Examples/Exercises  
Afternoon: 14:30-17:30  
  • CUDA memory accesses, shared-memory, Matrix Product Enhanced / Matrix Transpose  
  • Examples/Exercises  

Day 5  
Morning: 9:30-12:30  
  • GPU Computing with SYCL  
  • GPU Computing with KOKKOS  
  • Examples/Exercises  
Afternoon: 14:30-17:30  
  • Accelerating python with GPU  
  • Final Remarks and Conclusions