



Magurele Summer School for Computing in a Rapidly Evolving Society: Parallel Algorithms and Optimizations (smr 4077)

30 Jun - 11 Jul 2025
Programme

A	B	C	D	E	F
Week 1	Monday	Tuesday	Wednesday	Thursday	Friday
09:00 - 09:45	Registration	Thinking in Parallel: Parallel Programming 101 (IG)	Parallel Programming on Shared Memory (IG)	Keynote: HPC Best Practises (AE)	Intro to MLIP (AE)
09:45 - 10:30					
10:30 - 11:00	Coffee Break				
11:00 - 11:45	Intro HPC (IG)	Distributed Parallel Programming using MPI (ID) (MPI code struct, MPI comm, Basic message, MPI Hello, Ping-pong, Sendrecv, Blocking/Non-blocking, Collective)	Parallel Programming on Shared Memory (Lab) (ID) - Parallel PI - Parallel MM (advanced)	GPU Computing (AF) -- CPU Vs GPU, GPU perf. features, programming models, cost Vs flops, cost Vs energy	Basic MLIP (Lab) (AE)
11:45 - 12:30					
12:30 - 14:00	Lunch				
14:00 - 15:30	Intro HPC (Lab) (IG)	Distributed Parallel Programming using MPI (ID/IG/FA) - Parallel PI	HPC Lab - Parallel Hybrid (PI) (ID)	Intro to GPU Computing using OpenACC (Lab) "Hello World!"	Intro to ML (AE)
15:30 - 16:00	Coffee Break				
16:00 - 17:30	Intro HPC (Lab) (IG)	Distributed Parallel Programming using MPI (ID/IG/FA) - Parallel Identity	Hybrid Programming (i.e. usage of a multithreaded library on distributed data) -- Showcase where hybrid make sense (IG)	GPU Computing using OpenACC (Lab) (MM with OpenACC)	Basic ML on GPU (Lab) (AE)
Week 2	Monday	Tuesday	Wednesday	Thursday	Friday
09:00 - 09:45	Computing beyond the single processing and single GPU (FS)	Computing Technology Outlook (key-note - FS)	Parallel Tasking and Parallel/Processing	QC (CIFRA) (key-note)	QC/HPC (SA/RI)
09:45 - 10:30					
10:30 - 11:00	Coffee Break				
11:00 - 11:45	Unlimited GPU Computing on distributed nodes (IG)	ML for HPC (Parallel pytorch) (NT)	HPC/ML Workflows (MC)	QC (SA/RI)	QC/ML (SA/RI)
11:45 - 12:30					
12:30 - 14:00	Lunch Break				
14:00 - 15:30	GPU Computing on Distributed MultiGPU nodes (Labs) (IG/FS)	ML for HPC (Lab) (NT)	ML for HPC (Lab) (MC)	QC (SA/RI)	QC (SA/RI)
15:30 - 16:00	Coffee Break				
16:00 - 17:30	GPU Computing on Distributed MultiGPU nodes (Labs) (IG/FS)	ML for HPC (Lab) (NT)	ML for HPC (Lab) (MC)	QC (SA/RI)	QC (SA/RI)