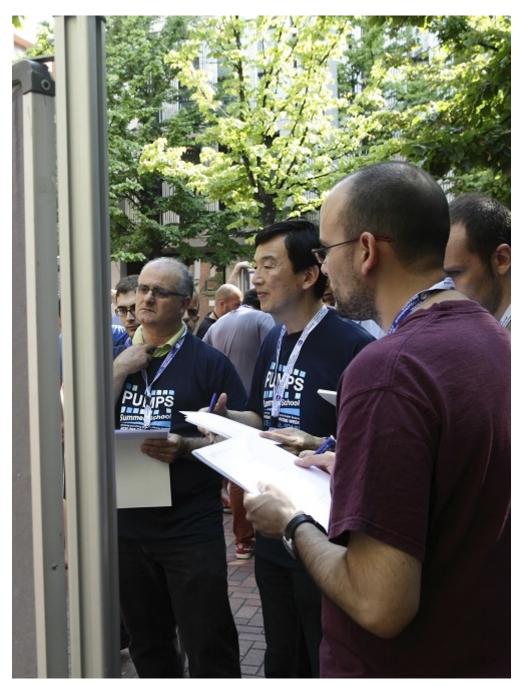


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The PUMPS is aimed at enriching the skills of researchers, graduate students and teachers with cutting-edge technique and hands-on experience in developing applications for many-core processors.



The fifth edition of the Programming and Tuning Massively Parallel Systems summer school (<u>PUMPS</u>) is aimed at enriching the skills of researchers, graduate students and teachers with cutting-edge technique and hands-on experience in developing applications for many-core processors with massively parallel computing

resources like GPU accelerators.

Summer School Co-Directors: **Mateo Valero** (BSC and UPC) and **Wen-mei Hwu** (University of Illinois at Urbana-Champaign)

Organized by: Barcelona Supercomputing Center (BSC) University of Illinois at Urbana-Champaign (<u>University of Illinois</u>) Universitat Politecnica de Catalunya (<u>UPC</u>) HiPEAC Network of Excellence (<u>HiPEAC</u>) PUMPS is part of this year PRACE Advanced Training Centre program

Date: Monday, 7 July, 2014 - 09:00 to Friday, 11 July, 2014 - 18:00

Objectives:

- Instructors Wen-mei Hwu (University of Illinois) and David B. Kirk (NVIDIA), co-authors of <u>"Programming Massively Parallel Processors, A Hands-on Approach</u>", will provide students with knowledge and hands-on experience in developing applications software for many-core processors, such as general purpose graphics processing units (GPUs).
- By the end of the summer school, participants will:
 - Be able to design algorithms that are suitable for accelerators.
 - Understand the most important architectural performance considerations for developing parallel applications.
 - Be exposed to computational thinking skills for accelerating applications in science and engineering.
 - Engage computing accelerators on science and engineering breakthroughs.

Agenda:

• Topics:

The following is a list of some of the topics that will be covered during the course. The updated full program will soon be available

- CUDA Parallel Execution Model
- $\circ~$ CUDA Performance Considerations
- CUDA Algorithmic Optimization Strategies
- Data Locality Issues
- $\circ\,$ Dealing with Sparse and Dynamic data
- Efficiency in Large Data Traversal
- Reducing Output Interference
- Debugging and Profiling CUDA Code
- GMAC Runtime
- Multi-GPU Execution
- Introduction to OmpSs
- OmpSs: Leveraging GPU/CUDA Programming
- Hands-on Labs: CUDA Optimizations and OmpSs Programming

The programme is available here

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