2nd Thematic CERN School of Computing

Sunday, 15 June 2014 - Friday, 20 June 2014

Scientific Programme

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This weeklong intensive training is an advanced dive into software, tools and techniques for exploiting current and next generation computing hardware.</div>
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Core topics include practical use of relevant software methodologies for parallelization, efficient use of compilers, performance optimization, controlled floating point calculations – all coupled with hands-on exercises. The lecture and excercises will go in details into modern and performant C++, parallelism and efficient multi-thread developments. In addition to the core teaching material, a range of supplementary topics is offered, such as select aspects of supercomputing, accelerated processing and others.

Finally, perspectives on cutting edge software and hardware will be presented, along with a vision of projected developments and their possible consequences.

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The thematic CSC 2014 covers five domains

Programming for Concurrency

Data oriented design

Memory programming

Efficient Computing

Acceleration

Modern and

performant C++

Designing for data

Data-intensive applications

Vectorization

Memory Awareness

Overview

Architecture refresher: x86, ARM, Atom, MIC, GPU

Principles of programming for accelerators

Direct, Offload, Symmetric mode, MIC

Expressing parallelism pragmatically

Advanced performance monitoring and tuning

Resource protection and thread safety

Compilers and their strengths/weaknesses

Accurate and efficient Floating Point

Lectures 3

Exercises 3

Lecture 1

Exercise 1

Lecture 1

Exercise 1

Lectures 3

Exercises 4

Lecture 1

Exercises 2