First INFN International School on: "Architectures, tools and methodologies for developing efficient large scale scientific computing applications" ESC09 - Bertinoro (Forlì-Cesena) I 12-16 October 2009

Report of Contributions

Contribution ID: **0**　　　　　　　　　　　　　　　　　　Type: **not specified**

Introduction/Setting the scene for why efficient use of modern architectures is important

Monday 12 October 2009 09:00 (45 minutes)

Presenter: JARP, Sverre (CERN)

Session Classification: Session 1

Contribution ID: **2**   Type: **not specified**

Review of modern CPU architectures (The 7 dimensions of performance)

Monday 12 October 2009 09:50 (45 minutes)

Presenter: JARP, Sverre (CERN)

Session Classification: Session 1

Contribution ID: **3**   Type: **not specified**

Designing Architectures and Frameworks for HEP

Monday 12 October 2009 11:00 (45 minutes)

Presenter: MATO, Pere (CERN)

Session Classification: Session 1

Contribution ID: **4**   Type: **not specified**

Designing Architectures and Frameworks for HEP

Monday 12 October 2009 11:50 (45 minutes)

Presenter: MATO, Pere (CERN)

Session Classification: Session 1

Contribution ID: **5**
Type: **not specified**

Understanding performance tuning

Monday 12 October 2009 14:15 (45 minutes)

Presenter: Mr NOWAK, Andrzej (CERN)

Session Classification: Session 1

Contribution ID: **6** Type: **not specified**

Exercises

Monday 12 October 2009 15:00 (45 minutes)

Presenters: Mr NOWAK, Andrzej (CERN); SALOMONI, Davide (CNAF); JARP, Sverre (CERN)

Session Classification: Session 1

Contribution ID: **7**   Type: **not specified**

Exercises

Monday 12 October 2009 15:45 (45 minutes)

Presenters: SALOMONI, Davide (CNAF); INNOCENTE, Vincenzo (CERN)

Session Classification: Session 1

Contribution ID: **8**   Type: **not specified**

Exercises

Monday 12 October 2009 16:45 (45 minutes)

Presenters: SALOMONI, Davide (CNAF);   Dr MATO, Pere (CERN)

Session Classification: Session 1

Contribution ID: **9**   Type: **not specified**

Evening Lecture: "High throughput data trasmission through network links"

Monday 12 October 2009 19:00 (1 hour)

Presenter: GALLI, Domenico (BO)

Contribution ID: **10**
Type: **not specified**

Basic C++ performance issues

Wednesday 14 October 2009 08:30 (45 minutes)

Presenter: BINET, Sebastien (LAL - IN2P3)

Session Classification: Session 3

Contribution ID: **11**
Type: **not specified**

Basic C++ performance issues

Wednesday 14 October 2009 09:20 (45 minutes)

Presenter: BINET, Sebastien (LAL - IN2P3)

Session Classification: Session 3

Contribution ID: **12**   Type: **not specified**

Software physical design

Tuesday 13 October 2009 14:30 (45 minutes)

Presenter: MATO, Pere (CERN)

Session Classification: Session 2

Contribution ID: **13** Type: **not specified**

Data structures

Tuesday 13 October 2009 10:30 (45 minutes)

Presenter: CALAFIURA, P. (LBNL)

Session Classification: Session 2

Contribution ID: **14** Type: **not specified**

Data structures

Tuesday 13 October 2009 11:15 (45 minutes)

Presenter: CALAFIURA, P. (LBNL)

Session Classification: Session 2

Contribution ID: 15 Type: **not specified**

Real examples / C++ issues

Presenters: MATO, Pere (CERN); BINET, Sebastien (LAL - IN2P3)

Contribution ID: **16**   Type: **not specified**

Exercises

Tuesday 13 October 2009 15:15 (45 minutes)

Presenters: SALOMONI, Davide (CNAF); TUURA, Lassi (Northeastern University); ELMER, Peter (Princeton University)

Session Classification: Session 2

Contribution ID: **17**   Type: **not specified**

Exercises

Tuesday 13 October 2009 16:15 (45 minutes)

Presenters: SALOMONI, Davide (CNAF); CALAFIURA, Paolo (Lawrence Berkeley National Lab); Dr MATO, Pere (CERN)

Session Classification: Session 2

Contribution ID: **18**   Type: **not specified**

Exercises

Tuesday 13 October 2009 17:00 (45 minutes)

Presenters: SALOMONI, Davide (CNAF); CALAFIURA, Paolo (Lawrence Berkeley National Lab); Dr MATO, Pere (CERN)

Session Classification: Session 2

Contribution ID: **19**   Type: **not specified**

Evening Lecture: "Getting it all with C++: Abstraction, Reusability, Performance and Future-Safety"

Tuesday 13 October 2009 19:00 (1 hour)

Presenter: DREPPER, Ulrich (Red Hat)

Contribution ID: **20**
Type: **not specified**

Memory management and use

Tuesday 13 October 2009 08:30 (45 minutes)

Presenter: TUURA, Lassi (Northeastern University)

Session Classification: Session 2

Contribution ID: **21**

Type: **not specified**

Memory management and use

Tuesday 13 October 2009 09:20 (45 minutes)

Presenter: TUURA, Lassi (Northeastern University)

Session Classification: Session 2

Contribution ID: **22**   Type: **not specified**

Compiler Optimization including efficient programming with SIMD (SSE) instructions

Wednesday 14 October 2009 10:10 (45 minutes)

Presenters: Mr NOWAK, Andrzej (CERN); JARP, Sverre (CERN)

Session Classification: Session 3

Contribution ID: **23**
Type: **not specified**

Building the software

Wednesday 14 October 2009 11:15 (45 minutes)

Presenter: ELMER, Peter (Princeton University)

Session Classification: Session 3

Contribution ID: **24**
Type: **not specified**

Building the software

Wednesday 14 October 2009 12:05 (45 minutes)

Presenter: ELMER, Peter (Princeton University)

Session Classification: Session 3

Contribution ID: **25**　　　　　　　　　　　　　　　　　Type: **not specified**

Exercises on Memory Management

Wednesday 14 October 2009 14:30 (45 minutes)

Presenters:　SALOMONI, Davide (CNAF);　TUURA, Lassi (Northeastern University);　ELMER, Peter (Princeton University)

Session Classification:　Session 3

Contribution ID: **26**
Type: **not specified**

Exercises

Wednesday 14 October 2009 15:20 (45 minutes)

Presenters: Dr LAZZARO, Alfio (CERN);   SALOMONI, Davide (CNAF);   Dr BINET, Sebastien (LAL/IN2P3)

Session Classification: Session 3

Contribution ID: **27** Type: **not specified**

TBD

Contribution ID: **28** Type: **not specified**

TBD

Contribution ID: **29**   Type: **not specified**

Introduction to multithreading/multiprocessing methodology and vocabulary

Thursday 15 October 2009 08:30 (45 minutes)

Presenter: INNOCENTE, Vincenzo (CERN)

Session Classification: Session 4

Contribution ID: **30** Type: **not specified**

Introduction to OpenMP

Thursday 15 October 2009 09:20 (45 minutes)

Presenter: LAZZARO, Alfio (CERN)

Session Classification: Session 4

Contribution ID: **31**
Type: **not specified**

Parallel Programming using std::thread

Thursday 15 October 2009 10:10 (45 minutes)

Presenter: INNOCENTE, Vincenzo (CERN)

Session Classification: Session 4

Contribution ID: **32**　　　　　　　　　　　　　　　　Type: **not specified**

Support tools for multithreading

Thursday 15 October 2009 11:15 (45 minutes)

Presenter: Mr NOWAK, Andrzej (CERN)

Session Classification: Session 4

Contribution ID: **33**   Type: **not specified**

Introduction to MPI

Thursday 15 October 2009 12:05 (45 minutes)

Presenter: Dr LAZZARO, Alfio (CERN)

Session Classification: Session 4

Contribution ID: **34**   Type: **not specified**

Parallel Programming exercises using OpenMP and MPI

Thursday 15 October 2009 14:30 (45 minutes)

Presenters: Dr LAZZARO, Alfio (CERN); JARP, Sverre (CERN)

Session Classification: Session 4

Contribution ID: **35**　　　　　　　　　　　　　　　　　　Type: **not specified**

Parallel Programming exercises using OpenMP and MPI

Thursday 15 October 2009 15:15 (45 minutes)

Presenters: LAZZARO, Alfio (MI); INNOCENTE, Vincenzo (CERN)

Session Classification: Session 4

Contribution ID: **36**   Type: **not specified**

Exercises using std::thread

Thursday 15 October 2009 16:15 (45 minutes)

Presenters: SALOMONI, Davide (CNAF); INNOCENTE, Vincenzo (CERN)

Session Classification: Session 4

Contribution ID: **37**   Type: **not specified**

Exercises

Thursday 15 October 2009 17:00 (45 minutes)

Presenters: Mr NOWAK, Andrzej (CERN);   SALOMONI, Davide (CNAF);   Mr JARP, Sverre (CERN)

Session Classification: Session 4

Contribution ID: **38**
Type: **not specified**

Evening Lecture: Multicores, GPUs, FPGAs and custom processors for scientific computing: a delicate tradeoff"

Thursday 15 October 2009 19:00 (1 hour)

Presenter: TRIPICCIONE, Raffaele (FE)

Contribution ID: **39** Type: **not specified**

Aspects of I/O

Friday 16 October 2009 08:30 (45 minutes)

Presenter: HANUSHEVSKY, A. (SLAC)

Session Classification: Session 5

Contribution ID: **40**   Type: **not specified**

Aspects of I/O

Friday 16 October 2009 09:20 (45 minutes)

Presenter: HANUSHEVSKY, A. (SLAC)

Session Classification: Session 5

Contribution ID: **41**   Type: **not specified**

Aspects of I/O

Friday 16 October 2009 10:10 (45 minutes)

Presenter: HANUSHEVSKY, A. (SLAC)

Session Classification: Session 5

Contribution ID: **42**   Type: **not specified**

Network I/O and latency

Friday 16 October 2009 11:15 (45 minutes)

Presenter: Dr FURANO, Fabrizio (CERN)

Session Classification: Session 5

Contribution ID: **43** Type: **not specified**

Network I/O and latency

Friday 16 October 2009 12:05 (45 minutes)

Presenter: Dr FURANO, Fabrizio (CERN)

Session Classification: Session 5

Contribution ID: 44   Type: **not specified**

Exercises

Friday 16 October 2009 14:30 (45 minutes)

Presenters: HANUSHEVSKY, A. (S);   SALOMONI, Davide (CNAF);   Dr FURANO, Fabrizio (CERN)

Session Classification: Session 5

Contribution ID: **45**   Type: **not specified**

Exercises

Friday 16 October 2009 15:15 (45 minutes)

Presenters: Mr HANUSHEVSKY, Andrew (SLAC National Accelerator Lab); SALOMONI, Davide (CNAF); Dr FURANO, Fabrizio (CERN)

Session Classification: Session 5

Contribution ID: **46**   Type: **not specified**

Exercises

Friday 16 October 2009 16:15 (45 minutes)

Presenters: Mr HANUSHEVSKY, Andrew (SLAC National Accelerator Lab); SALOMONI, Davide (CNAF); Dr FURANO, Fabrizio (CERN)

Session Classification: Session 5

Contribution ID: 47 Type: **not specified**

Exercises

Friday 16 October 2009 17:00 (45 minutes)

Presenters: Mr HANUSHEVSKY, Andrew (SLAC National Accelerator Lab); SALOMONI, Davide (CNAF); Dr FURANO, Fabrizio (CERN)

Session Classification: Session 5

Contribution ID: **48**   Type: **not specified**

Students feedback

Saturday 17 October 2009 08:30 (30 minutes)

Session Classification: Session 6

Contribution ID: **49** Type: **not specified**

Examinations

Contribution ID: **50**   Type: **not specified**

Welcome and Opening of the School

Monday 12 October 2009 08:30 (30 minutes)

Presenter: VAGNONI, Vincenzo Maria (BO)

Session Classification: Session 1

Contribution ID: **51**　　　　　　　　　　　　　　　　Type: **not specified**

Evening lecture: Virtualization, Grid, Cloud: Integration Paths for Scientific Computing

Friday 16 October 2009 19:00 (1 hour)

Presenter:　SALOMONI, Davide (CNAF)

Contribution ID: **52**
Type: **not specified**

Final examination

Saturday 17 October 2009 09:00 (2 hours)

Session Classification: Session 6

Contribution ID: **53**
Type: **not specified**

Delivery of certificates of attendance

Saturday 17 October 2009 11:30 (30 minutes)

Session Classification: Session 6

Contribution ID: **54**   Type: **not specified**

Shuttle departure

Saturday 17 October 2009 13:15 (1 minute)

Session Classification: Session 6