

WORKSHOP

ScalPerf'05: SCALABLE APPROACHES to HIGH PERFORMANCE and HIGH PRODUCTIVITY COMPUTING

October 09-13, 2005

Bertinoro International Center for Informatics

<http://www.cs.unibo.it/bici/>

Sunday, October 09

18:00-21:00 **Check-in & Reception** (“Seminario”)

19:30-21:00 **Welcome Buffet** (“Seminario”)

Monday, October 10

08:30-09:00 **Registration**

09:00-09:15 **Welcome**

09:15-10:15 **Panel I Memory Hierarchy for On-Chip Multiprocessing:
Architecture and System Software Issues**

Part A: Target Questions

10:15-10:55 A Bird's Eye View of the Cell Processor Architecture
Pratap Pattnaik (IBM Thomas J. Watson Research Center)

10:55-11:25 **Coffee**

11:25-12:05 System Software Design for A Mani-Core Chip Based Supercomputer System:
A Case Study on Performance Issues
Guang R. Gao (University of Delaware)

12:05-12:45 The Potential of On-Chip Multiprocessing for QCD Machines
Geppino Pucci (University of Padova)

13:00-14:00 **Lunch**

15:00-15:40 Performance Issues in a Historical Perspective
Einar Rustad (Dolphin Interconnect Solutions Inc.)

15:40-16:20 CODACS Architecture: a Development Tool for Embedded System
Processor Prototyping
Lorenzo Verdoscia (ICAR-CNR)

16:20-16:50 **Coffee**

16:50-17:30 Performance Characteristics of eCommerce Workloads
Joefon Jann (IBM Thomas J. Watson Research Center)

17:30-18:10 Issues in Operating System Virtualization
Hubertus Franke (IBM Thomas J. Watson Research Center)

20:00-21:30 **Dinner**, *Ristorante Belvedere*, Via Mazzini 7, Bertinoro (0543 445127).

Tuesday, October 11

- 09:00-9:40 Performance Analysis of Blue Gene/L Hierarchy Configurations
José Castanos (IBM Thomas J. Watson Research Center)
- 9:40-10:20 Montecarlo Simulations of Spin-Glass:
a Physicist's Nightmare and a Computer Architect's Paradise
Raffaele Tripiccione (University of Ferrara)
- 10:20-10:50 **Coffee**
- 10:50-12:50 **Panel I Memory Hierarchy for On-Chip Multiprocessing:
Architecture and System Software Issues**
Part B: Answers and Directions for Further Research
- 13:10-14:10 **Lunch**
- 14:15-23:30 **Excursion** to Ravenna (details on last page)
Social Dinner at *Hotel Pino*, Viale A. Garibaldi 7, Cesenatico (0547 80645).

Wednesday, October 12

- 09:00-10:00 **Panel II Memory Hierarchy for On-Chip Multiprocessing:
Algorithmic and Application Issues**
Part A: Target Questions
- 10:00-10:40 Exploiting Predictability of Message-Driven Objects to Scale the Memory Hierarchy
Laxmikant Kale (University of Illinois Urbana-Champaign)
- 10:40-11:10 **Coffee**
- 11:10-11:50 System Architecture Design at Extreme-Scale Using Predictive Performance Models
Adolfy Hoisie (Los Alamos National Laboratory)
- 11:50-12:30 Performance Analysis Challenges in Current and Future Supercomputers
Luiz Derose (Cray Inc.)
- 13:00-14:00 **Lunch**
- 14:50-15:30 On the Space and Access Complexity of Computation DAGs
Andrea Pietracaprina (University of Padova)
- 15:30-16:10 Cache Oblivious Stencil Computations
Matteo Frigo (IBM Austin Research Laboratory)
- 16:10-16:50 The Price of Obliviousness
Keshav Pingali (Cornell University)
- 16:50-17:20 **Coffee**
- 17:20-18:00 Predictable Cache Performance - A Review and Challenges
Ben Juurlink (University of Delft)
- 18:00-18:40 A Research Program Proposal: Fault Equations for the Memory Hierarchy
Y.C. Tay (National University of Singapore)
- 20:00-21:30 **Dinner**, *Osteria Perbacco*, Via Mazzini 62, Bertinoro (0543 444317).

Thursday, October 13

- 09:10-09:50 *Toward a Stochastic Analysis of Replacement Policies*
Gianfranco Bilardi (University of Padova)
- 09:50-10:30 *Dealing with Memory Hierarchy when Generating High Performance Libraries*
Francois Bodin (INRIA/IRISA)
- 10:30-11:00 **Coffee**
- 11:00-11:30 *Optimization of the FD-TD Integration Scheme for the Maxwell Equations*
Paolo Palazzari (ENEA and Ylichron Srl)
- 11:30-12:20 *Optimizing Numerical Simulation Kernels
for Current Instruction and Memory Architectures*
Ulrich Rüde (University of Erlangen-Nuernberg)
- 13:00-14:00 **Lunch**
- 14:30-16:30 **Panel II Memory Hierarchy for On-Chip Multiprocessing:
 Algorithmic and Application Issues**
 Part B: Answers and Directions for Further Research
- Adjourn**
- 19:30-20:30 **Dinner** (“Seminario”)
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General Information

Organizing Committee

Gianfranco Bilardi (University of Padova) and *Pratap Pattnaik* (IBM Research).

Secretariat

Ms. *Elena Della Godenza*

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Workshop Site

University Residential Centre of Bertinoro Via Frangipane 4&6 Bertinoro (FC), ITALY

More specifically, these buildings are involved in the activities:

- “Seminario” (Via Frangipane 4): **check-in**, reception, cafeteria, some of the guest rooms;
- “Rocca” (Via Frangipane 6): meeting room, computer room (24/7), office, some of the guest rooms.

Directions

Please, consult the web page

http://www.centrocongressibertinoro.it/en/dove_siamo/index.htm

Parking is available, if you come by car.

If you arrive by train, the recommended stations are Forlì (coming from North) and Cesena (coming from South), both about 13 kilometers from the Centre. From either station, one can take a taxi to Bertinoro (approx. 25 Euro). A third station, Forlimpopoli, is closer but (a) most trains do not stop there and (b) taxis are not available near the station.

Arrival/Reception

The check-in desk is in the “Seminario” building. A welcoming reception, including buffet dinner, is planned for Sunday, October 9, from 18:00 to 21:00, in the “Seminario.” During the reception, you may contact Mr. *Carlo Venturi* (xxx xxx xxxx) or the switching board (0543 446500). You can also reach *Gianfranco Bilardi* (xxx xxx xxxx) In case of late arrival, please go directly to the “Seminario” and ring the bell with the label “Custode”.

Accommodations & Meals

Registration includes accommodations at the workshop site for the five nights October 09-13 as well as meals, from the dinner of October 9 to the breakfast of October 14. Please, send e-mail, specifying your planned arrival and departure dates, as well as any special needs, to:

- *Elena Della Godenza* (edellagodenzaATceub.it),
- *Gianfranco Bilardi* (bilaridiATdei.unipd.it).

Registration

Registration will be on site. The registration fee is Euro 700.00, reduced to Euro 350.00 for junior participants (reduced registration entitles to accommodations in a double room). Major credit cards, cash, and checks in euros drawn on Italian banks are acceptable forms of payment.

Excursion to Ravenna - Tuesday, October 11

14:15 Group meeting in front of *dining room*. **14:30 Vignarolo Square:** departure by Bus Onofri (xxx xxx xxxx). **15:30 Ravenna Railway Station:** Meeting with Guide (ph. xxx xxx xxxx, 0544 3010).

18:00 One-hour free time for individual touring and shopping. **19:00** Departure to *Cesenatico*.

20:00 Seafood Dinner (Vegetarian menus, please request in advance) *Restaurant Hotel Pino*, Via A. Garibaldi 7 (Port, East Channel), Ph. 0547 75350. ≈ **22:00** Bus to Bertinoro.

Sponsorship

ScalPerf'05 is sponsored by:

- BICI: The Bertinoro International Institute for Informatics
- The Centre of Excellence “Science and Applications of Advanced Computing Paradigms” of the University of Padova
- Eurotech-Exadron