Map of Potsdam

Nauen
AB
273 Potsdamer Str.
Pappelallee
Berlin Spandau
AB
Hotel Schloss Cecilienhof
2
Amundsenstr.
Bornstedter Str.
Voltaireweg
Neuer Garten
Fr.-Ebert-Str.
Jägerallee
Orangerie
Maulbeerallee
Schopenhauerstr.
Schloss Sanssouci
Hegelallee
Palais
Universität Potsdam
Neues Palais
Park Sanssouci
Berlin Wannsee
Charlottenstr.
Am Neuen
Schloß Charlottenhof
Lenne' str.
Feuerbachstr.
Breite Str.
Am Kanal 1
Lange Brücke
Potsdam-Stadt
S
Wildpark
R
Geschwister-Scholl-Str.
R P.-West
Forststr.
Havel
Zeppelinstr.
Leipziger Str.
Saarmunder Str.
Werder Brandenburg
AB
1
R
Residence Hotel
Potsdam-Hauptbahnhof
Templiner See
Michendorfer Chaussee
2
AB
Belitz

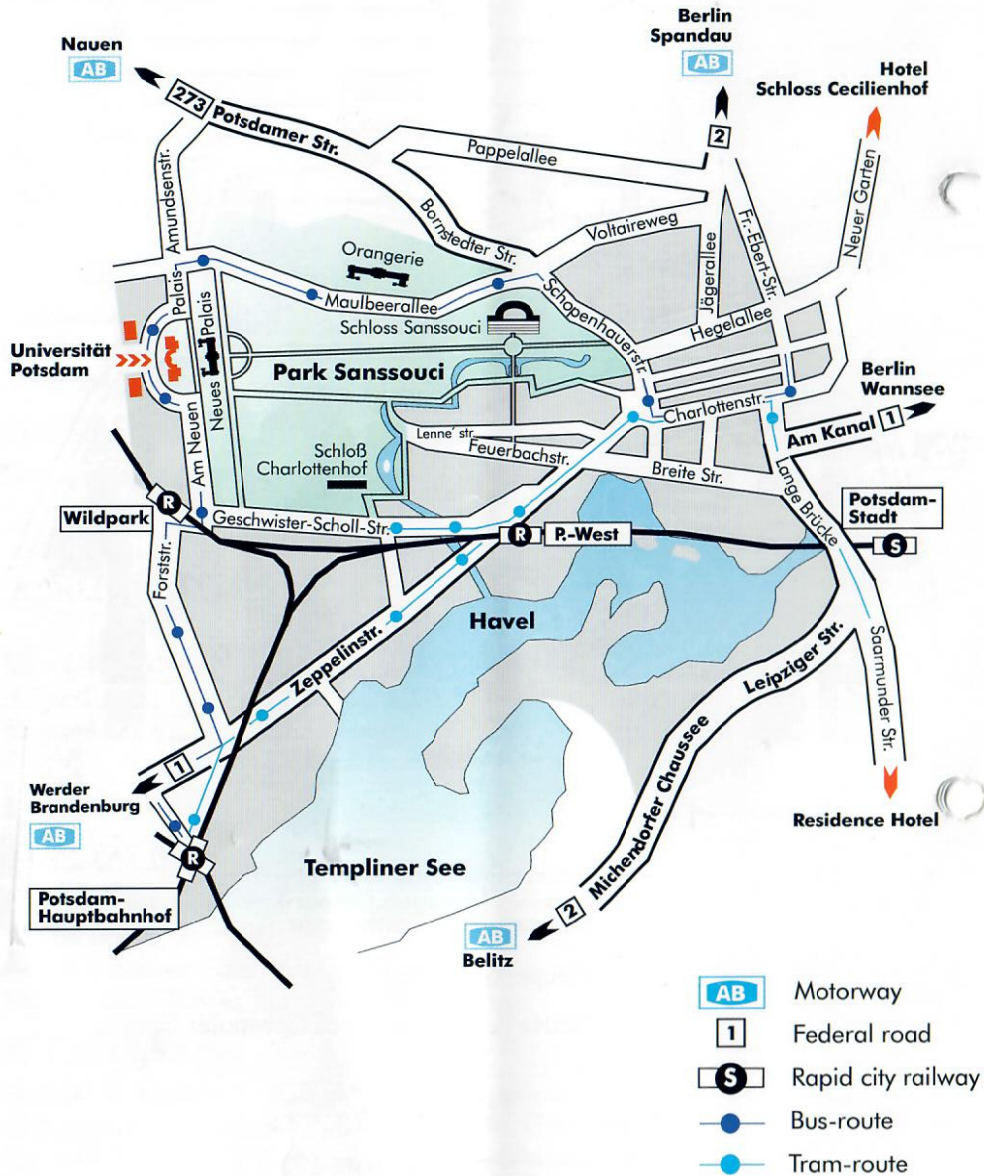|	
AB	Motorway
1	Federal road
S	Rapid city railway
●	Bus-route
●	Tram-route

GFaI

PARCELLA 94

Sixth International Workshop on Parallel Processing by Cellular Automata and Arrays

September 21-23, 1994

University Potsdam, Germany

Conference Programme

The PARCELLA'94 workshop is organised by the Gesellschaft zur Förderung angewandter Informatik e.V. (GFaI), An-Institut der TFH/FHTW Berlin and is focused on basic research in, and applications of, Parallel Processing by Cellular Automata and Arrays in Central and Eastern Europe.

The series PARCELLA displays the landscape of research in these countries and is also a meeting place for exchange of ideas and initialising steps forward into future broad scoped East-West co-operation in a unified Europe.

Papers have been submitted from all over the world, e.g. United states, Singapore, Russia, Ukraine and most of the European countries. They discuss Parallel Algorithms, Cellular and Neural processing, Parallel numerical computations, Parallel Architectures, Systolic Arrays, Signal Processing and imaging and Regular computational structures. This demonstrates the forthcoming scientific importance of Parallel Processing in Eastern Europe and the growing interest of scientists in the whole of Europe to work together in this field.

The Proceedings will be published by Akademie Verlag Berlin in Research in Informatics series.

PARCELLA'94 is sponsored by
Commission of the European Union, DG XIII, PECO Programme
Land Brandenburg, Freistaat Thüringen
Daimler-Benz AG
Siemens AG
Parsytec-Gesellschaft für Parallele Systemtechnik mbH
Gesellschaft zur Förderung angewandter Informatik e.V.,
An-Institut der TFH/FHTW Berlin

PARCELLA'94 is hosted by the GFaI.

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Well-known experts from Europe, Asia and the United States have agreed to present a keynote or an invited lecture:
- S.Y. Kung, Princeton University
- Patrice Quinton, IRISA-CNRS
- Wolfgang Giloi, GMD FIRST
- Blagovest Sendov, Institut for Informatics, Bulgarian Academy of Sciences
- Raghu Raghavan, National University of Singapure
- Yakov Fet, Siberian Division of the Russian Academy of Sciences

PARCELLA'94 will be a single session conference.

ADDITIONAL EVENTS:

An EXHIBITION including vendor session will be arranged for prototypes and products in the field of parallel machines and large size scientific projects.

ROUND TABLE DISCUSSION:
- Promotion and funding of Parallel and Scientific computation studies in Europe
- The rising gap between computation and communication performance - how to close it: by node architectures, by advanced topologies and technologies, by new communications methods (ATM, optics etc.)

AWARDS:

Two prizes will be awarded for the best papers presented by workshop participants. Each prize will include a certificate, and a cash award. The awards are funded by the Daimler-Benz AG, the Siemens AG, and the Society for the Promotion of Applied Computer Science (GFaI) as co-sponsors of the workshop, and will be presented at the end of the workshop by one of its representatives. The prizes will be offered in two categories:

1. **Award for the best scientific result** in respect to originality and practical or scientific impact. The prize is awarded to workshop participants from Eastern Europe, and all the states of the CIS. It is further only for authors or co-authors born after October 1, 1944. The cash award is 500,- DM.

2. **Award for the best presentation** in respect to the methodology and clarity of the lecture, and of the submitted paper. This award cannot be given to the winner of award for the best scientific result. There is no age limitation or restriction to Eastern Europe origin for this category. This cash award is 300,- DM.

Invited speakers and members of the program committee do not participate in the competition.

1

08.00 HRS:	**OPENING, WELCOME ADDRESSES**
08.30 HRS:	*Patrice Quinton, Institut de Recherche en Informatique et Systèmes Aléatoires, Rennes (Invited Speaker)* **Systolic Arrays: Why and how?**
09.30 HRS:	**SYSTOLIC ARRAYS** *Ruman Andonov et al., Institut de Recherche en Informatique et Systèmes Alèatoires, Rennes Cédex* **Pure Systolic Array for a Class of Recurrence with Dynamic Dependencies**
10.00 HRS:	Coffee Break
10.30 HRS:	**SYSTOLIC ARRAYS** *Octav Brudaru et al., Universitatea "Al. I. Cuza", Iasi* **Systolic Arrays for Accelerating Iteration Processes** *Philippe Clauss, IECS/EME, Université Robert Schuman, Strasbourg Cédex* **An Efficient Allocation Strategy for Mapping Affine Recurrence into Space and time-optimal Regular Processor Arrays** *Rolf Hoffmann et al., Technische Hochschule Darmstadt, Fachbereich Informatik, Darmstadt* **The Cellular Processing Machine CEPRA-8**
12.00 HRS:	Lunch
13.00 HRS:	*Wolfgang Giloi, GMD FIRST, Berlin (Invited Speaker)* **META: A Super Multi-Threaded Architecture**
14.00 HRS:	**PARALLEL ARCHITECTURES** *Martin Cobernuss, Max-Planck-Gesellschaft, AG Fehlertolerantes Rechnen, Universität Potsdam* **Bused Interconnection Network for Parallel Memory with Linear Storage Schemes** *Tomasz Kalinowski, Institute of Computer Science, Polish Academy of Sciences, Warsaw* **TRANSPAC: A Transputer System with Dual Interprocessor Connection Network**
15.00 HRS:	Coffee Break
15.30 HRS:	**PARALLEL ARCHITECTURES/SYSTOLIC ARRAYS** *Yin Zuo Ming, Institute of Systems Science, National University of Singapore, Singapore* **Parallel Compression of Cellular Data** *Anatolij E. Doroshenko, Glushkov Institute of Cybernetics, Academy of Sciences of Ukraine, Kiev* **Advancing Synchronization and Communication Techniques for Distributed/Shared Memory Parallel Programs** *Gabriel Okša, Nuclear Power Plant Research Institute, Trnava*

G. Heinz u.a.: -tast Adaptive Communication Processor for 2D/3D-Torus and Hypercube Nets.

A New Linear Systolic Array for a General, Strongly Regular Toeplitz System of Linear Equations
Jevgenij V. Zima, Department of Computational Mathematics and Cybernetics, Moscow State University, Moscow
Recurrent Relations Technique to Parallelize Large-scale Numerical Computations in Loops Effectively

17.30 HRS:	**PANEL SESSION** · Promotion and funding of Parallel and Scientific computation studies in Europe · The rising gap between computation and communication performance - how to close it
19.00 HRS:	End of the Session on Wednesday
19.30 HRS:	"Thüringer Abend" hosted by the Government of the Freistaat Thüringen

08.00 HRS:	**PARALLEL APPLICATIONS** *Wolfgang Schade, GFaI, Berlin* **Parallelised Placement Tools for Printed CircuitBoard Design** *H. Holzheuer et al., Cadlab, Paderborn* **Distributed and Parallel Simulation of Transmission Line Systems on Printed Circuit Boards** *Gisbert Schneider et al., Laser-Medizin-Zentrum, Freie Universität Berlin, Berlin* **Optimizing Amino Acid Sequences by Simulated Molecular Evolution**
09.00 HRS:	**SIGNAL PROCESSING AND IMAGING** *R.M. Palenichka et al., Institute of Physics and Mechanics, Lviv* **Recursive Implementation of Image Rank-Order Filtering** *Andrij Yu. Lutsyk et al., Institute of Physics and Mechanics of the Ukrainian Academy of Sciences, Lviv* **High-Speed System for Image Processing Based on Homogeneous Computing Structures** *Wieslaw L. Nowinski, JHU-ISS Center for Information-Enhanced Medicine, National University of Singapore, Singapore* **A Hybrid Parallel Ray Caster for Medical Imaging**
10.00 HRS:	Coffee Break
10.30 HRS:	*Blagovest Sendov, Institute for Informatics, Bulgarian Academy of Sciences, Sofia (Invited Speaker)* **Fractal Approximation for Image Compression**

2 Wavelet

From Merko

11.30 HRS:	**PARALLEL ALGORITHMS** *A. Schubert et al., Technische Universität Dresden, Dresden* **Systematic Generation of a Variety of Processor Arrays**
12.00 HRS:	Lunch
13.00 HRS:	**MODELS OF PARALLEL COMPUTATIONS** *Peter Sanders, Universität Karlsruhe, Karlsruhe* **Massively Parallel Search for Transition-Tables of Polyautomata** *Peter Hartmann, Technische Hochschule Darmstadt, Darmstadt* **Parallel Grammars on Geometric Hypergraphs: A Mathematical Tool for Handling Dynamic Geometric Sceneries**
14.00 HRS:	*Yakov Fet, Siberian Division of the Russian Academy of Sciences, Novosibirsk (Invited Speaker)* **Digital compressors**
15.00 HRS:	Coffee Break
15.30 HRS:	**PARALLEL NUMERICAL COMPUTATIONS** *Valentina P. Markova, Computing Center, Sibirian Division of the Russian Academy of Sciences, Novosibirsk* **Cellular Knuth's Algorithm for Complex Number Multiplication** *Larisa Jelfimova et al Glushkov Institute of Cybernetics, Academy of Sciences of Ukraine, Kiev* **A Fast Toroidal Systolic Array for Matrix Operations** *Roman Wyrzykovski et al., Technical University of Czestochowa, Czestochowa* **Systolic-Type Implementation of Matrix Computations**
17.00 HRS:	**PROJECT/POSTER PRESENTATION** *Volodymyr Hrytsyk, Physico-mechanical Institute of the Ukrainian Academy of Sciences, Lviv* **High-Productive Structures of Image Processing in Real Time** *V.S. Michalevich et al., Glushkov Institute of Cybernetics, Academy of Sciences of Ukraine, Kiev* **Programming Environment for Highly Parallel Problem Solving on Distributed Multicomputers**
18.00 HRS:	End of the Session on Thursday

Friday Sessions

08.00 HRS:	**CELLULAR AND NEURAL PROCESSING** *Igor A. Kaliaev, Research Institute of the Multiprocessor Computing System, Taganrog* **Homogeneous Neurolike Structures for the Optimum Control Problem Solving**

	Thomas Friemel, Technische Universität Darmstadt, Darmstadt **Variat Cellular Processing Models Depending on Applications** *V.N. Aleksandrov et al., University of Newcastle-Upon-Tyne, Newcastle-Upon-Tyne* **Mapping Knapsack Type Problems on 2D Regular Arrays: Two Case Studies** *Chee-Kong Chui et al., National University of Singapore, Singapore* **Topology Independent Models for Parallel Computation**
10.00 HRS:	Coffee Break
10.30 HRS:	*S.Y. Kung, Princeton University, Princeton (Invited Speaker)* **Digital Neural Network: From Theory to Application**
11.30 HRS:	**PARALLEL ALGORITHMS** *Fraciszek Seredynski et al., Institute of Computer Science, Polish Academy of Sciences, Warsaw* **Parallel Genetic Algorithms for Dynamic Mapping**
12.00 HRS:	Lunch
13.00 HRS:	Parallel Algorithms *Elena Trichina, Department of Computer Science, Joensuu University, Joensuu* **Development of Occam Programs by Stepwise Algebraic Transformations of Affine Recurrence Equations** *Elena Trichina, Department of Computer Science, Joensuu University, Joensuu* **Programming Discipline on Transputer Networks: Streams and Stream Programming** *Corneliu Barsan et al., Technical University of Iasi, Iasi* **Parallel Parsing by Boolean Expressions**
14.00 HRS:	*Raghu Raghavan, National University of Singapore, Singapore (Invited Speaker)* **Bottom Up Design: From Cellular Automata to Pattern Recognition**
15.00 HRS:	Coffee Break
15.30 HRS:	**REGULAR COMPUTATIONAL STRUCTURES** *Thomas Worsch, Universität Karlsruhe, Karlsruhe* **Investigation of Different Input Modes for Cellular Automata** *Yin Zuo Ming, National University of Singapore, Singapore* **Optimal Pipelining Broadcasting in Distributed Memory Cellular System**
17.00 HRS:	End of the Conference

Potsdam and Potsdam area

Potsdam is a town of palaces and gardens. It was first mentioned by Emperor Otto III in a Deed of Gift of 993. Potsdam was the summer residence of kings and emperors and again it was here in Potsdam that Prussian and German history was made. Since 1990 Potsdam has been the capital of Land Brandenburg. The famous places and parks are the key attractions - Sanssouci, New Palace, Cecilienhof, Babelsberg Palace etc. In 1994 the 250th anniversary of Sanssouci will be celebr_ d - in 1744 Friedrich the Great started with the construction of the Sanssouci Palace terraces. The "Communes", one time working premises for the New Palace built after the Seven Year War, today house the University.

Sand, pine-trees and the numerous lakes along the River Havel characterize the landscape of the region in and around Potsdam. The White Fleet offers excursions by water to Wannsee and across the lakes Templiner See and Schwielowsee to Werder Islands. The trips are a special attraction and a visit to one of the charmingly located outdoor restaurants will provide an enjoyable culmination to the end of the program of the workshop days.

ACCOMMODATION

A number of rooms in different price categories at special discount rates have been booked for the Workshop. Hotel accomodation will be reserved if the registration form has reached GFaI before August 16, 1994. We recommend you to make your hotel booking as soon as possible due to the large number of participants expected. GFaI reserves the right to book another hotel category if the desired accomodation should be fully booked. Upon receipt of the completed registration form and remittance of the appropriate fees participants will be sent a receipt and additional information.

CANCELLATION

Notification of cancellation must be sent in writing to GFaI. Cancellations will be accepted until August 26, 1994 with a refund of all fees except for an administrative fee of DM 150. It is regretted that no refunds can be made for cancellations received after August 26, 1994. All refunds will be made after the Workshop.

Please note that 75-100 % of the hotel costs will be charged for cancellation of a hotel reservation received after September 1, 1994.

BOOKING FORM (TO BE RETURNED TO GFAI)

Hotel Schloß Cecilienhof, Neuer Garten, D-14469 Potsdam

❑ double (single use)   DM 250
❑ double   DM 270
❑ double (single use)   DM 270
❑ double   DM 290
❑ single   DM 170

Residence Hotel, Saarmunder Straße 60, D-14478 Potsdam

❑ double (single use)   DM 90
❑ single   DM 110
❑ single/double (single use)   DM 135
❑ double   DM 170

Private accomodation

❑ single   DM 15...50
❑ double   DM

                                 30...100

Arrival: ❑ September 20,1994   ❑ September 21,1994
             ❑ . . . ./ . . . ./1994

Departure: ❑ September 23,1994   ❑ . . . ./ . . . ./1994

WORKSHOP REGISTRATION FORM

<u>PLEASE TYPE OR WRITE IN BLOCK LETTERS</u>

Surname _____
Christian name _____
Occupation _____
Institution/Company _____
Department _____
Address _____
PO Box _____ Postal Code _____
City _____ Country _____
Phone_____ Fax _____
E-mail _____

BRANCH

☐ University   ☐ Research Centre
☐ Industry R&D   ☐ Government
☐ Vendor   ☐ CEC/European Project

FIELD OF INTEREST

☐ Computer science Aspects   ☐ Parallel Algorithms
☐ Parallel Applications   ☐ Parallel Architecture's
☐ Models of parallel computation   ☐ Systolic arrays

I WISH TO REGISTER FOR THE PARCELLA'94

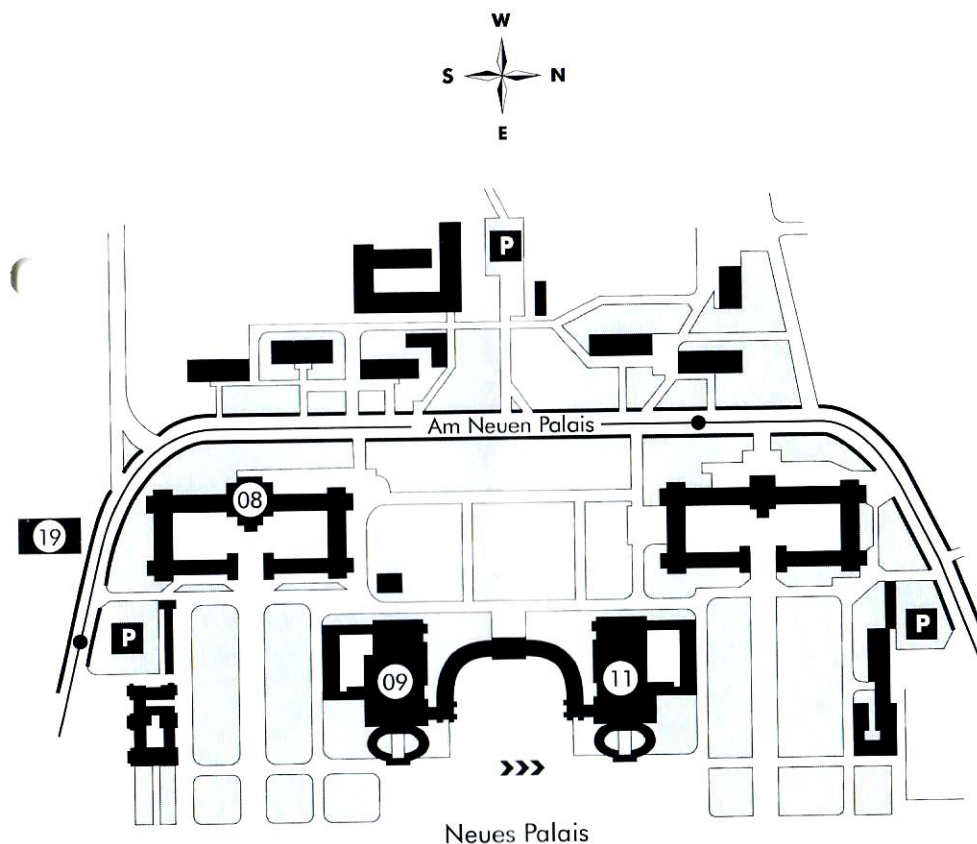|	(before August 15)	(from August 16)
full registration	☐ DEM 450,-	☐ DEM 500,-
students	☐ DEM 250,-	
Payment	☐ Cheque	
	☐ Bank Transfer	

Signature:

PLEASE PAY TO:

PARCELLA'94, GFal, Rudower Chaussee 5, Gebäude 13.7
12484 Berlin, Germany
Account: Berliner Bank AG, GFal
No.   4381138800, BLZ: 100 200 00

PLEASE RETURN TO:

Prof. Dr. V. Jossifov, PARCELLA'94, GFal, Rudower
Chaussee 5, Gebäude 13.7, D-12484 Berlin, Germany
fax: +49-30 63921602, e-mail: jossifov@iief.fta-berlin.de

Map of the University Potsdam

House ⑧ : Exhibition

House ⑨ : Conference

House ⑪ : Restaurant

House ⑲ : Faculty of Computer Science

P Parking

●——— Bus-route 695