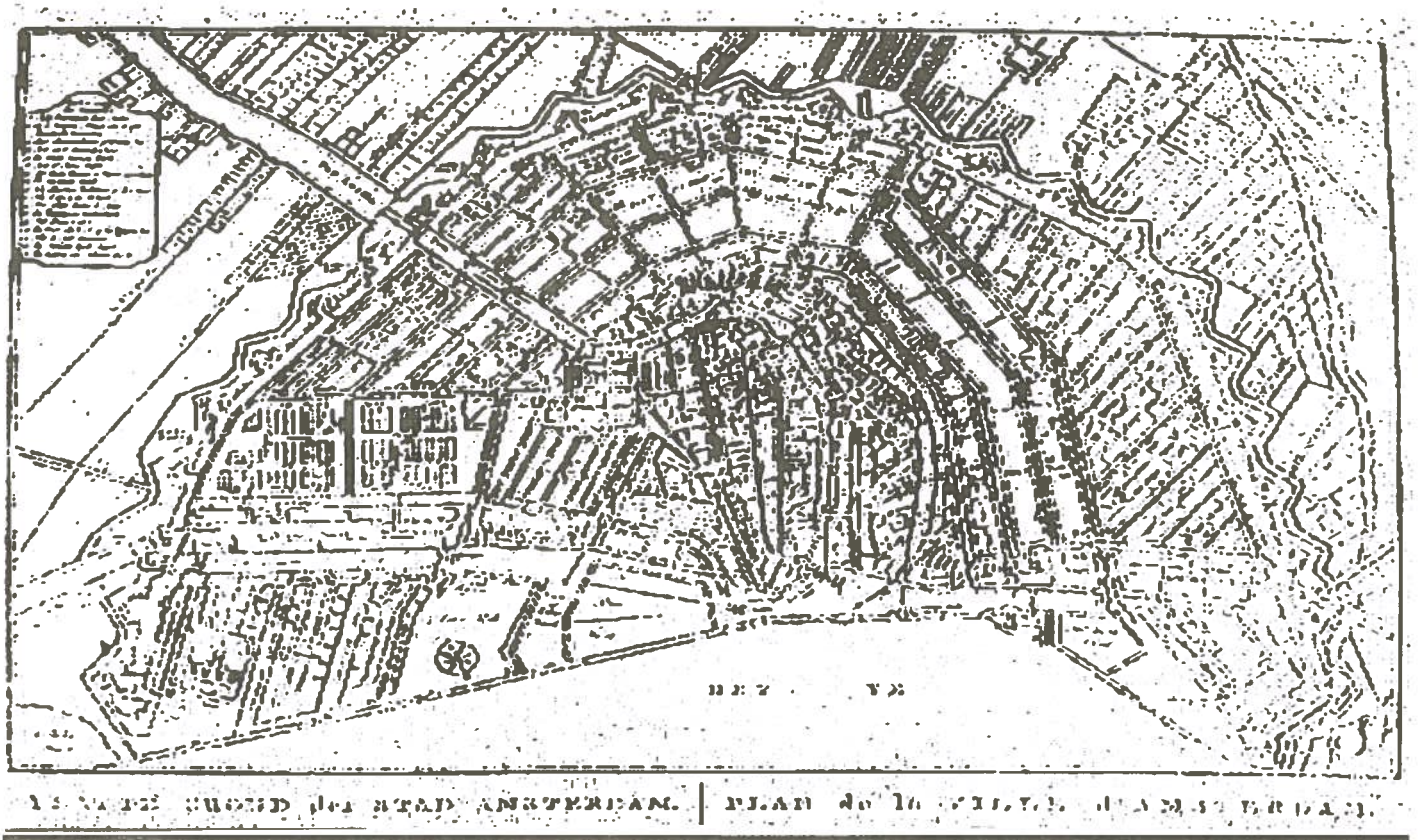


COMPUTING IN HIGH ENERGY PHYSICS

June 25-28, 1985 - Amsterdam (Netherlands)

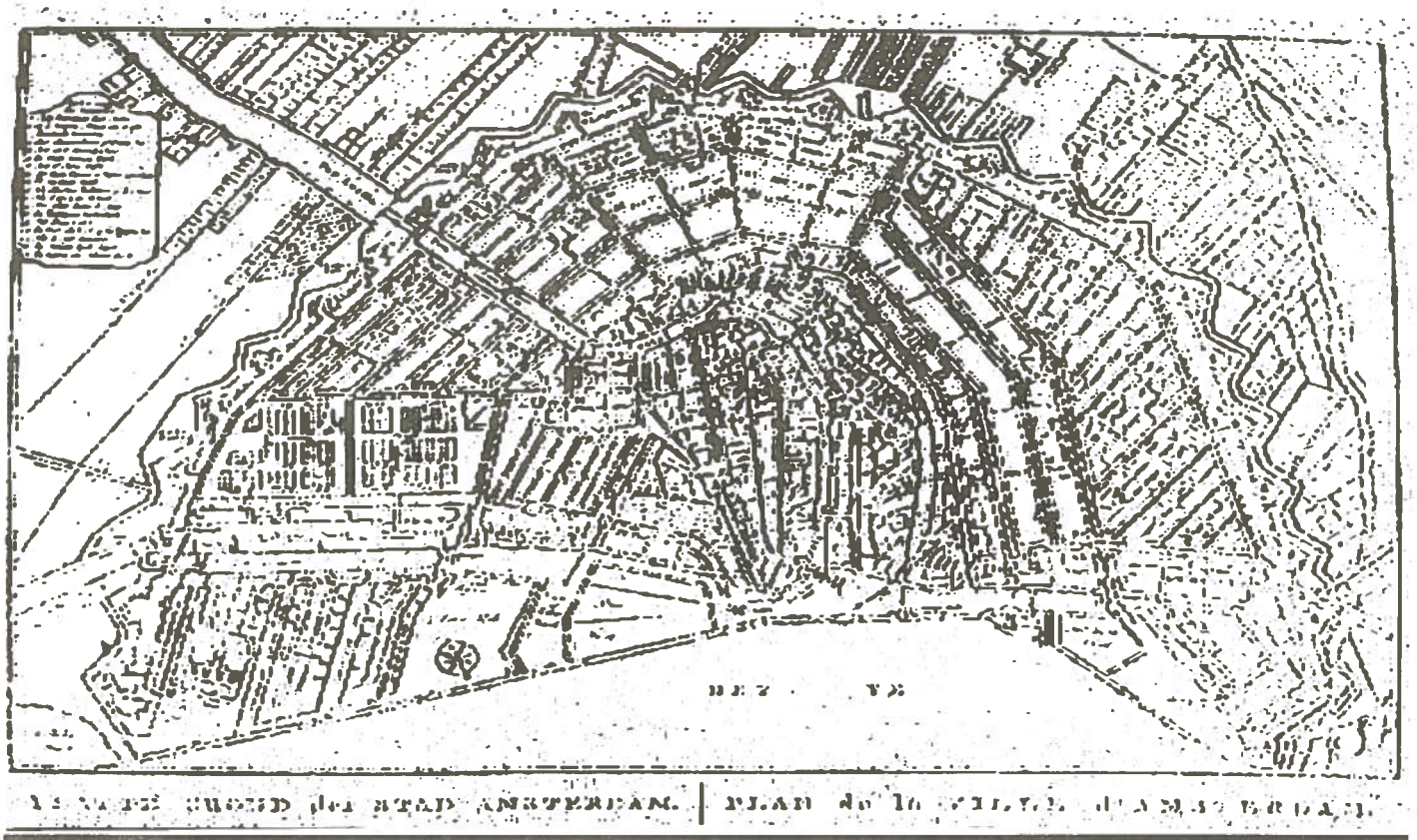
Organized by the National Institute for Nuclear Physics and High Energy Physics, section H (NIKHEF-H) and the Computer Science Dept. (FVI), University of Amsterdam

FINAL PROGRAM
AND
GENERAL INFORMATION

* Program
* Exhibition
* General Information
* List of Participants per 06-21-1985

Introduction

This booklet should be viewed as a companion to the "Final Announcement and Advance Program". The final scientific program, which has some changes with respect to the "Advance Program", is presented as well as a list of participants to the panel discussions and a few late abstracts. For all other abstracts available we refer to the "Final Announcement and Advance Program". Furthermore an updated overview of the exhibition, additional general information and a list of participants as registered at June 20 are included.



COMPUTING IN HIGH ENERGY PHYSICS

June 25-28, 1985 - Amsterdam (Netherlands)

Organized by the National Institute for Nuclear Physics and High Energy Physics, section H (NIKHEF-H) and the Computer Science Dept. (FVI), University of Amsterdam

FINAL PROGRAM
AND
GENERAL INFORMATION

* Program
* Exhibition
* General Information
* List of Participants per 06-21-1985

SCIENTIFIC PROGRAM

TUESDAY JUNE 25 1985

Morning (Chairman: M. Hine)

Opening, W. Hoogland(NIKHEF-H, Amsterdam, Netherlands)	09.30 - 10.00
Trends in Computing for HEP P. Zanella (CERN, Geneva, Switzerland)	10.00 - 10.45
Coffee Break	10.45 - 11.15
New Architectures L.O. Hertzberger (FVI, University of Amsterdam, Netherlands)	11.15 - 12.00
Distributed Operating Systems A.S. Tanenbaum (Free University, Amsterdam, Netherlands)	12.00 - 12.45
Lunch	12.45 - 14.00

Afternoon (Chairman: P. van Dam)

Trends in Languages for Embedded Systems M. Boasson (Hollandse Signaalapp., Hengelo, Netherlands)	14.00 - 14.45
Real-time Systems Architectures D.M. Sendall (CERN, Geneva, Switzerland)	14.45 - 15.30
Tea Break	15.30 - 16.00
Trends in Local Area Networks E.B. Spratt (University of Kent at Canterbury, U.K.)	16.00 - 16.45
Trends in Wide Area Networks H. Kirkman (University of London, U.K.)	16.45 - 17.30

WEDNESDAY JUNE 26 1985

Morning (Chairman: W. Hoogland)

Barriers in Networking for HEP J. Prévost (CEA-DPhPE, CEN, Saclay, France)	09.00 - 09.45
Supercomputers T. Bloch (Ecole Polytechnique, Palaiseau, France)	09.45 - 10.30
Coffee Break	10.30 - 11.00
Alternatives in High Volume HEP Computing R. Mount (Caltech, Pasadena, U.S.A.)	11.00 - 11.45
Panel discussion: Software Development for Embedded Systems	11.45 - 12.30
Lunch	12.30 - 14.00

Afternoon

Parallel sessions A1 - Networking in HEP B1 - Embedded Systems C1 - Vector and Parallel Processing in HEP	14.00

THURSDAY JUNE 27 1985

Morning (Chairman: S. Centro)

Data Storage – Where do we Store Terabytes of Data? E. Freytag (DESY, Hamburg, Federal Republic of Germany)	09.00 – 09.45
Requirements for Databases in HEP J.C. Hart (RAL, Didcot, U.K.)	09.45 – 10.30
Coffee Break	10.30 – 11.00
Future Plans for HEP Computing in the U.S.A. J. Ballam (SLAC, Stanford, U.S.A.)	11.00 – 11.45
Panel discussion: Vector and Parallel Processing in HEP	11.45 – 12.30
Lunch	12.30 – 14.00

Afternoon

Parallel sessions 14.00
A2 – Networking in HEP
B2 – Embedded Systems
C2 – Vector and Parallel Processing in HEP

FRIDAY JUNE 28 1985

Morning: Research and Development in Computer Industry.
(Chairman: H. Newman)

Parallelism in Scientific Engineering Computation, an Experimental Parallel Computer System E.Clementi (IBM)	09.00 – 09.40
Research Activities in Vector and Parallel Processing at Sandia National Laboratories M.L. Arendt (ELXSI)	09.40 – 10.10
Vectorization of Monte Carlo Codes on FACOM VP-200 for High Energy Physics Applications K. Miura (Fujitsu)	10.10 – 10.40
Strategy for Distributed Computer-Architecture J.P. Scheerder (Data General, U.S.A.)	10.40 – 11.10
Coffee break	11.10 – 11.25
The Control Data CYBERPLUS system, Multiparallel Processing for Simulation H. Beverley Taylor (CDC)	11.25 – 12.00
SCI-CLONE/32, A New Concept for Real-Time Systems Builders C. Wilks (Gould)	12.00 – 12.30
Lunch	12.30 – 14.00

Afternoon: Resumes and closing remarks
(Chairman: L.O. Hertzberger)

Resume Networking in HEP J. Hutton (RAL, Didcot, U.K.)	14.00 – 14.45
Resume Embedded Systems D.O. Williams (CERN, Geneva, Switzerland)	14.45 – 15.30
Tea break	15.30 – 16.00
Resume Vector and Parallel Processing in HEP P.F. Kunz (SLAC, Stanford, U.S.A.)	16.00 – 16.45
Closing remarks	16.45 – 17.00

PARALLEL SESSION A: NETWORKING IN HEP

WEDNESDAY JUNE 26 1985

T I M E	SESSION A1 (Chairman R. Popescu-Zeletin)	
14.00	P.F. Kunz	Status of Networking for High Energy Physics in the United States
14.30	P. van Binst	Present Solutions on HEP Networking in Europe
15.00	Tea Break	
15.30	M. Hine	Satellite Communications
15.50	P. Kaufmann	Deutsches Forschungs Network
16.10	B.E. Carpenter	Computer Communications at CERN
16.30		Panel discussion: HEP networking
17.00	END OF SESSION	

THURSDAY JUNE 27 1985

T I M E	SESSION A2 (chairman T.P. Kokott)	
14.00	F. Fluckiger et al.	GIFT: an HEP project for File Transfer
14.20	P. van Binst et al.	Wide Area Networking for High Energy Physics in Brussels and Antwerp
14.40	R. Popescu-Zeletin	"Y" a Distributed Resource Sharing System in Nuclear Research Environment
15.10	E.C.G.Owen	Networking at Daresbury
15.30	Tea Break	
16.00	A.J. de Raaf	A LAN with Real-Time Facilities based on OSI Standards
16.20	A. Cojan et al.	Equipment Bus: a Very Simple Network to Interconnect Control and Monitor Equipment
16.50	J.H.Voskamp et al.	LAN with an Experiment Command Interpreter and 2.5 MBaud Interfaces
17.10	END OF SESSION	

PARALLEL SESSION B: EMBEDDED SYSTEMS

WEDNESDAY JUNE 26 1985

T I M E	SESSION B1 (Chairman H.J. Stuckenberg)	
14.00	B.J. Pijlgroms et al.	The intelligent FASTBUS – 168/E Data Acquisition Interface System for the NA31 Experiment
14.15	J. Zweizig et al.	VIRTUS: A Multiprocessor System in FASTBUS
14.40	H.Muller	On–line FASTBUS Processor for LEP
15.05	Tea Break	
15.30	M. Frodyma et al.	Status of Development of a Parallel–Pipelined Data Driven Processor Capable of Analyzing 10^5 Events per Second On–Line
16.00	A. Deuter et al.	A Multiprocessor System for Parallel Proton Tracking
16.25	J. Dorenbosch	SUMMER, a VME/VMX based Multi–processor Second Level Trigger System
16.40	P. Rossi	A VME/VMX parallel Multiprocessor System for the Data Acquisition of the UA1 Streamer Tubes
17.00	B.G.Taylor	MacVEE – The Intimate Macintosh – VME System
17.15	S. Cittolin	The UA1 VME Read–Out System
17.40	END OF SESSION	

THURSDAY JUNE 27 1985

T I M E	SESSION B2 (Chairman S. Cittolin)	
14.00	H.P.Christiansen et al.	Portability Aspects of MODULA–2
14.20	L.O.Hertzberger et al.	The Design of a Real–Time Distributed System
14.40	H. Maaskant	DRM: A Distributed Real–Time Multiprocessing System
15.10	P.Baehler et al.	XOP, a Fast Versatile Processor, as a Building Block for Parallel Processing in High Energy Physics Experiments
15.30	Tea Break	
16.00	D. Cutts et al.	Data Acquisition for the D0 Experiment
16.25	A. Marchiori et al.	The ALEPH Event Builder
16.50	P. Koldewijn	IKONET: Distributed Accelerator and Experiment Control
17.10	P.G. Jansen	TUMULT, A Distributed Real–Time Multiprocessor System
17.30	END OF SESSION	

PARALLEL SESSION C: VECTOR AND PARALLEL PROCESSING

WEDNESDAY JUNE 26 1985

T I M E	SESSION C1 (Chairman R. Böck)	
14.00	F.C. Iselin et al.	The New MAD: A Software Tool for Designing Accelerators
14.20	H. Hanerfeld	Computational Needs for Modeling Accelerator Components
14.40	P.M. Ferran et al.	The 3081/E Emulator, a Processor for Use in On-Line and Off-Line Arrays
15.00	Tea Break	
15.30	P. Bacilieri et al.	Using the 3081/E as a VAX Emulator
15.50	E. Marinari et al.	The APE project: A Giga Flop Parallel Processor for Lattice Calculations I.
16.10	R.W. Rusack et al.	The APE project: A Giga Flop Parallel Processor for Lattice Calculations II.
16.30	P.Y. Kahana	Application of the MAP-6420 in Physics and Chemistry
16.50	R. Brower et al.	The Space Time Array Computer
17.10	END OF SESSION	

THURSDAY JUNE 27 1985

T I M E	SESSION C2 (Chairman G.G.G. Massaro)	
14.00	M. Pohl	Loosely and Tightly Coupled Parallel Processors for High Energy Physics
14.15	C. Maples	The Effect of Processor Topology and Communication Mechanisms on the Performance in a Multi-processor System
14.35	W. Jalby et al.	Use of SIMD-SPMD Machine for Simulation in Particle Physics
14.55	A.J.G. Hey et al.	High Performance Simulation of Lattice Physics Using Enhanced Transputer Arrays
15.25	Tea Break	
16.00	A.M. Rushton et al.	The ANL/STAR Project - A New Architecture for Theoretical Physics Calculations
16.25	T. Nash	Fermilab Advanced Computer Program Multimicroprocessor Project
17.05	END OF SESSION	

PANEL DISCUSSIONS

Wednesday June 26, $11.^{45}$ - $12.^{30}$ / Software Development for Embedded Systems

M. Boasson	(Hollandse Signaalapparaten)
D. Cutts	(Brown University)
L.O. Hertzberger	(University of Amsterdam) (Chairman)
D. Notz	(DESY)
E.C.G. Owen	(Daresbury)
D.O. Williams	(CERN)

Wednesday June 26, $16.^{30}$ - $17.^{00}$ / HEP Networking (Parallel Session A1)

P. van Binst	(Brussels)
B.E. Carpenter	(CERN)
M. Hine	(CERN)
P. Kaufmann	(DFN, Berlin)
T.P. Kokott	(Bonn) (Chairman)
P.F. Kunz	(SLAC)

Thursday June 27, $11.^{45}$ - $12.^{30}$ / Vector and Parallel Processing in HEP

M.L. Arendt	(ELXSI)
T. Bloch	(Ecole Polytechnique)
R. Böck	(CERN) (Chairman)
E. Clementi	(IBM)
P.F. Kunz	(SLAC)
R. Mount	(Caltech)
T. Nash	(Fermilab)

LATE ABSTRACTS

Plenary Sessions

FRIDAY JUNE 28

SCI-CLONE/32, A New Concept for Real-Time Systems Builders,

C. Wilks,

Gould S.E.L. Computer Systems, Copthall House, Grave Road, Sutton, Surrey SM11BY, U.K.

Digital technology today provides the speed and functionality for solving most critical event driven problems at a much reduced cost over their analogue and hybrid forerunners. The classical computer complex today uses 32-bit general purpose computers which possess an architecture with real-time characteristics. Real-time computing has always been characterized by specialization but the trend is away from it as standard digital products that will do the job become readily available from established suppliers. The days of in-house specials with little or no commercial value are decidedly over. Commercial organizations whose very existence depends on their competitiveness in the open market recognized this years ago when they switched to general purpose scientific computers. It left them to concentrate on making the product their costumers needed, and suppliers such as Gould have adapted their digital skills to provide products that address not only the special needs of a single customer but for a whole range of customers with real-time needs.

This paper will show how the systems engineer solves his real-time computer problem today. It will discuss the options available and explain the limitations. It will show how the evolution of the dynamic database at the heart of every real-time system leads us to the concept of the distributed dynamic database which eliminates almost all latency and contention delays. This unique networking system from Gould is called SCI-CLONE/32. It promises a certainty about the future because its expansion path is open-ended with a wide range of options. It will reduce design costs because its modular structure permits concurrent development. It will reduce start-up costs because one buys only what is needed to begin with and avoids unnecessary duplication of peripherals.

SCI-CLONE/32 is a superfast real-time network connecting any Gould Concept /32 computers directly memory to memory. It can operate at speeds in excess of 200 million bits per second. It effectively creates a dynamic database which is distributed amongst the computers in the network. Circuitry is provided to detect any update to the database in any one node which automatically updates the other nodes within 150 nanoseconds without any central processor involvement. SCI-CLONE/32 is modular and very flexible and permits a suitable configuration for even the most sophisticated application.

Parallel Sessions

WEDNESDAY JUNE 26 / C1 - Vector and Parallel Processing

Application of the MAP-6420 in Physics and Chemistry,

Paz Y. Kahana,

CSPI, 40 Linnell Circle, Billerica, MA 01821, U.S.A.

An economical array processor, the MAP-6420, is now available that can speed up computations in the area of theoretical physics and chemistry in double precision (64 bits in hardware) by a factor of 5 to 50 compared to the VAX host. Supported by a Fortran 77 compiler with an extensive scientific subroutine library, implementing a Fortran program on the 6420 does not require code vectorization, and depending on the program, may take as little as several days to run.

The MAP-6420 is most suitable for use by individual researchers or by a small group of scientists. It is currently in use by groups at Carnegie-Mellon University, MIT, Cornell University, Caltech, Duke University, SUNY at Stony Brook as well as industrial organizations such as Lockheed, ASEA and US Government establishments.

The presentation will focus on key architectural design concepts, as they benefit the users. It will include detailed discussion of implementation procedures, and make comparisons to other alternatives available to new buyers of array processors. Actual benchmark results will be presented.

The Space Time Array Computer,

R.C. Brower, R.C. Giles and G. Maturana,

Department of Physics, Boston University, Boston, U.S.A.

The Space Time Array Computer (STAC) is a new implementation of parallel architecture capable of 2.5 Gigaflops on a grid of 256 processors. Simplicity of control and programmability is achieved by extending the physical two-dimensional 16×16 grid into a third time access of 8 virtual processors. Thus the virtual machine is an 8×16×16 grid operating with an effective cycle time of 1 microsecond – 8 times slower than the physical array. Pipelines and registers become invisible and are automatically filled by a vectorizing switch on each node. Responsibility for overall control, supervision and generation of microcode resides in a LISP machine host connected to the array by data and microcode busses.

THURSDAY JUNE 27 / B2 – Embedded Systems

TUMULT, A Distributed Real-Time Multiprocessor System,

P.G. Jansen,

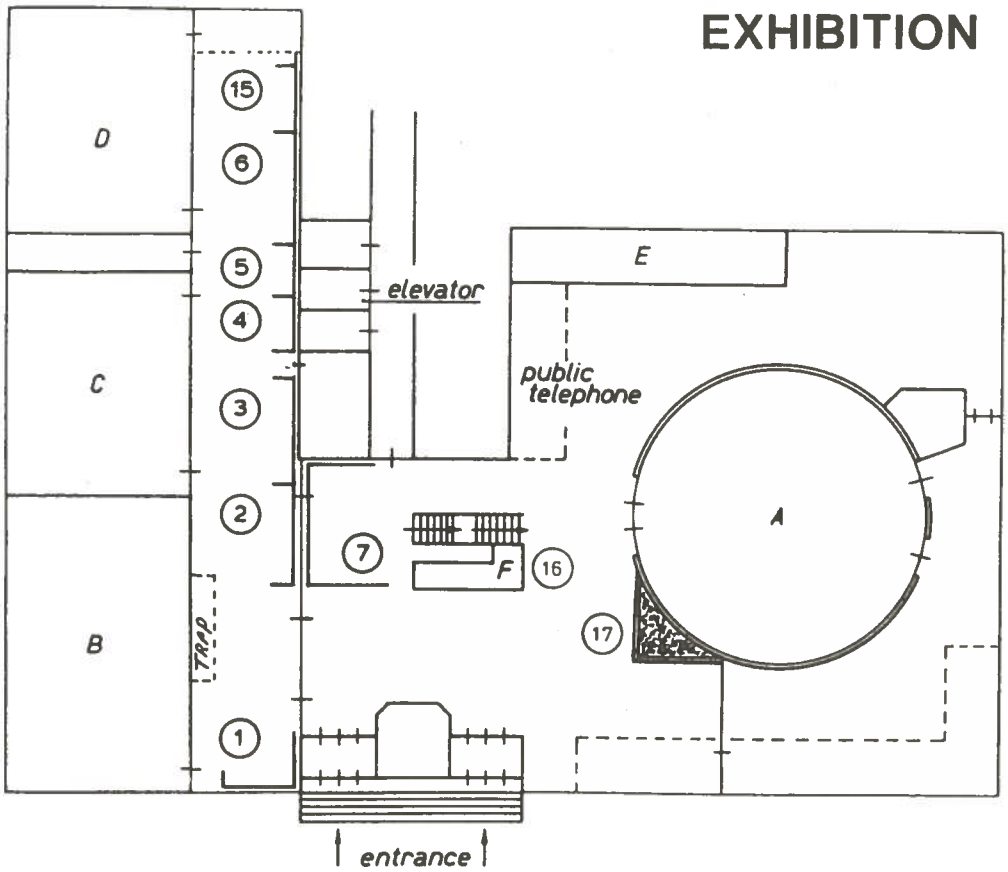
Department of Computer Science, Twente University of Technology, Postbox 217, 7500 AE ENSCHEDE, The Netherlands.

TUMULT (Twente University MULTi processor system) is the name of an ongoing project aiming at the design and implementation of a modular extendible multiprocessor system. All memory is distributed and processors communicate in parallel via a fast and reliable local switching network instead of a shared bus. A distributed real-time operating system is being designed and implemented, consisting of a multi-tasking subsystem per processor. Processes can communicate via a message passing mechanism. Communication links and processes are dynamically created and disposed by the application. A distributed exception mechanism is offered to recover from malfunctioning of resources or processes.
In this paper a brief description of the system is given; communication aspects are emphasized.
TUMULT is written in Modular Pascal [1].

Reference

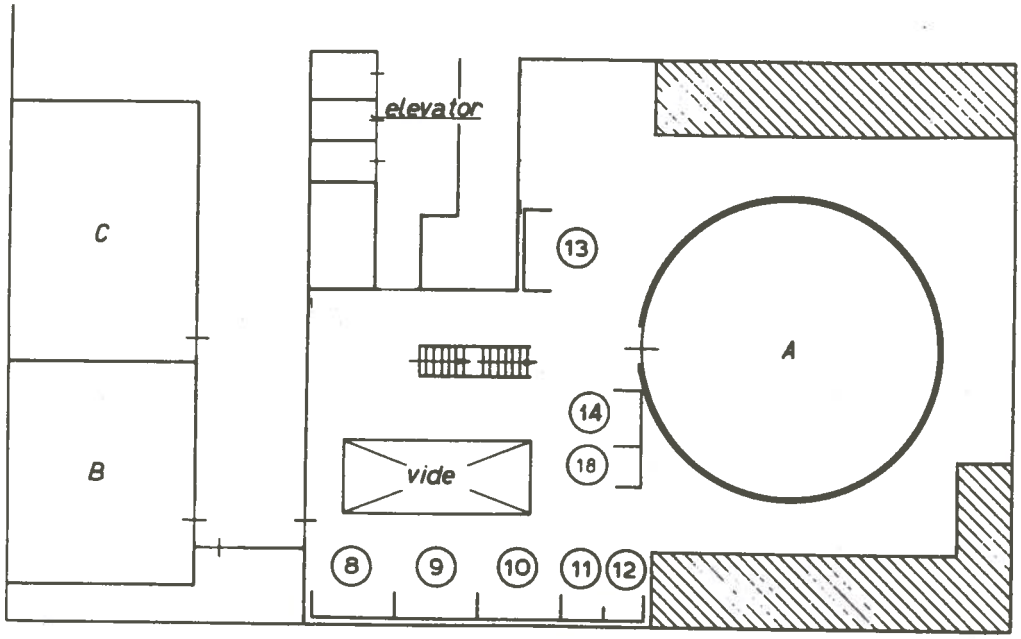
[1] Bron, C.W.: "Modular Pascal Language Definition", Department of Computer Science, Twente University of Technology, Enschede, The Netherlands, int. rep. nr. INF-82-10, 1982.

EXHIBITION



A - LECTURE HALL
B - ,,
C - ,,

GROUND FLOOR



A - LECTURE HALL
B - ,, ,,
C - ,, ,,
1-18 - EXHIBITION

FIRST FLOOR

E X H I B I T O R S

Ground floor

1. Microproject BV
2. Floating Point Systems
3. Philips Nederland
4. Hewlett-Packard Nederland BV
5. ELXSI
6. IBM Nederland NV
7. Apollo Computer BV

15. Gould Computer Systems Division BV
16. North Holland Publishing Company
17. Scheltema Holkema Vermeulen

First floor

8. Masscomp Europe BV
9. Dr. Bernd Struck
10. Westvries Systems BV
11. INCAA Computers
12. Control Data BV / SARA
13. Datageneral Nederland BV
14. Digital Equipment BV

18. CSP Inc.

GENERAL INFORMATION

Lunches

Lunch facilities within the conference site and surroundings are barely available. We therefore decided to offer all participants simple lunches in the faculty bar (ground floor) and the main hall (second floor). You can obtain - free of charge - rolls, milk, fruit and coffee during the lunch breaks.

Please do not use the student cafetaria facility!

Coffee/Tea Break

In the morning coffee is available in the lounges; in the afternoon tea will be served (free of charge).

Bar Service

The faculty bar (ground floor) is open during the conference hours.

XEROX Facility

At the conference desk a XEROX service for abstracts and sheets is available. The price per copy is Dfℓ. 0.10.

Parking

At the conference desk you can obtain a parking identification for free parking at the parking lot of the Mathematics Building. Entrances at Roetersstraat and Nieuwe Achtergracht. Opening hours from $07.^{00}$ a.m. until $19.^{30}$ p.m.

** ** **

Restaurants, recommended by some members of the organizing committee:

		no. of seats	price
Baldur Weteringschans 76 244672	vegetarian (with garden)	50	30,-
Belhamel Brouwersgracht 60 221095	various menu	40	65,-
Bols Taverne Rozengracht 106 245752	French fish	50-70	>40,-
Cafe Bern Nieuwmarkt 9 220034	Swiss/French	30	45,-
Carré Kelder Amstel 133 251071	various menu	35, ca.	7,25
Contra 73 Camperstraat 24 949930	bistro	60	60,-
De Knijp Van Baerlestraat 134 714248	French	25	>60,-
De Rooie Waard Hobbemakade 71 643837	plate service French, South American	20	45,-
De Trechter Hobbemakade 63 711263	haute cuisine 1 Michelin *	25	≥100,-

Golden Temple Utrechtsestraat 126 268560	vegetarian	25	35,-
Haesje Claes N.Z. Voorburgwal 320 249998	Dutch	200	≥15,-
Koh-i-Noor Westermarkt 29 233133	Indian also good vegetarian menu	30	45,-
Kyo Jan Luykenstraat 2 716916	Japanese	20	>50,-
Mangerie Spuistraat 3 b 252218	haute cuisine	50	>70,-
Oesterbar Leidseplein 10 263463	fish	110	60,-
Orient Van Baerlestraat 21 734958	Indonesian also good vegetarian menu	35	45,-
Sama Sebo P.C. Hooftstraat 27 628146	Indonesian	40	50,-
Sherry Bar Lijnbaansgracht 246 239098	French	50	40,-
Sluizer Utrechtsestraat 45 263557	Fish	25	40,-
Sluizer Utrechtsestraat 43 226376	French	25	40,-

Tempo Doeloe Utrechtse straat 75 256718	Indonesian		
Warstein Spuistraat 266 229609	plate service 2 fixed menus	40	45,-

---

The quoted prices are the minimum prices for a complete menu.
In all these restaurants reservation is highly recommended.

Lunch restaurants within walking distance from the conference site:

Plantage Pl. Middenlaan 37 232969	40
Carré Kelder Amstel 133 251071	35
Mirabella Weesperplein/Valckenierstr	25

---

* * * *

CHEP PARTICIPANTS

name:	organization:	city:	country:	HOTEL
ADERHOLZ, M.	MPI, PHYSICS	MUNCHEN	W. GERMANY	CASA
AERTS, P.J.C.	W.G.S.	GRONINGEN	NETHERLANDS	
ALBANESE, J.P.	CPPM, Fac. de S	MARSEILLE Cedex	FRANCE	CASA
ALMEHED, S.	University of L	LUND	SWEDEN	CASA
ALSAADI, R.H.	MINISTRY OF H.E	BAGHDAD	IRAK	
ANDERHUB, H.	IHP/ETH	ZURICH	SWITZERLAND	CASA
ANDERSSON, G.C.	Lund University	LUND	SWEDEN	CASA
ARENDT, M.L.	ELXSI	SAN JOSE	USA	CASA
BAEHLER, P.	CERN, D.D. Divi	GENEVA 23	SWITZERLAND	CASA
BALL, R.C.	University of M	ANN ARBOR	USA	CASA
BALLAM, J.	SLAC	MENLO PARK	USA	CASA
BASILE, M.	Univ. of Bologn	BOLOGNA	ITALY	CASA
BEAULIEU, J-M.	CERN, E.P. Divi	GENEVE 23	SWITZERLAND	CASA
BEETHAM, C.G.	CERN, SPS	GENEVA 23	SWITZERLAND	CASA
BERNERS-LEE, T.	CERN, D.D. Divi	GENEVA 23	SWITZERLAND	CASA
BLOCH, T.	Ecole Polytechn	PALAISEAU	FRANCE	CASA
BLOKZIJL, R.	NIKHEF-H	AMSTERDAM	NETHERLANDS	
BOASSON, M.	Hollandse Signa	HENGELO	NETHERLANDS	
BOCK, R.K.	CERN, E.P. Divi	GENEVE 23	SWITZERLAND	
BOWIE, A.			USA	CASA
BROWER, R.	Univ. of Boston	BOSTON	USA	CASA
BROWN, M.G.	DEC	MALBORO	USA	CASA
BRUSSEE, R	NIKHEF-H	AMSTERDAM	NETHERLANDS	
BURGER, M.	NIKHEF-H	AMSTERDAM	NETHERLANDS	
CARPENTER, B.E.	CERN, D.D.-C.S.	GENEVE 23	SWITZERLAND	CASA
CENTRO, S.	Univ of Padova,	PADOVA	ITALY	CASA
CHOUDRY, A.	FVI	AMSTERDAM	NETHERLANDS	
CHRISTENSEN, P.	RISOE National		DENMARK	
CIAFFOMI, O.	INFN-FRASCATI	FRASCATI (ROMA)	ITALY	CASA
CITTOLIN, S.	CERN, D.D. Divi	GENEVE 23	SWITZERLAND	CASA
CRIJNS, F.J.G.H	HEF Dept. Unive	NIJMEGEN	NETHERLANDS	
CUTTS, D.	Dept. of Physic	PROVIDENCE	USA	CASA
DAVIDS, D.	CERN, D.D. Divi	GENEVA 23	SWITZERLAND	CASA
DE BOER, W.	Max Planck Inst	MUENCHEN 40	W. GERMANY	CASA
DE JONG, E.	FVI	AMSTERDAM	NETHERLANDS	
DEUTER, A.	DESY / F35	HAMBURG 52	W. GERMANY	
DUINKER, P.	NIKHEF-H	AMSTERDAM	NETHERLANDS	
EMMEN, A.H.L.	SARA	AMSTERDAM	NETHERLANDS	
FABIANI, F.	CERN, SPS	GENEVA 23	SWITZERLAND	CASA
FALCIANO, S.	Ist. di Fisica	ROMA	ITALY	CASA
FERGUSON, J.M.	CERN, DD DIVISI	GENEVE, 23	SWITZERLAND	CASA
FOKMA, N.E	FVI	AMSTERDAM	NETHERLANDS	
FRENKEL, A.	Istituto di Fis	ROMA	ITALY	CASA
FREYTAG, E.	DESY	HAMBURG 52	W. GERMANY	
FRUEHWIRTH, R.	Institut f. Hoc	WIEN	AUSTRIA	CASA
FUCCI, A.	CERN, D.D. Divi	GENEVA 23	SWITZERLAND	CASA
GALLICE, P.	CEN SACLAY,	GIF SUR YVETTE	FRANCE	CASA
GOSMAN, D.	NIKHEF-H	AMSTERDAM	NETHERLANDS	
GROSDIDIER, G.	CNRS, LAL-Orsay	ORSAY	FRANCE	CASA
GUNDERSON, B.	Desy F36	HAMBURG 52	W. GERMANY	CASA
HAGLUND, R.	CERN, E.P. Divi	GENEVA 23	SWITZERLAND	CASA
HANDLER, T.	Physics Dept. U	KNOXVILLE	USA	CASA
HANERFELD, H.	SLAC	STANFORD	USA	CASA
HART, J.C.	Rutherford Appl	DIDCOT	U.K.	CASA
HAYNES, W.J.	CERN, E.P. Divi	GENEVA 23	SWITZERLAND	

CHEP PARTICIPANTS

name:	organization:	city:	country:	HOTEL
HEIMAN, G.	CERN, DD Divisi	GENEVE 23	SWITZERLAND	CASA
HERTZBERGER, L.	FVI	AMSTERDAM	NETHERLANDS	
HEY, A.H.G.	Southampton Uni	SOUTHAMPTON	U.K.	CASA
HINE, M.G.N.	CERN, D.D. Divi	GENEVE 23	SWITZERLAND	CASA
HINTON, R.	CERN, D.D. Divi	GENEVA 23	SWITZERLAND	CASA
HO MENG-CHIA	Inst. of High E	BEIJING	CHINA	
HOFFMANN, J.	GSI, Darmstadt	DARMSTADT	W. GERMANY	CASA
HOFFMANN, W.	Math. Instituut	AMSTERDAM	NETHERLANDS	
HOLTHUIZEN, D.J	NIKHEF-H	AMSTERDAM	NETHERLANDS	
HOOGLAND, W.	NIKHEF-H	AMSTERDAM	NETHERLANDS	
HUTTON, J.S.	Rutherford Appl	DIDCOT	U.K.	CASA
JACOBS, D.A.	CERN, D.D. Divi	GENEVA 23	SWITZERLAND	CASA
JALBY, W.	INRIA	le Chesnay Cede	FRANCE	CASA
JANK, W.	CERN, D.D. Divi	GENEVE 23	SWITZERLAND	CASA
JANSEN, P.G.	TH-TWENTE TW-A3	ENSCHEDE	NETHERLANDS	
JOOSTEN, J.M.	CERN, D.D. Divi	GENEVA 23	SWITZERLAND	CASA
KAHANA, PAZ Y.	CSP Inc.	BILLERICA	USA	
KAUFMANN, P.	DFN-ZPL	BERLIN	W. GERMANY	CASA
KIRKMAN, H.C.	Computer Centre	LONDON	U.K.	CASA
KIRSCH, L.	Martin Fisher S	WALTHAM	USA	CASA
KLOK, P.F.	NIKHEF-Nijmegen	NIJMEGEN	NETHERLANDS	
KOERSNER, I.	Tandem Accelera	UPPSALA	SWEDEN	CASA
KOKOTT, T.P.	FHYS. INST. UNI	BONN	W. GERMANY	
KOLDEWIJN, P.	NIKHEF-K	AMSTERDAM	NETHERLANDS	
KOZLOWSKI, T.	LANL, MP-1 (MS-	LOS ALAMOS	USA	CASA
KROON, P.A.	Kernfysisch Ver	GRONINGEN	NETHERLANDS	
KUNZ, P.F.	SLAC, BIN 62	STANFORD	USA	CASA
LANGELAAR, J.	NIKHEF	AMSTERDAM	NETHERLANDS	
LANKFORD, A.J.	SLAC / BIN 95	STANFORD	USA	CASA
LAUGIER, J.P.	DPHPE	GIF SUR YVETTE	FRANCE	CASA
LESQUOY, E.L.	CEN/SACLAY	GIF SUR YVETTE	FRANCE	CASA
LIEBENDORFER, H	KINETIC SYSTEMS	ZUCHWIL	SWITZERLAND	CASA
LINNEMANN, J.T.	College of Natu	EAST LANSING	USA	CASA
LOKEN, J.G.	Oxford Univ., N	OXFORD	U.K.	CASA
LORETI, M.	Univ. of Padova	PADOVA	ITALY	
LORSTAD, B.	Univ. of Lund,	LUND	SWEDEN	CASA
LUKA'CS, J.	Central Researc	BUDAPEST	HUNGARY	
MAILLARD, J.	College de Fran	PARIS Cedex	FRANCE	CASA
MALLET, J.F.	CEN SACLAY	GIF SUR YVETTE	FRANCE	CASA
MARINI, A.	INFN-FRASCATI	FRASCATI (ROMA)	ITALY	CASA
MASSARO, G.G.G.	NIKHEF-H	AMSTERDAM	NETHERLANDS	
MASUCH, H.	CERN, D.D. Divi	GENEVA 23	SWITZERLAND	CASA
MEROLA, L.	Dipartimento di	NAPOLI	ITALY	CASA
MITAROFF, W.A.	Inst. f. Hochen	VIENNA	AUSTRIA	CASA
MIURA, K.	FUJITSU ,MAINFR	KAWASAKI	JAPAN	
MORROW, C.	ELXSI	ADDLESTONE SUR	UK	
MOUNT, R.P.	CERN-EP	GENEVE 23	SWITZERLAND	CASA
MULLENDER, S.J.	CWI	AMSTERDAM	NETHERLANDS	
MULLER, HANS	CERN, E.P. Divi	GENEVA 23	SWITZERLAND	CASA
McKEEMAN, A.	CERN, SPS Divis	GENEVA 23	SWITZERLAND	CASA
McPHERSON, G.M.	CERN, E.F. Divi	GENEVE 23	SWITZERLAND	CASA
NASH, T.	FERMILAB	BATAVIA	USA	CASA
NEWMAN, H.B.	CALTECH	PASADENA	USA	CASA
NIEDERER, J.	Brookhaven Nati	UPTON	USA	CASA
NILSSON, B.S.	Niels Bohr Inst	COPENHAGEN	DENMARK	CASA
NOTZ, D.	DESY, F-1	HAMBURG 52	W. GERMANY	CASA

CHEP PARTICIPANTS

name:	organization:	city:	country:	HOTEL
NYGARD, A.M.	CERN, DD DIVISI	GENEVE,23	SWITZERLAND 23	CASA
OWEN, E.C.G.	Daresbury Labor	Nr. WARRINGTON	U.K.	CASA
PASCOLI, D.	Istituto di Fis	PADOVA	ITALY	CASA
PETRILLI, A.M.V	CERN, DD DEVISI	GENEVE, 23	SWITZERLAND	CASA
PIJLGROMS, B.J.	CERN, E.P. Divi	GENEVE 23	SWITZERLAND	
PLISCHKE, P.	Universitat Kar	KARLSRUHE	W. GERMANY	CASA
POHL, M.	IHP/ETH	ZURICH	SWITZERLAND	CASA
POLETIEK, G.	NIKHEF-H	AMSTERDAM	NETHERLANDS	
POPESCU-ZELETIN	Hahn Meitner In	BERLIN 39	WEST GERMANY	CASA
POPPENSIEKER, K	ESI	DARMSTADT	W. GERMANY	CASA
PREVOST, J.	CEA-DphPE	GIF-SUR-YVETTE	FRANCE	CASA
RADEMAKERS, F.	NIKHEF-H	AMSTERDAM	NETHERLANDS	
REMIDDI, E.	INFN-CNAF	BOLOGNA	ITALY	CASA
ROSSI, P.	CERN, D.D. Divi	GENEVE 23	SWITZERLAND	CASA
ROTHENBERG, A.F	SLAC, BIN 96	STANFORD	USA	CASA
ROZENDAAL, A.	SARA	AMSTERDAM	NETHERLANDS	
RUSACK, R.W.	EP Division CER	GENEVE 23	SWITZERLAND	
RUSHTON, M.	ANL	ARGONNE	USA	CASA
SABAN R.I.	CERN LEP Divisi	GENEVA 23	SWITZERLAND	
SALIH, K.J.	MINISTERIE OF H	BAGHDAD	IRAK	
SAMYN, D.	CERN, D.D. Divi	GENEVE 23	SWITZERLAND	CASA
SANDERS, H.	Univ. of Chigac	CHIGACO	USA	CASA
SCHAAP		HEILOO	NETHERLANDS	
SCHELLERUP, L.			AUSTRIA	CASA
SCHOEPS, W.	Swiss Institute	VILLIGEN	SWITZERLAND	CASA
SCHOUTEN, T.E.	K.U. NIJMEGEN	NIJMEGEN	NETHERLANDS	
SCHREUR J.P.	University of A	HUIZEN	NETHERLANDS	
SCHULLER, J.P.	CEN/SACLAY	GIF-SUR-YVETTE	FRANCE	CASA
SENDALL, M.	CERN, DD Divisi	GENEVE 23	SWITZERLAND	CASA
SEYERLEIN, J.	MPI fur Physik	MUNCHEN 40	W. GERMANY	CASA
SHAMBROOM, W.D.	NorthEastern Un	BOSTON	USA	CASA
SILVA, J.A.	Universite de P	AMIENS	FRANCE	CASA
SPRATT, B.	Computing Labor	CANTERBURY	U.K.	CASA
SPRUIT, R.	TRIUMF	VANCOUVER	CANADA	CASA
STORR, K.M.	CERN, D.D. Divi	GENEVA 23	SWITZERLAND	CASA
STORY, C.M.	CERN, D.D. Divi	GENEVE 23	SWITZERLAND	CASA
STRAHM, A.E.	DATATAPE INCORP	PASADENA	USA	CASA
STUCKENBERG, H.	DESY	HAMBURG	W. GERMANY	
SWIDER, G.	NIKHEF-H	AMSTERDAM	NETHERLANDS	
TANENBAUM, A.S.	VU - R-20	AMSTERDAM	NETHERLANDS	
TAYLOR, B.G.	CERN, E.P. Divi	GENEVA 23	SWITZERLAND	CASA
TENNER, A.G.	NIKHEF-H	AMSTERDAM	NETHERLANDS	
THOMPSON, P.	R.A.L., Central	DIDCOT	U.K.	CASA
TRASATTI, L.	INFN FRASCATI	FRASCATI (ROMA)	ITALY	CASA
VALENTE, E.	INFN Roma, "G.	ROMA	ITALY	CASA
VAN BINST, P.	University of B	BRUSSELS	BELGIUM	
VAN DAM, P.	NIKHEF-H	AMSTERDAM	NETHERLANDS	
VAN DE POLL, E.	FVI	AMSTERDAM	NETHERLANDS	
VAN DE VORST ,	KSLA, Dept. MSE	AMSTERDAM	NETHERLANDS	
VAN DER VELDE,	FVI/NIKHEF-H	AMSTERDAM	NETHERLANDS	
VAN DER VOORT,	LAB. EMMC	AMSTERDAM	NETHERLANDS	
VAN DRIEL, M.A.	NIKHEF-H	AMSTERDAM	NETHERLANDS	
VAN LAHR, L.T.	DATATAPE INCORP	PASADENA	USA	CASA
VAN LEEUWEN, W.	NIKHEF-H	AMSTERDAM	NETHERLANDS	
VAN MUISWINKEL,	FVI	AMSTERDAM	NETHERLANDS	
VAN WANING, W.E	FVI/UVA	AMSTERDAM	NETHERLANDS	

CHEP PARTICIPANTS

name:	organization:	city:	country:	HOTEL
VANDENBROUCKE,	Vrije Universit	BRUSSELS	BELGIUM	
VERKERK, C.	CERN	GENEVE 23	SWITZERLAND	
VERMEULEN, J.C.	NIKHEF-H	AMSTERDAM	NETHERLANDS	
VERWEIJ, H.	CERN, E.P. Divi	GENEVA 23	SWITZERLAND	
VICKERS, A.J.		CULHAM	U.K.	CASA
VISSCHERS, J.L.	NIKHEF-K	AMSTERDAM	NETHERLANDS	
VOIGT, K.	Joint Inst. for	MOSCOW	U.S.S.R.	CASA
VOSKAMP, J.H.	TH-Eindhoven	EINDHOVEN	NETHERLANDS	
WARKENTYNE, H.M	University of V	VICTORIA	CANADA	CASA
WASSENAAR, E.	NIKHEF-H	AMSTERDAM	NETHERLANDS	
WELLS, C.	Univ. of Sheffi	SHEFFIELD	U.K.	CASA
WILLIAMS, D.O.	CERN, D.D. Divi	GENEVE 23	SWITZERLAND	CASA
WINDE, M.	Joint Inst. for	MOSCOW	U.S.S.R.	CASA
WOJCIK, W.	Centre de Calcu	PARIS Cedex 05	FRANCE	CASA
WOLTERS, A.A.	R. v.d. Graaf L	UTRECHT	NETHERLANDS	
YUE PENG	NIKHEF-H	AMSTERDAM	NETHERLANDS	
ZACHAROV, I.	NIKHEF-H	AMSTERDAM	NETHERLANDS	
ZALEWSKI, J.	Institute of At	WARSZAWA	POLAND	
ZANELLA, P.	CERN, D.D. Divi	GENEVE 23	SWITZERLAND	CASA
ZANELLO, L.	Univ. "la sapie	ROMA	ITALY	CASA
ZELLER, R.	Physics Dept.	PROVIDENCE	USA	CASA
ZWEIZIG, J.G.	CERN, E.P. Divi	GENEVE 23	SWITZERLAND	