

SEMINARS

SEMINAIRES

Monday 17 April

EF SEMINAR

at 11.00 hrs – EF Conference Room
bldg 13, 2-005

The ALEPH TPC

by John CONWAY / University of Wisconsin

The central tracking device for the ALEPH experiment is a large second-generation Time Projection Chamber (TPC). The design parameters of the TPC will be reviewed, followed by a discussion of how they were achieved in the actual chamber. Results from tests and measurements with the chamber will be presented, and a summary of present and future work will be given.

Monday 17 April*

PS SEMINAR

at 11.00 hrs – PS Auditorium
bldg 26, 2-024

FEL and RFQ accelerator activities in Los Alamos

by J. STOVALL / LANL, Los Alamos, USA

With recent advances in photocathode technology, very high current, bright electron beams are now achievable for Free Electron Laser research. A photocathode gun has been integrated with a coupled cavity Linac to replace the D.C. thermionic electron gun on the Los Alamos FEL facility. RFQ injectors, designed to replace Cockcroft Waltons, represent a maturing technology. Los Alamos is developing RFQs for applications in industry, medicine, research and defence. Some of the design and performance features of these two types of accelerator will be reviewed.

* Please note unusual day!

Tuesday 18 April

CERN PARTICLE PHYSICS SEMINAR

at 14.00 hrs* – Auditorium

New results from the $p\bar{p}$ collider experiments – The search for Top

by G. BELLETTINI / Pisa for CDF,
L. FAYARD / Orsay for UA2 &
M. DELLA NEGRA / CERN for UA1

* Please note unusual time!

Wednesday 19 April

PS SEMINAR

at 11.00 hrs - PS Auditorium
bât. 26, 2-024

Status of the electron beam ion source

by R. BECKER / University of Frankfurt

The electron beam ion source (EBIS) has been developed to deliver short pulses of highly charged ions. The physics of this source, comprising ionization, recombination and internal ion cooling will be outlined as well as the demanding technology. A proposal will be presented, showing how to combine experience at SATURNE, SACLAY and IPA, University of Frankfurt, to make a significant step towards an EBIS that matches the requirements of the CERN heavy (lead) project study.

Wednesday 19 April

CAS ACCELERATOR SEMINAR

at 14.00 hrs – Auditorium

Plasma suppression of beamstrahlung and the plasma adiabatic focuser

by A. SESSLER / Lawrence Berkeley Laboratory

A high energy beam passing through an intense (over-dense) plasma will not only experience space-charge neutralization, but will drive return currents through the plasma which will tend to cancel the beam magnetic field. Thus the plasma will greatly reduce the coherent radiation of particles at the interaction point of a linear collider; i.e. beamstrahlung. A high energy beam passing through an under-dense plasma will experience strong ion focusing. If the plasma density is tailored so as to increase slowly along the beam direction, the beam will be focused down to a small transverse size. For sufficiently small emittance beams this final size can be less than the 'Oide limit'. For emittances less than a universal value ($\approx r/\alpha^4$, where r is the classical electron radius and α is the fine structure constant) quantum mechanical effects must be included and the final transverse beam size can be made arbitrarily small.

Wednesday 19 April

COMPUTER SEMINAR

at 16.00 hrs – Auditorium*

The evolution of evolvability

by Richard DAWKINS / New College, Oxford University

Evolution works by non-random survival of random variation. It is a very slow, very gradual process. It has to be or it couldn't properly explain what it in fact does explain : everything about our existence and why we are the way that we are. Nevertheless, there is more to it. New genetic variations are random in some senses but not in others: they work by making small changes to existing processes of embryonic development, and are limited because each embryology allows only certain kinds of change. Also, some kinds of embryology are good at fostering further evolution and others are bad. We may be able to discern a kind of selection among embryologies in favour of 'evolvability'. My own understanding of this was aided by playing with my computer program 'Blind Watchmaker', which simulates a form of evolution - of 'computer biomorphs' - on a computer screen. The original version was rich in evolutionary potential but, even so, limitations became apparent and these proved to be inherent in the embryology of the biomorphs. Innovations in the embryological rules unleashed new flowerings of evolutionary potential : incorporating 'segmentation' or changing the rules of bodily symmetry proved particularly pregnant with possibility, just as presumably they did in the evolution of real life. The lecture will be illustrated by demonstrations of computer biomorph evolution in action.

Richard Dawkins was born in Kenya in 1941. He was educated at Oxford University. He was Assistant Professor at UC Berkeley, 1967-1969, and has been University Lecturer in Zoology at Oxford and Fellow of New College since 1970. He is author of 'The Selfish Gene' (1976), 'The Extended Phenotype' (1982) and 'The Blind Watchmaker' (1986).

* Tea & coffee will be served at 15.30 hrs.

Thursday 20 April

TECHNICAL PRESENTATION

09.00 to 17.00 hrs - Car park near bldg 63 (PTT)

Servomex (UK) Ltd, a leading manufacturer of Gas Analysis equipment in Britain, has equipped an exhibition van with a cross-section of their products. Equipment displayed will include oxygen measuring equipment using the magnetodynamic principle or a zircon dioxide measurement cell. The former is used in the portable (570) and industrial oxygen analysers (1100 A), as well as in the ambient air monitoring system (1175), already in use at CERN. Zirconia cells are used in oxygen trace analysis equipment (756) and flue-gas measuring systems for boiler efficiency optimization. Recently added to the range of products have been a number of instruments for the detection of toxic gases. Also shown is the Infrared Process Stream Gas Analyser (402). This uses the proven 'one-tube', two-wavelengths' principle, withz cancels effects of changes in detector sensitivity, source energy or tube contamination, thus ensuring excellent long term stability. Servomex is represented in Switzerland by Marino Müller (tel. 01-984 13 53).

Languages : English, French & German
Information : M. Diraison / FI / 4585

Thursday 20 April

DEC SYSTEM MANAGERS' MEETING

at 10.00 hrs - DD Auditorium

1. Minutes of previous meeting and matters arising :
 - a) Distribution of Minutes
 - b) Status of DEC contract for 1989
 - c) Status of 'Dossiers' for CERN contract extensions
 - d) Review of DEC Support Centre in St. Sulpice (facsimile, e-mail, etc.)
 - e) DEC/CERN Account Staff review
 - f) Re-organization of DEC office space at CERN
2. CERN DEC Joint Project status
3. Report from last DEC Account Review Board
 - a) DRB32 and UU Driver Support
 - b) Netsystem Pilot Project
 - c) System Management Service Study
 - d) Status of TA90 test results & commercial conditions
4. New DEC training courses
5. DECNET configuration
6. DEC products announced in the last quarter
7. Security
8. SDD (Symptom Directed Diagnosis) Tool Presentation
9. AOB

Thursday 20 April

DD SEMINAR

14.00 to 15.00 hrs - DD Auditorium
bldg 31, 3-005

Building the fastest possible uniprocessors : trace scheduling compilers and VLIW architectures

by Joseph A. Fisher / Multiflow Computer, Inc.

Overlapped execution of CPU operations is today's hottest development topic among yesterday's RISC developers. The basic idea is to issue as many operations as possible whenever the clock ticks, rather than issuing a single operation and waiting for it to complete before issuing the next. Virtually every RISC development project has now turned its attention to this topic. Conventional wisdom has it that the hardware should decide, while the program is running, which set of operations to issue each cycle. Conventional wisdom is wrong. Far more speedup is available if the compiler makes this decision in advance, but certain seemingly impossible problems would have to be solved. These problems now have been solved with a software technique called Trace Scheduling. As a result, the VLIW (Very Long Instruction Word) RISC machines described in

this talk offer a compiler the ability to overlap more than 50 operations. Despite having instruction words over 1000 bits long, they are used as normal computers and yield the fastest uniprocessors by far for a fixed circuit speed. These systems take full advantage of non-vectorized code, do vector operations faster than a vector machine, and serve as excellent nodes for multiprocessors.

Thursday 20 April

DD SEMINAR

15.15 to 16.15 hrs – DD Auditorium
bldg 31, 3-005

The Multiflow Trace / 300 Series

by Joseph A. FISHER / Multiflow Computer, Inc.

Based upon the technology described above, the Multiflow Trace / 300 is a family of general-purpose, easy to use, very high performance scientific/engineering computers. As a result of Multiflow's software driven approach to high performance, the Trace achieves supercomputer performance without requiring the user to spend significant time rearranging his algorithms. The Trace runs most major scientific and engineering prepackaged applications (and runs them fast), and is especially effective on user-developed 'in house' codes. Multiflow's customer base includes many Fortune 1000 corporations and research groups in government, defense and academic institutions. Multiflow is recognised in the US as a leading manufacturer of high performance computers. While the Trace has been available in West Germany for the past year (where it has captured a very large portion of the high performance computing market), it is now being introduced and is available in the rest of Western Europe.

Thursday 20 April

CERN COLLOQUIUM

at 16.30 hrs – Auditorium*

Probing the interior of a star

by R.M. BONNET / European Space Agency

Only 25 years ago a colloquium advertised with such a title would have seemed pure fiction. Today this is not at all the case : we count neutrinos emitted in the core of the Sun, new techniques used until recently by geophysicists to probe the interior of the Earth can rather easily be applied to the Sun and allow to infer the temperature, density, chemical composition and the rotation rate of our star below the photosphere. Furthermore, long term observations from the ground and from space give new insights on the overall dynamics of the interior in the Convection Zone and give clues as to what and where is the origin of the Solar Cycle. The role of future observations linked to helioseismology and conduc-

ted in particular from space appears essential to determine unambiguously the key parameter affecting the Solar Model near its core.

* Tea & coffee will be served at 16.00 hrs.

Friday 21 April

PRESENTATION

10.00 to 12.00 & 14.00 to 16.00 hrs
DD Auditorium, bldg 31, 3-005

Latest news from Motorola

Motorola will present the latest news and information on their products including :

- VMEexac real-time kernel
- MC88000 based VMEbus boards
- DECnet on Motorola UNIX systems.

The morning session will consist of a formal presentation and question and answer sessions. The afternoon will be devoted to practical demonstrations and informal discussions.

Refreshments will be served in DD Conference Room no. 1 (bldg 600) for the benefit of the participants, starting at 12.00 hrs (or the end of the formal presentation).

Information : C. Parkman / DD / 3963 /
PMN@CERNVM

Monday 24 April

EF SEMINAR

at 11.00 hrs – EF Conference Room
bldg 13, 2-005

A new generation of computational tools in structural engineering

by Lionel BORNE / CERN-EF

The goal of this seminar is to introduce the recent concepts of operators and typed objects, which improve considerably the programming capacities for the finite element method in structural engineering. The versatility of such architecture will be discussed using the CASTEM 2000 package. It provides a simple, powerful, and interactive environment for the user : the finite element modeling is done using an 'evolved' language to link operators and typed objects. Natural typed objects and basic operators will be used in a very simple analysis. New features will be also explored :

- The user's capacity to check, modify, improve an algorithm without any help from the developing team.
- The user's capacity to build procedures and libraries, his own environment.
- The capacity to perform other types of analysis and to incorporate new features.

Language : Foils will be in English; the talk will be in French.

Lundi 24 avril

PRESENTATION TECHNIQUE

de 14.00 à 17.30 h – bus, parking extérieur, près de l'entrée principale

Excom AG (CH/J) présente ses nouveautés en matériel informatique :

- *Ordinateurs : EPSON AX, AX2, AX3 386 20 MHz, AX portable 286 12 MHz, PSE30*
- *Imprimantes : EPSON LX-850 : LQ-550, SQ-850, SQ-2550, TLQ-4800, TSQ-4800, GQ-5000 laser jusqu'à 6 MB de mémoire, LQ-860/1060*
- *Moniteurs : EIZO 4051 WL monochrome blanc 14", 6500 monochrome blanc 21" pour PAO, 9060 FLEXSCAN 14", 9070 FEXSCAN 16", 9500 FLEXSCAN pour la CAO.*

Langues : allemand, anglais, français

Renseignements : M. Diraison / FI / 4585

TRAINING AND EDUCATION ENSEIGNEMENT



ENSEIGNEMENT TECHNIQUE
TECHNICAL TRAINING

Tél. Secrétariat : 44.60

RAPPEL

Séminaire de Mathématiques pour ingénieurs et physiciens appliqués

LES SYSTEMES DYNAMIQUES

Henri EPSTEIN

Institut des Hautes Etudes Scientifiques
Bure-sur-Yvette

du 24 au 28 avril 1989

- Théorèmes fondamentaux d'existence
- Variétés stables et instables
- Linéarisations
- Théorème KAM et questions connexes
- Systèmes hyperboliques
- Systèmes à une dimension réelle ou complexe.

Il reste encore quelques places. Les personnes intéressées sont priées de contacter le secrétariat le plus rapidement possible.

Mercredi 26 avril

PRESENTATION

à 09.00 h – Amphithéâtre LEP
bât. 30, 7e étage

Applications de systèmes experts au LEP

Journée de démonstration autour du générateur GENESIA

Mercredi 26 avril

PRESENTATION TECHNIQUE

de 09.30 à 16.30 h – bât. 17, salle 1-007

X-Tronix SA (CH) présente ses produits.

INFORMATICS TUTORIALS 1989

Announcement

- Title** : An Introduction to Operating Systems
- Lecturer** : C.R. SNOW / University of Newcastle-upon-Tyne
- Dates** : Monday 9 to Friday 13 May
- Place** : Mornings – DD Auditorium (bldg 31, 3rd floor)
Afternoons – Technical Training facility (bldg 593)

The course discusses the principles of operating system design, taking a detailed look at the overall structure of an operating system, and the design and implementation of its various components. As each aspect is considered, various alternative design decisions will be described and evaluated. The course will be divided into five parts, each one corresponding (roughly) to one of the five days during which the course will run. The aspects to be considered will be :

- *Introduction to operating systems, processes and interprocess communication, system structure, process representation, process scheduling*
- *User view of an operating system, user interaction with the system, system calls*
- *Memory management, allocation of real memory, virtual memory and its management*
- *Input/output, device drivers, deadlocks*
- *File systems : design and implementation*