

# SEMINARS SEMINAIRES

**Monday 25 April**

EF SEMINAR

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

**DUMAND, the Deep Underwater Muon And  
Neutrino Project and the successful short  
prototype string experiment**

by Peter GRIEDER / University of BERN

*The goals of the DUMAND (Deep Underwater Muon And  
Neutrino Detector) project are briefly outlined, followed  
by a more detailed presentation of the successful short  
prototype experiment. Instrumental aspects as well as data  
analysis are discussed and a first set of data is presented.*

**Monday 25 April**

EP SEMINAR

at 16.30 hrs – Auditorium

**Direct photon production in UA1**

by B. MOURS / LAPP-Annecy

*Isolated photons, produced directly by a hard scattering  
process, have been observed in the UA1 experiment at  
centre-of-mass energies  $\sqrt{s} = 546$  GeV and  $\sqrt{s} = 630$  GeV.  
Photon differential cross-sections will be presented and  
compared with the expectations of QCD. The topology of  
the events will be discussed. The cross-section for low  
mass, high  $P_T$  Drell-Yan production will be compared to  
the direct photon cross-section using a relationship between  
real and virtual photon production.*

**Tuesday 26 April**

EP SEMINAR

at 11.00 hrs – Auditorium

**Please note unusual day and time!**

**Silicon drift detectors**

by P. REHAK / BNL

*Silicon drift detectors were proposed six years ago. Since  
then prototype detectors have been successfully produced  
and tested. The position resolution of these detectors has  
been measured to be better than  $5 \mu\text{m}$  over areas of a few  
 $\text{cm}^2$ . An overview of recent results and new developments  
will be given.*

**Tuesday 26 April**

CERN PARTICLE PHYSICS SEMINAR

at 16.30 hrs – Auditorium\*

**Recent results from Kamiokande**

by Y. TOTSUKA / Institute for Cosmic Ray  
Research, University of Tokyo

1. A deficit in the atmospheric mu-neutrino flux was observed after analysing the 2.9 kt . yr data. It can not be explained by any systematic effects of the Kamiokande detector. Neutrino oscillations might be a solution for it.

2. We are currently searching for  $^8\text{B}$  solar neutrinos. The result based on the analysis of the data January 1987/March 1988 will be reported. The present upper limit of the  $^8\text{B}$  solar neutrino flux is about 60% of the standard solar model prediction (90% CL). There seems to be a small excess ( $2\sigma$  level) which might be a genuine  $^8\text{B}$  signal.

3. The next Kamioka project, Super-Kamiokande, will be briefly presented.

\* Tea and coffee will be provided at 16.00 hrs.

**Wednesday 27 & Thursday 28 April**

TECHNICAL PRESENTATION/EXHIBITION

10.00 to 16.00 hrs – bldg 73, Room 2-027  
Meyrin Site

*To improve your information you are invited to visit the  
exhibition organized by the members of the French  
Manufacturers Association for Measuring Instruments and  
Industrial Control SYMECORA.*

Languages : French, English

Information : M. Diraison / FI / 4585

## ELECTRONIC MEASURING

Wednesday 27 April

| COMPANIES                 | PRODUCTS                                                                                                                                              |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| AKSUD                     | Acoustics : microphones, calibration systems, sound level meter systems                                                                               |
| AOIP                      | Calibrators, multimeters, data acquisition and logging systems, digital panel meters                                                                  |
| CHAUVIN ARNOUX            | Multimeters, insulation and earth resistance meters, digital panel meters, controllers                                                                |
| DAMELEC                   | Electric and electronic instruments and systems maintenance                                                                                           |
| METRIX                    | Analog and digital multimeters, oscilloscopes                                                                                                         |
| MULTISOURCES ELECTRONIQUE | IEEE 488 programmable power supplies and electronic loads, insulation testers, gigohmmeters, bench and O.E.M. power supplies                          |
| PHOTONETICS               | Measurements on optical fibers, optical fiber sensors for two phase mixtures                                                                          |
| SCHLUMBERGER INDUSTRIES   | Electronic test and measurement instruments                                                                                                           |
| SEFELEC                   | Dielectric strength test generators, megohmmeters, milliohmmeters, gigohmmeters, measuring bridges, test systems, low and high voltage power supplies |

Thursday 28 April

| COMPANIES         | PRODUCTS                                                                       |
|-------------------|--------------------------------------------------------------------------------|
| BERRUET-MONNET    | Electronic recorders for physical quantities                                   |
| CORECI            | Controllers, timers : whole types - Humidity measurement devices : whole range |
| DESGRANGES & HUOT | Digital pressure standards                                                     |

|                           |                                                                                                                                                                            |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GEORGIN                   | Pressure, temperature, level, flow control devices :<br>- electric or pneumatic or electronic devices output 4/20 mA<br>- IPX5 or intrinsically safe or intrinsically safe |
| JPB                       | Pressure sensors and transmitters, accelerometers                                                                                                                          |
| KROHNE                    | Flowmeters, level indicators, densimeters                                                                                                                                  |
| MASONEILAN                | Control valves                                                                                                                                                             |
| PROTAIS                   | Manometers - Pressure transmitters - Measure and control level devices                                                                                                     |
| SART                      | Float type flowmeters, level indicators, level contactors, control valves                                                                                                  |
| SAUNIER DUVAL ENTREPRISES | Automatized equipment and instrumentation and electrical systems, device, production, installation                                                                         |
| SENSOREX                  | Displacement transmitters : LVDT type - Bank indicators                                                                                                                    |
| SFERE                     | Multipurpose programmable converters/transmitters for analog and digital measurements                                                                                      |
| SPECITEC                  | Temperature transmitters - Study and production of systems - Study and production of special sensors                                                                       |

## Wednesday 27 April

### PS SEMINAR

at 11.00 hrs – PS Auditorium (bldg 6, 2-024)

**The PS timing system and the program-line-sequencer control of the power house**

by J. LEWIS

## Wednesday 27 April

### THEORETICAL SEMINAR

at 14.00 hrs – TH Conference Room

**Cellular automata approach to physical problems**

by M. DROZ / Département de Physique Théorique, Université de Genève

*The main applications of cellular automata (C.A.) in physical problems are briefly reviewed. After having defined what a C.A. is, some considerations on the motivations to use C.A. in physics are given. Several examples of their applications in the fields of hydrodynamics, equilibrium statistical mechanics of systems on a lattice, growth mechanisms, diffusion processes, pattern recognition, models of memory and deterministic dynamics are given. An explicit application to a model of non-equilibrium phase transition is considered in more details. It is shown how the C.A. rules are reconstructed, how to define analytically a mean field approximation for the automation and how the results of this mean field approximation compare with the exact numerical solution of the model. Finally some general remarks on the prospects and open problems in the field are made.*

## Wednesday 27 April

### COMPUTER SEMINAR

at 16.00 hrs – Auditorium

**The fractal cosmos: m-sets, mountains & music**

by Richard F. VOSS / IBM, Yorktown

*Geometry, the mathematical language for the description and manipulation of shapes, is often viewed as dry, dull and synonymous with the simple triangles, circles and cones of classical Euclidean geometry. Such basic shapes, however, offer a poor vocabulary for nature's seemingly complex forms. Benoit Mandelbrot was the first both to recognize the obvious problem : 'mountains are not cones, clouds are not spheres' and to provide the answer in terms of a new mathematical language: the fractal geometry of nature. Fractal shapes, generated from simple rules repeated over and over, are insensitive to magnification. Even the simplest fractals can capture the essence of mountains, clouds, trees, melodies or unimagined, but strangely familiar, new worlds of breath-taking natural beauty. Since its invention in 1975, fractal geometry has revolutionized the application to science of non-Euclidean constructs; it is now widely accepted as the appropriate mathematical framework for the irregular shapes of nature. The imagery of fractals has also stimulated renewed interest in science, computation and mathematics by visual designers, artists and movie makers. This talk will rely heavily on computer-generated images, animation and music to provide an intuitive introduction to the subject.*

#### The speaker

Dr Richard Voss is a recognized pioneer and popular lecturer on fractals. After receiving a PhD in Physics from UC Berkeley in 1975, he joined IBM as a Research Staff Member and has since worked closely with Mandelbrot. His computer-generated images have appeared widely in the popular scientific press (and in IBM advertisements). His research in condensed matter physics includes low temperature macroscopic quantum phenomena in Josephson junction devices, low frequency noise and the fractal characteristics of random media and growth processes.

\* Tea and coffee will be served at 15.30 hrs

## Thursday 28 & Friday 29 April

### DISCUSSION MEETING ON LEAD BEAM EXPERIMENTS AT THE SPS

Auditorium

#### Thursday afternoon at 14.00 hrs

CERN's view of the Pb program ..... H. Schopper  
Status of the Pb beam project ..... R. Stock  
J/ $\psi$  and di-muons in the Pb era ..... L. Kluberg  
Di-electrons in nuclear collisions ..... H. Specht  
Super-GAMS for photons,  $\pi^0$ ,  $\eta^0$  ..... R. Santo  
Measurement of Multi-pion Correlation with Pb ..... T. Humanic  
Di-quarks and baryons at high  $p_T$  ..... W. Geist

#### Friday morning at 9.00 hrs

Accelerator planning/status ..... H. Haseroth  
Large Acceptance Hadron Spectrometer ..... H. Gutbrod  
Large TPC for particle identification ... J. Harris or H. Pugh  
RICH detectors for Pb experiments ..... A. Sandoval  
Fully automated Streamer chamber analysis ..... F. Puhlhofer  
TPC for lead experiments ..... C. Gruhn

#### Friday afternoon at 14.00 hrs

Omega spectrometer for neutral strange particles ..... E. Quercigh

|                                                      |           |
|------------------------------------------------------|-----------|
| Special purpose spectrometers and calorimeters ..... | C. Fabjan |
| Special spectrometer .....                           | W. Willis |
| Emulsion hybrid experiment .....                     | G. Romano |
| Last minute contributions                            |           |
| Discussion of further procedure .....                | L. Foa    |

## Vendredi 29 avril

### PRESENTATION TECHNIQUE

de 09.00 à 13.00 h – Parking PTT, bât. 63

*Amphenol GmbH (CH), représenté par Novitronic AG (CH), propose en exposition démonstration : connecteurs circulaires et rectangulaires pour l'industrie, connecteurs pour circuits imprimés, connecteurs pour câbles plats, connecteurs coaxiaux, connecteurs à contacts filtres, connecteurs T-Sub, connecteurs fibres optiques, connecteurs SMD (Surface Mounted Device), etc.*

Langues : allemand, anglais, français, italien  
Renseignements : Diraison / FI / 4585

## Monday 2 May

### SPECIAL PS ACCELERATOR SEMINAR

at 11.00 hrs – Auditorium

#### Introduction to accelerators

#### A prelude to CERN accelerator school courses

by E. J. N. WILSON / CERN-PS

*This 9 week course, under the auspices of PS Seminars, is intended for anyone with a technical or scientific background who would like to become familiar with the principles of accelerator design. The level of the course is chosen with the intention of preparing those with no specialist knowledge of accelerator theory for the CERN Accelerator School in September, but it will also be of interest to a much wider audience from all the technical Divisions. The first two talks (2 May at 11.00 hrs and 9 May at 14.00 hrs) will be by way of mathematical introduction for those whose matrix algebra and solution of differential equations may need refreshing. Starting on 16 May there will be a series of seven talks on all aspects of circular machines which will cover in a simple way the principles of focussing, betatron motion, dispersion, chromaticity, radio frequency systems and phase stability and beam instabilities. The special features of electron machines will be emphasized in preparation for LEP. All sessions will be held in the Main Auditorium (Bldg 500). There will be tutorial sessions on Fridays following the Monday courses.*

## Monday 2 May

### EP SEMINAR

at 16.30 hrs – Auditorium

#### Spectroscopy and annihilation of the $p\bar{p}$ atom at LEAR

by Ugo GASTALDI / CERN-EP

*An overview is given of the physics output of the LEAR experiments that have worked on the spectroscopy and*

*atomic cascade of protonium (PS171-ASTERIX, PS174, PS175) and on  $p\bar{p}$  annihilations at rest, that occur from levels of the  $p\bar{p}$  atom (PS170-APPLE, PS171-ASTERIX, PS182, PS183). Emphasis is put on results that could not have been obtained without LEAR and that offer new and unique physics tools for the spectroscopy of light non-exotic and exotic mesons and for nucleon-antinucleon nuclear physics. Topics include : formation of the  $p\bar{p}$  atom, effects of strong interactions on S and P atomic levels of protonium, dependence of the yields of atomic transitions of protonium on the target density, observation of dependence of the branching ratios of exclusive annihilation channels from the target density and from the selection of initial atomic states of protonium, concept and experimental observation of Angular Momentum Polarization (AMP), use of AMP to identify broad states (glueballs? hybrids?) produced in  $p\bar{p}$  annihilations at rest.*

## Tuesday 3 May

### SPS EXPERIMENTS COMMITTEE

#### Open session

Tuesday 3 May at 09.00 hrs – Auditorium

1. Status of experiment proposals for UNK (V. Obraztsov and L. Montanet).
2. Status report on WA80 (Study of relativistic nucleus-nucleus collisions; H.H. Gutbrod).
3. Status report on WA85 (Study of high energy nucleus-nucleus interactions with Omega equipped with a multiparticle high  $p_T$  detector; E. Quercigh).
4. Status report on NA35 (Study of relativistic nucleus-nucleus collisions; R. Stock).

#### Closed session

at 14.00 hrs – Conference Room 6th floor, Administration Building (to be continued on Wednesday 4 May at 09.00 hrs).

## Tuesday 3 & Wednesday 4 May

### PRESENTATIONS

at 09.00 hrs – bldg 32, 1-A24

**Please note unusual time and place!**

#### New graphics workstations from Tektronix

by R. STÄMPFLI / Tektronix

Tuesday 3 May :

|            |                                              |
|------------|----------------------------------------------|
| Exhibition | 09.00 to 12.00 hrs and<br>13.30 to 16.30 hrs |
| Talk       | 14.00 to 14.45 hrs                           |

Wednesday 4 May :

|            |                    |
|------------|--------------------|
| Exhibition | 09.00 to 12.00 hrs |
|------------|--------------------|

## Tuesday 3 May

### CERN PARTICLE PHYSICS SEMINAR

at 16.30 hrs – Auditorium

#### Charm hadro-production in proton-proton interactions at $\sqrt{s} = 27$ GeV

by M.I. JOSA / Ciemat, Madrid

## Wednesday 4 May

### PS SEMINAR

at 11.00 hrs – PS Auditorium (bldg 6, 2-024)  
**New ideas and evolution of accelerator timings**  
by G. BARIBAUD

## Wednesday 4 May

### LEP SEMINAR

at 14.30 hrs – LEP Auditorium  
**The LEP-BI Equipement Database at CERN**  
by X. ANDRIOPOULOS / CERN-LEP

## Wednesday 4 May

### LEAR DISCUSSION MEETING

at 14.30 hrs – PS Auditorium  
bldg 6, 2-024  
**Mesons and multi-quark spectroscopy**  
by N. ISGUR / CERN-TH

## Wednesday 4 May

### PRESENTATION

at 15.00 hrs – DD Auditorium  
bldg 31, 3-005  
**The S-1 Mini Supercomputer**  
by R. HARVEY & M. FUNG / Supertek  
Computers, Inc, California, USA

## Thursday 5 May

### CERN COLLOQUIUM

at 16.30 hrs – Auditorium  
**The cosmic background anisotropies**  
by F. MELCHIORRI / Università di Roma

## TRAINING AND **EDUCATION** **ENSEIGNEMENT**

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## Mardi 3 mai

### LES SCIENCES AUJOURD'HUI

à 20.00 h précises – Amphithéâtre  
(jusqu'à environ 22.00 h)  
par R. CARRERAS

*Rafel Carreras, responsable du programme d'Enseignement général au CERN, commentera et expliquera un choix d'articles parus récemment dans des revues scientifiques, et qui couvrent l'ensemble des sciences physiques et biologiques ainsi que certains aspects des relations science-société. Une attention particulière est portée au langage et aux notions utilisés afin que les*

*explications et les commentaires soient accessibles aux personnes n'ayant pas de formation scientifique.*

Entrée libre

(Please note that the lecture will be given in FRENCH)

Service des Relations Publiques  
Tél. 2722

## ENSEIGNEMENT GENERAL

**Tél. 2844 - 5811**

## Jeudi 28 avril

de 13.00 h à 13.30 h – Amphithéâtre  
**Science pour tous**  
par R. CARRERAS

## ACADEMIC TRAINING

**Tel. 2844 - 3364**

## 4, 5 & 6 May

11.00 h to 12.00 h – Auditorium  
**Technical problems of new accelerators**  
by K. JOHNSEN

*During the whole history of accelerators there has been a close relationship between technological development and the advancement of the art of particle acceleration. In most cases it has been the technology that has been leading and the accelerator builders who have made sophisticated use of this development. Recently it has become more common for the accelerator laboratories themselves to be the main force behind the necessary technical developments, such as superconducting magnets and cavities.*

*The lectures, although starting with a historical introduction, will mainly be devoted to the technical development of accelerators for the future, like very high energy hadron colliders and linear colliders for electrons. Some of the most exotic ideas will be mentioned at the end, but without details, as much research and development for those will still be needed before we start seeing the technical problems.*

## 4 & 6 May

14.30 h to 15.30 h – Auditorium  
**Please note unusual time!**  
**Experimental searches for dark matter**  
by B. SADOULET / University of California,  
Berkeley

*One of the most natural explanations for the dark matter which constitutes at least 90% of the universe, is that it is made of exotic particles, not yet seen at accelerators. The present density of dark matter constrains this rather general hypothesis enough for meaningful tests. The concentration of dark matter particles in the halo of our galaxy leads to potentially observable fluxes of  $\bar{p}$ ,  $e^+$ ,  $\gamma$  rays and neutrinos. Elastic scattering rates of the order of a few events per kg and per day are also expected. These two lectures will describe the present searches for such dark matter particles and the developments which are being undertaken to improve these searches.*