

SEMINARS SEMINAIRES

Monday 3 November

EF SEMINAR

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

Compositness : Do quarks, leptons and vector-bosons have a substructure?

by D. TREILLE / CERN

In spite of the successes of the Standard Model, present data do not exclude the possibility that leptons quarks and weak vector bosons are composite objects. The main ideas and the possible experimental signatures at existing and future accelerators are discussed.

Monday 3 November

CERN COMPUTER SEMINAR

at 15.00 hrs – Auditorium

Please note unusual date and time

The GF11 supercomputer

by Don WEINGARTEN / IBM, Yorktown Heights

The GF11 is a parallel processor currently under construction at the IBM Yorktown Research Center. The machine incorporates 576 floating-point boards. Each board carries 2 Megabytes of memory and has a peak arithmetic rate of 20 Megaflops, giving the total machine a peak of over 11 Gigaflops. These floating point processors are interconnected by a non-blocking switching network. At each machine cycle, any of 1024 preselected permutations of data can be realized among the processors. The main intended application of GF11 is a class of calculations arising from quantum chromodynamics.

Don Weingarten's main area of research is theoretical elementary particle physics. He joined the staff at the T.J. Watson Research Center of IBM in 1983. From 1969 to 1976 he held research positions at Fermi National Accelerator Laboratory, at the Niels Bohr Institute of the University of Copenhagen, the University of Paris at Orsay and the University of Rochester. From 1976 to 1983 he was a Professor of Physics at Indiana University in Bloomington, Indiana.

Monday 3 November

EP SEMINAR

at 16.30 hrs – Auditorium

Recent results on Ξ^* and Ω^* states from the SPS hyperon beam

by K. RAGAN / University of Geneva

Recent results on Ξ^ and Ω^* spectroscopy obtained in Ξ^- -Be interactions at the CERN-SPS charged hyperon beam are presented. The first Ω^* resonances have been observed in the $\Xi^- \pi^+ K^-$ channel. Several Ξ^* resonances have been investigated in the $\Lambda \bar{K}^0$, ΛK^- , and $\Xi^- \pi^+ \pi^-$ channels. A new state has been observed and studied at 1960 MeV/c², and there are indications for other new states at 1780 and 2180 MeV/c². The well-known Ξ (1820) has been observed and a parity measurement performed. The status of the Ξ (1690) has been improved by the observation of a 6.7 σ signal.*

Tuesday 4 November

EXPERT SYSTEMS SEMINAR

at 10.00 hrs – DD Auditorium
bldg 31, 3-005

The UNL Logic Programming Group and its research

by Miguel CALEJO / Grupo de Programação em Logica, Universidade Nova de Lisboa

A small historical perspective will be given on the Logic Programming Group at the New University of Lisbon (UNL), followed by a description of all its research activities : distributed logic programming languages, logic programming methodology and environment, knowledge base frameworks, natural language interface, rational methodology. The last two will be described in more detail, namely the constrained natural language (menu) interfaces, rational program debugging and perspectives on fault-finding.

Since graduating as an electrical engineer at the University of Porto in 1984, Miguel Calejo has been at the Logic Programming Group in Lisbon, working on constrained natural language interfaces using menus. He has now started working on his PhD thesis on rational fault-finding, under Professor Luis Pereira's supervision.

Tuesday 4 November

CERN PARTICLE PHYSICS SEMINAR

at 16.30 hrs – Auditorium*

Production and decays of heavy quark bound states

by Kay KÖNIGSMANN / Universität Würzburg, Germany and Deutsches Elektronen-Synchrotron DESY, Germany

Recent developments on the physics of heavy quark bound states will be summarized. The topics to be discussed are :

- radiative corrections for the processes $e^+ e^- \rightarrow \text{vector-meson}$;
- spectroscopy of heavy quark bound states including the possible existence of two new states;
- precision measurements of hadronic and electromagnetic transitions within bottomonium states and comparison with QCD inspired models; and
- exclusive and inclusive radiative decays of the charmonium J/ψ and bottomonium $\Upsilon(1S)$ states.

* Tea and coffee will be provided at 16.00 hrs.

Wednesday 5 November

THEORETICAL SEMINAR

at 14.00 hrs – TH Conference Room

Inverse scattering and the Riemann hypothesis

by N.N. Khuri / Rockefeller University, New York

Starting with a suitably chosen ansatz for an S-wave phase-shift, we use the Marchenko equation to prove the existence of a potential $U(r)$, satisfying

$$U(r) = \int_0^a |U(r)| dr < \infty, \quad \text{and} \quad \int_0^\infty |U(r)| dr < \infty$$

for which our input phase shift gives a scattering amplitude proportional to the Riemann Zeta function of argument

ment $(2+k)^{-1}$. Its zeros on the critical line produce redundant poles just as in the case of the soluble potential $U(r) = e^{-mr}$ and the analogy is startling. Then using the symmetry often stressed by Regge between the S-wave Schrodinger equation, and the l-wave equation at zero energy with $-k - i(l + 1/2)$, we see that the Riemann hypothesis implies that the zero energy Regge poles of the above potential all lie on the line $\text{Re } l = 1/2$. We point out specifically what is needed to make the last step along this line. Finally, assuming the validity of the hypothesis we give an explicit calculation of the potential.

Wednesday 5 November

DD SEMINAR

at 16.00 hrs – DD Auditorium
bldg 31, 3-005

Super computing at Cray Research

by Philippe DEFORCRAND / Cray
Chippewa Falls, Wisconsin

Hardware features of current Cray machines (X-MP and Cray-2) are reviewed. Trends for new design efforts (Y-MP, Cray-3, MP/64) are outlined. Some software tools for performance optimization (esp. floptrace) are described. Examples of multi-tasking/micro-tasking and asynchronous SSD usage are given, with emphasis on lattice gauge theory applications.

Vendredi 7 novembre

PRESENTATION TECHNIQUE

vendredi 7 novembre, de 10.00 à 18.00 h
samedi 8 novembre, de 09.00 à 13.00 h
9, rue Boissonnas, Acacias, Genève, tél. 424244

PORTES OUVERTES SUR L'INDUSTRIE

Créé en 1976, l'OPI, Office pour la Promotion de l'Industrie genevoise, entre autres activités au service de l'industrie genevoise, gère une exposition permanente (toute l'année du lundi au jeudi, de 08.00 à 18.00 h et le vendredi de 08.00 à 17.30 h), qui regroupe près de 150 exposants sur les 180 entreprises affiliées que compte l'Office. A l'occasion de son 10 anniversaire, des produits nouveaux viendront s'ajouter aux plus des 1000 articles qui sont exposés en permanence au siège de l'OPI, à savoir :

Nouveau robot genevois d'assemblage multi-stations de la gamme Cybro.

Machine à mesurer les jauges SIP 302 M, qui sert au contrôle et à la certification de toutes les jauges utilisées dans l'industrie.

Régulateur de pression electro-pneumatique HONEYWELL-LUCIFER, qui permet de régler une pression proportionnelle à un signal électrique analogique de consigne au moyen d'une commande électronique intégrée et d'une électro-vanne. Exemple d'application : doser une force de serrage dans le cas d'un robot.

Phototraceurs et systèmes CAO : INRAD, qui permet de créer les masques nécessaires à la fabrication de circuits imprimés, fonctionne avec une table plate.

Messages parlés... sans parleur : AMESA TECHNOLOGIES; frappés sur un clavier et visualisés sur écran, les messages écrits sont transformés en parole grâce

ce à une 'bibliothèque' de mots préenregistrés sous forme digitale.

Sécurité des biens et des personnes : Alarm, Care-Alarm, Lift-Call, Luxmatic de 3 S et transec, installation simple, rapide, sans câbles.

Vis à rouleaux satellites : Rollvis, sécurité et précision, qui permet le forage programmé d'une multitude de trous dans une plaque de métal.

Les boîtes intelligentes : réseau local X-bus de X-Com système modulaire, qui permettent par exemple la gestion à distance des chaufferies, la transmission d'alarmes, de décentraliser la collecte d'informations et l'action qui doit en résulter.

Langues : français (+ allemand, anglais sur demande)

Renseignements : M. Diraison / FI / 4585

Friday 7 November

CERN COLLOQUIUM

at 16.00 hrs – Council Chamber

Retrospective on the achievements of Louis Dick on the occasion of his 65th birthday

by V.L. TELEGDI, L. DI LELLA,
G. von DARDEL and W. KUBISCHTA

Monday 10 November

EF SEMINAR

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

Report on the Nuclear Science Symposium 1986, Washington

by J.P. DUFÉY / CERN

The 1986 Washington Nuclear Science Symposium will be reviewed with emphasis on data acquisition hardware and software.

Monday 10 November

EP SEMINAR

at 16.30 hrs – Auditorium

Physics aspects of hadron calorimetry

by Richard WIGMANS / CERN and NIKHEF

Future experiments in particle physics will increasingly rely upon the quality of data taken with hadron calorimeters. Recently, much progress has been made in understanding the factors that determine and limit the capabilities of these detectors. The achievable energy resolution and the signal linearity crucially depend on the relative calorimeter response to the electromagnetic and the purely hadronic shower components, the e/h signal ratio. The factors that determine the value of this ratio will be examined in some detail. The choice of the readout material and the sampling fraction turn out to be extremely important in this respect. Signal equalization, or compensation ($e/h = 1$) does not necessarily require the use of uranium absorber, but can be achieved with lead, and probably even with iron as well.

Tuesday 11 November

PROTON SYNCHROTRON AND
SYNCHRO-CYCLOTRON COMMITTEE

Please note : No open session

Closed session

Tuesday 11 November at 09.00 hrs in the 6th floor
Conference Room.

Tuesday 11 November

CERN PARTICLE PHYSICS SEMINAR

at 16.30 hrs – Auditorium

**Recent results on the electroweak interactions of
the tau lepton and the quarks from the MAC
Experiment at SLAC**

by Manuel C. DELFINO / University of
Wisconsin

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

Mardi 4 novembre

LES SCIENCES AUJOURD'HUI

à 20.00 h précises – Auditorium
(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

Jeudi 6 novembre

de 13.00 h à 13.30 h – Amphithéâtre

Science pour tous

par R. CARRERAS

Wednesday 12 November

PS SEMINAR

at 11.00 hrs – PS Auditorium

**What signs of QCD in spectroscopy?
How can LEAR help?**

by F.E. CLOSE / Rutherford Appleton
Laboratory, UK

Wednesday 12 November

LEP SEMINAR

at 14.30 hrs – LEP Auditorium
bldg 30, 7th floor

RF cavity tuning control for the LEP main ring
by P. BROWN / CERN-LEP

ACADEMIC TRAINING

Tel. 2844-3364

3, 4, and 5 November

11.00 to 12.00 hrs – Auditorium

Future colliders – physics and machines

by C.H. LLEWELLYN SMITH / University of
Oxford

CORRECTED VERSION

The lectures will contain :

- a) an overview of what might be learned from experiments at future e^+e^- , pp and ep colliders;
- b) a review of limitations on circular and linear colliders; and

- c) a description of some novel ideas for acceleration.

The discussion of physics will be aimed at accelerator physicists and non-experts in high energy physics. The discussion of colliders will be given from the point of view of an amateur and will be aimed at experimenters and theorists with little or no knowledge of accelerators.

11, 12, 13 and 14 November

11.00 to 12.00 hrs – Auditorium

Introduction to optical communication

by R. SALATHE / PTT, Berne

1. Fibres

Basic parameters, materials, attenuation, dispersion, polarization, strength and environmental effects.