

SEMINARS SEMINAIRES

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[http://www.cern.ch/seminars.html](#)

Tuesday 4 & Wednesday 5 February

2ND WORKSHOP ON RADIATION HARDENING OF SILICON DETECTORS

at 09.00 hrs – ECP Conference room, bldg 13/2-005

Tuesday 4 February

- 09.00 Introduction
- 10.00 Session 1: Silicon crystal growth and analysis, detector processing
- 12.00 Session 2: Macroscopic measurements of detectors before and after irradiation
- 14.00 continue
- 17.00 Session 3: Microscopic analysis and defects

Wednesday 5 February

- 09.00 Session 4: Irradiation facilities, normalization and systematic effects
- 10.00 Session 5: Reports from new groups, silicon manufacturers and new ideas
- 14.00 RD-48 / ROSE Collaboration meeting

Organisers: F. Lemeilleur, G. Lindstroem and S. Watts

Tuesday 4 February

COMPUTING COLLOQUIUM

at 14.00 hrs – Auditorium

Using the ACE Framework and Design Patterns to Develop Object-Oriented Communication Software

by Douglas C. Schmidt / Washington University

POSTPONED

Tuesday 4 February

ISOLDE SEMINAR

at 16.00 hrs – Conference room 304/1-001A

Highly Directional Monochromatic Tuneable Hard X-ray (or γ -ray) Emitted by Relativistic Positron (or Electron) Moving in a Carbon Nanotube

by V.S. LETOKHOV / Troitsk, Russia

This talk will consider theoretically the spontaneous emission of a relativistic positron (or electron) moving inside a single-layer carbon nanotube and interacting without retardation with the screened nuclear charge of the carbon atoms. It will be shown, for example, that a beam of positrons with energy of around 1 GeV and a divergence of some 10^{-4} rad is captured by the nanotube and emits hard X-ray with an energy of about 0.3 MeV in the direction of its propagation. Electrons with an energy of 200 MeV may emit in their propagation direction quanta around 6 MeV in energy and some 1 keV in line width. The theoretical evaluation obtained allows to consider carbon nanotubes as a new source of hard, monochromatic, highly directional, tuneable X- γ -radiation potentially suitable for the implementation of selective photo nuclear reactions.

Wednesday 5, Thursday 6 & Friday 7 February

LHC WORKSHOP ON DYNAMIC EFFECTS AND THEIR CONTROL

at 09.00 hrs – LHC Auditorium, bldg 30 (7th fl.)

The LHC collider will use superconducting magnets whose field and field errors will have large dynamic effects. These need to be controlled and corrected if satisfactory operation of the machine is to be achieved. The likely errors, performance and tolerances of various LHC systems will be reviewed and discussed along with experience from other superconducting machines. From this, it is hoped to set up a possible scenario for the operation and control of the LHC in the presence of the dynamic effects of superconducting magnets.

The detailed programme and a registration form can be found on the WWW; access via "CERN Events" from the CERN Home Page. Presentations will be made by specialists from various laboratories and the workshop is open to all those interested but you are kindly requested to register in advance.

Organisers : J.P. Koutchouk, P. Proudlock, and R. Schmidt
Workshop secretariat : Jill.Karlson-Forestier@cern.ch

Mercredi 5 février

PRÉSENTATION TECHNIQUE

09.00-17.00 h – bât. 13/3-005

Techniques de câblage, de mesure et de commutation par ELBRO SA (CH)

Technique de câblage : des programmes complets de marquage industriel ainsi que pour les domaines : isoler et protéger, fixer et lier.

Technique de mesure : un assortiment étendu des instruments de mesure variés des instruments d'usage quotidien aux instruments laboratoires de haute qualité pour des mesures électriques et des mesures de grandeurs physiques sera offert. Des instruments de mesure pour des tests au standard des plus actuelles normes sont disponibles.

Technique de commutation : à part des horloges et interrupteurs horaires Grässlin bien connus, la maison Elbro offre aussi de régulateurs de température et des appareils de commutations.

Langues : français, allemand
Information : L. Abel / FI-A / 79561

Wednesday 5 February

GENERAL COLLOQUIUM

at 14.00 hrs – TH Conference Room

Determination of cosmological parameters using the most recent observations of the cosmic microwave background

by Charley LINEWEAVER / Observatoire de Strasbourg

The photons of the cosmic microwave background (CMB) are a rich and unique legacy of the universe shortly after the Big Bang. Five years ago, by observing the CMB, the COBE satellite discovered the oldest and largest structures in the Universe, structures which hold the key to the origin and formation of all the large objects into which our Universe is currently divided: galaxies, voids, clusters and superclusters of galaxies. Motivated by the success of COBE, NASA and ESA have decided to launch MAP (around the year 2000) and COBRAS/SAMBA (around 2005). Objective: determine the ultimate fate of the Universe (Ω_0), what the Universe is made of (Ω_{baryon} , Ω_{CDM} , etc.) and the age and size of the Universe (H_0 , Λ) at an unprecedented precision of a few per cent or better. Since the discovery by COBE, measurements of CMB fluctuations from balloons, mountains and from the South Pole, using bolometers, HEMTs and interferometers, have become increasingly accurate. Using a synthesis of these most recent observations, we have already obtained interesting constraints on Hubble's constant ($H_0 = 30^{+13}_{-9}$ km/s/Mpc) and on other cosmological parameters.

Wednesday 5 February

COMPUTING SEMINAR

at 16.00 hrs – IT Auditorium, bldg 31/3-005

Converting Structured Documents into Web Pages, using LaTeX2HTML

by Ross MOORE / Mathematics Department, Macquarie University, Sydney, Australia

LaTeX2HTML can be regarded as a word-processor that accepts input written using LaTeX to produce HTML markup for Web-pages. Hence it is a natural choice for a Web-page generator if you currently use LaTeX as a word-processor. Yet this only represents roughly 90% of the usage of LaTeX2HTML, and it is really that last 10% that makes LaTeX2HTML stand out as an excellent tool in its own right.

In this talk we look at the different requirements for electronic and hard-copy publications, and how these requirements are met in the HTML pages produced by LaTeX2HTML. In particular we look at the strategies available for producing and maintaining "structured" documents, which draw input data from a multitude of source files, in a variety of formats, with data that can change over time, thus needing continual updating.

Organiser : G. Folger / IT

Thursday 6 February

DETECTOR SEMINAR

at 16.30 hrs – ECP Conference Room, bldg 13/2-005

Radiation hardening of silicon detectors for the LHC experiment: Status of the ROSE/RD48 Collaboration

by Stephen J. WATTS / Brunel University

The ROSE Collaboration is investigating "defect engineering" of silicon detectors. The radiation environment in the LHC experiments will result in significant changes to the operating parameters of the silicon detectors. The collaboration is investigating various types of silicon substrate in order to identify the best material for use at the LHC. The 2nd Workshop on Radiation Hardening of Silicon Detectors and the ROSE Collaboration meeting will be held at CERN on 4/5th February, and this talk will provide up-to-date information on progress

with oxygenated float zone (OFZ), epitaxial, si-tin, si-ge, and other silicon substrates. Progress in the understanding of radiation damage in silicon and future plans of the collaboration will also be discussed.

Friday 7 February

MEETING ON PARTICLE PHYSICS PHENOMENOLOGY

at 14.00 hrs – TH Conference Room

Jet measurements in high-precision/low-signal problems. (What is a jet?)

by Fyodor TKACHOV / CERN & INR, Moscow

- Theoretical principles of the new theory of observables for description of multijet structure.
- Ambiguities of jet algorithms = instabilities w.r.t. statistical, measurement, rounding, etc. errors and higher-order corrections.
- Mathematical interpretation of the stability criterion; observables that satisfy the criterion.
- Compatibility with quantum field theory; implications for higher-order theoretical calculations and power corrections.
- C(alorimetric)-correlators instead of jet algorithms: description of "number of jets" and "n-jet mass spectra".
- Uniquely defined, universal (e^+e^- and pp) "optimal" $n \rightarrow 1$ clustering algorithm as a tool of approximate calculations of new observables from data.
- Describing hadronization without MC generators?
- Implications for e^+e^- into "3 jets" (towards NNLO and power).

Monday 10 February

ISOLDE EXPERIMENTS COMMITTEE

Open session

at 14.00 hrs – Council Chamber

1. Introductory remarks by the Chairman.
2. Progress report by the ISOLDE Technical Group Leader.
3. ISOLDE Coordinator's report.
4. Beta decay asymmetry in mirror nuclei: A = 9 (Aarhus - CERN - Göteborg - Madrid - Stockholm Collaboration); CERN/ISC 97-2/P88; O. Tengblad. (20 mn + 10 mn)
5. β -NMR study on microscopic structure and diffusion behaviour of Li implanted into ZnSe (Marburg - Mainz - Leuven - ISOLDE/CERN Collaboration); CERN/ISC 97-8/P67 Add.1; B. Ittermann. (20 mn + 10 mn)
6. Status Report on Experiment IS351 and request for beam time: Search for ^{73}Rb and investigation of nuclear decay modes near the Z=N line in the border region of the astrophysical RP-process path (CERN - Gatchina - Jyväskylä - Leuven - Lyon - Strasbourg - IN2P3 Collaboration); CERN/ISC 97-3/P63 Add.2; A. Jokinen. (20 mn + 10 mn)
7. Electron paramagnetic resonance investigations of Erbium and Silver related defects (Technische Universität Berlin - CERN/ISOLDE Collaboration); CERN/ISC 97-7/P83 Add.1; A. Näser. (20 mn + 10 mn)
8. Addendum to experiment IS339: The mechanism of β -delayed two-proton emission in the ^{31}Ar decay (Aarhus - CERN - Göteborg - Jyväskylä - Madrid Collaboration); CERN/ISC 97-4/P56 Add.1; M.J. Borge. (20 mn + 10 mn)

Closed session

after the Open Session, 6th Floor Conference Room,
Main Building.

Monday 10 February

PPE SEMINAR

at 16.30 hrs – Auditorium*

Two-photon physics with the OPAL detector

by Richard NISIUS / CERN-PPE

The OPAL detector has collected data for centre-of-mass energies $\sqrt{s_{ee}}$ ranging from the mass of the Z^0 boson M_{Z^0} up to 172 GeV. This data provides a rich field for the analyses of two-photon reactions which are used to study the internal structure of the photon. Two-photon scattering processes are usually experimentally divided according to the virtuality of the interacting photons, which is related to the scattering angle of the electrons. In this presentation results for untagged events (no $e^\pm$ is observed in the detector) and for singly-tagged events (one $e^\pm$ is observed) will be shown. The untagged events can be described in terms of the scattering of two quasi-real photons. The analyses of these events focus on the flow of hadronic energy and on the production of jets. The jet-production was found to be well described by next-to-leading order QCD calculations. The singly-tagged events will be discussed in the framework of deep inelastic electron-photon scattering. The main interest here is the measurement of the structure functions of the photon in hadronic and leptonic final states. The hadronic structure function and its evolution with $\ln Q^2$ have been determined in the range from 7.5 - 135 GeV². The results obtained help to better understand the structure of the photon. The analyses will be extended into a new energy regime within the LEP2 programme.

*Tea & coffee will be served at 16.00 hrs.

Tuesday 11 February

CERN COLLOQUIUM

at 16.30 hrs – Auditorium

Vortex nucleation in quench-cooled superfluid phase transition : model for cosmological large-scale structure formation?

by Matti KRUSIUS / Helsinki University of Technology

POUR INFORMATION / FOR INFORMATION

UNIVERSITY OF GENEVA

Particle Physics Department

24, quai Ernest-Ansermet, 1211 Geneva 4

Tel. 022 702 6273, Fax. 022 781 2192

Wednesday 5 February

PARTICLE PHYSICS SEMINAR

at 17.00 hrs - Auditoire Stückelberg

Bayesian reasoning in high energy physics

by G. D'AGOSTINI / "La Sapienza", Rome

Bayesian statistics associates the idea of probability - the measure of the degree of belief that an event will occur - to the lack of knowledge, as it is commonly perceived intuitively. The Bayes' theorem becomes then the basic tool to evaluate the probability, combining a priori judgements and experimental information. This approach allows to treat in a logically consistent way all kinds of uncertainties, including those originated from systematic errors. This fact has been also recognized recently by the international metrology organizations. The results are compared with the standard - frequentistic - methods currently used for uncertainty evaluations and hypothesis tests.

EDUCATION SERVICES EDUCATIFS



Information sur les cours, dates et places disponibles sur WWW:
Information about the courses, dates and places available on WWW :
<http://www.cern.ch/Training/>

ACADEMIC TRAINING ENSEIGNEMENT ACADEMIC

F. Benz Secretariat ☎ 73127

LECTURE SERIES

3, 4 & 5 February

11.00 to 12.00 hrs – Auditorium

Physics at the Nanoscale : from Imaging to Electronics

by C. JOACHIM / CEMES-CNRS, Toulouse, France

Physics at the nanoscale is concerned with the properties of objects like single atom or a single molecule. These properties range from mechanics (external or internal) to electronics (tunnel transport, switching, amplification). Starting from the microscopy (scanning tunneling microscopy), the conditions to slide, pull or push an adsorbate will be given for a molecule. The controllability of intramolecular mechanic will be discussed. Electrical contact on a single atom (or molecule)

will be shown opening experiments on ballistic and tunnel transport phenomena through atomic and molecular wire. Finally, a nanoscale electromechanical amplifier using a single molecule (with gain of 5) will be described.

10, 11, 12 & 13 February

11.00 to 12.00 hrs – Auditorium

Design Issues of Superconducting Magnets for LHC

by R. PERIN, D. PERINI, D. LEROY / CERN-LHC

In these series of lectures, types, design principles and main features of the superconducting magnets for the LHC will be reviewed, with a particular emphasis on the main dipoles. A general description of the LHC magnet system and a review of the fundamental technical characteristics of the magnets will be given in the first lecture. The two following lectures will be devoted to magnetic and mechanical design principles, and to superconductors and their influence on magnet performance. The fourth lecture will provide details of the mechanical design and construction of the dipole magnets