

SEMINARS SEMINAIRES

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<http://wwwas.cern.ch/Bulletin/Seminars/current.html>

Monday 20 April

EP SEMINAR

at 16.30 hrs – Auditorium, bld. 500*

Final energy calibration at LEP 1

by Guy WILKINSON / CERN-EP

The determination of the centre-of-mass energies for the LEP1 data of 1993, 1994 and 1995 has recently been finalised. Accurate knowledge of these energies is crucial in the measurement of the Z resonance parameters. The evolving understanding of the factors influencing the LEP energy is presented, and the analysis of the 1993-1995 data described.

Organiser : Fabiola Gianotti / EP Division

** Tea & coffee will be served at 16.00 hrs.*

Tuesday 21 April

DUALITY WORKSHOP

at 14.00 hrs – TH Conference Room, bld. 4

D-particle bound states and generalized instantons

by Samson SHATASHVILI / CERN-TH

I compute the principal contribution to the index in the supersymmetric quantum mechanical systems which are obtained by reduction to 0+1 dimensions of $N = 1$, $D = 4, 6, 10$ super-Yang-Mills theories with gauge group $SU(N)$.

Wednesday 22 April

LHCC COMPUTING BOARD

Open Session

at 10.30 hrs – Council Chamber, bld. 503

10.30 RD45 Status Report [Persistent Object Manager for HEP] (LHCC 98-11/LCB RD45 Status Report; J. Shiers)

11.20 Collaboration Database (PIE) Status Report (LCB 98-6; R. Martens)

Wednesday 22 April

PS SEMINAR

11.00 hrs – PS Auditorium, bld. 6/2-024

Lead Ion Accumulation in LEAR for the LHC

by M. CHANEL & G. TRANQUILLE / CERN

Colliding heavy ions in LHC require an entirely new production scheme including accumulation and cooling in the LEAR machine. In 1997, before its long shutdown, LEAR was modified to test the multitrans injection and the accumulation process. More than 5×10^8 Pb^{54+} ions were stored. This result was obtained by pulsing the Linac3 every 0.4 s, injecting a batch of ions over 20 turns and collecting 10 batches. The scenario of ion collisions in the LHC will be described and the technical aspects of injection and electron cooling thoroughly discussed.

Organiser: Bruno Autin

Wednesday 22 April

THEORETICAL SEMINAR

at 14.00 hrs – TH Conference Room, bld. 4

Non-exponential damping of excitations in hot gauge theories

by Jean-Paul BLAIZOT / Saclay

It has recently been found that the elementary excitations in gauge theories at high temperature suffer an unusual type of damping, characterized by a non-exponential time dependence. I shall explain how this result was obtained and discuss its implications for the physics of the quark-gluon plasma. I shall also briefly mention other physical situations where a similar behaviour could be expected (for instance in the scattering of light by random media).

Thursday 23 April

COMPUTING COLLOQUIUM

at 09.30 hrs – Council Chamber, bld. 503

Scientific Computing using the Blitz++ Class Library (Part 1)

by Todd VELDHUIZEN / University of Waterloo

The C++ programming language offers many desirable features useful for tackling complex scientific computing problems: inheritance, polymorphism, generic programming, and operator overloading are some of the most important.

Unfortunately, these advanced features came with a hefty performance pricetag: until recently, C++ lagged behind Fortran's performance by anywhere from 20% to a factor of ten. As a result, the adoption of C++ for scientific computing has been slow.

Is there a way to soup up C++ so that we can keep the advanced language features but ditch the poor performance? This is the goal of the Blitz++ project: to develop techniques which will enable C++ to rival — and in some cases even exceed — the speed of Fortran for numerical computing, while preserving an object-oriented interface. The experimental Blitz++ Numerical Library is being constructed as a testbed for these techniques.

Recent benchmarks show C++ encroaching steadily on Fortran's high-performance monopoly, and for some benchmarks, C++ is even faster than Fortran! These results are being obtained not through better optimizing compilers, preprocessors, or language extensions, but through the use of template techniques. By using templates cleverly, optimizations such as loop fusion, loop unravelling, and algorithm specialization can be performed automatically at compile time.

Thursday 23 April

THURSDAY SEMINAR

at 14.00 hrs – TH Conference Room, bld. 4

Supersymmetry breaking in strings

by Emilian DUDAS / CERN-TH

Supersymmetry breaking through compactification of large dimensions is studied in the context of superstrings and

Horava-Witten theory. In the Horava-Witten case, supersymmetry is broken in the eleventh dimension in the gravitational sector and the breaking is then transmitted in a suppressed way to matter fields. We investigate then consistent open string models with a similar behaviour. They correspond physically to models with supersymmetry breaking along an intermediate scale radius.

Thursday 23 April

LHC PROJECT SEMINAR

at 14.15 hrs – LHC Auditorium, bld. 30/7th floor

Collective effects in the LHC

by F. RUGGIERO / CERN-SL

The very high design luminosity of the LHC calls for a large number of low emittance, intense proton bunches. This implies feedback systems and a careful optimisation of the beam enclosure in order to avoid single or multi-bunch instabilities and to minimise the energy lost by the beam to its cold surroundings. I review some of the mechanisms responsible for collective instabilities and parasitic losses, ranging from resistive wall impedance to electron cloud build-up, as well as stabilising effects such as Landau damping associated with incoherent or bunch-to-bunch tune spread.

After a discussion of the implications for the LHC hardware and beam parameters, I present an overview of the ongoing experimental and theoretical activities on collective and beam-beam effects.

Friday 24 April

IT TRAINING TUTORIAL

10.00-12.00 hrs – IT Auditorium, bld. 31/3-004

Win32 Internals

by Alberto PACE / CERN-IT

Tackling an operating system efficiently requires a good mental model. Wrong models are always at the origin of misunderstanding, bugs in the software and bad implementations. As the model in mind should always be in line with the real implementation, this talk will try to explain the model on which the entire Windows operating systems are built.

The aim is to have a short Windows under the hood tutorial where the major windows model will be explained. The tutorial is targeted for non windows specialists with knowledge of standard programming techniques and object oriented programming.

Organisers: M. Marquina and R. Ramos /IT-User Support

Information: <http://www.wininfo.cern.ch/support/training>

Friday 24 April*

COMPUTING SEMINAR

at 14.00 hrs* – IT Auditorium, bld. 31/3-005

Scientific Computing using the Blitz++ Class Library (Part 2)

by Todd VELDHUIZEN / University of Waterloo

The language C++ has features which make it attractive for scientific computing: templates for generic programming, operator overloading for expressiveness, and object-orientation for abstraction and code reuse. Despite these features, the scientific computing community has been reluc-

tant to adopt C++, partly due to performance problems. In the early 1990s, C++ programs were much slower than their Fortran counterparts — typical benchmarks showed C++ lagging behind Fortran's performance by anywhere from 20% to a factor of ten. Users of C++ often rewrote the number crunching parts of their programs in Fortran to get acceptable performance.

In the past five years, the performance of C++ programs has improved markedly due to a combination of better optimizing C++ compilers and new library techniques. In some recent benchmarks, C++ is even faster than Fortran. In this article, I'll explain these techniques and show benchmarks comparing a C++ class library (Blitz++) to Fortran.

Organiser : G.Folger / IT

* Please note unusual day & time!

Friday 24 April

MEETING ON PARTICLE PHYSICS PHENOMENOLOGY

at 14.00 hrs – TH Conference Room, bld. 4

Diagrammatic two-loop results for the masses of the neutral CP-even Higgs bosons in the MSSM

by Marco Aurelio DIAZ/ Universidad de Valencia

In the R-Parity conserving MSSM, one-loop radiative corrections to the chargino pair production in electron-positron collisions are presented. Arguments about their importance in the determination of underlying parameters are given. A bilinear R-Parity violating (BRpV) term is introduced in the superpotential. The phenomenology of the charginos in this MSSM-BRpV model is analysed, especially its influence on fermion Yukawa couplings. Unification of bottom-tau and top-bottom-tau Yukawas as well as the constraints from $B(b \rightarrow s \gamma)$ are studied in this model.

Monday 27 April

CERN HEAVY ION FORUM

at 15.30 hrs – Conference Room, bld. 160/1-009

Strangeness in pp and pA collisions

by W.M. GEIST / IRES Strasbourg and MPI Munich

Some aspects of strangeness production in pp and pA collisions and their relation to QGP searches are first discussed. Then differential cross sections for the inclusive reactions $pA \rightarrow \text{anti-p, } \Lambda, \text{ anti-}\Lambda, \Xi, \text{ anti-}\Xi, \Omega, \text{ anti-}\Omega$ at $p_{\text{lab}} = 30\text{-}800 \text{ GeV}/c$ are investigated in detail.

Tuesday 28 April

CERN PARTICLE PHYSICS SEMINAR

at 16.30 hrs – Auditorium, bld. 500*

TESLA: How to construct a high energy, high luminosity, 30 km long superconducting linear collider

by Björn WIK / DESY & Univ. Hamburg

The international TESLA collaboration, centred at DESY, is now laying the foundation for the construction of a high energy e^+e^- linear collider with an integrated X-ray source. The collider, which is based on low frequency superconducting cavities, will allow us to explore centre-of-mass energies from LEP energies up to 500 GeV and

beyond, with a luminosity of order $5 \times 10^{34} \text{ cm}^2 \text{ s}^{-1}$. After a discussion on the layout and performance of the facility, I shall focus on the efforts to provide reproducible high performance superconducting radiofrequency cavities and on the status of the TESLA Test Facility and future plans. I shall end with some comments on the possible realization of the TESLA facility.

Organiser : Jasper KIRKBY / EP Division

* Tea & coffee will be served at 16.00 hrs.

Thursday 30 April

CERN COLLOQUIUM

at 16.30 hrs – Auditorium, bld. 500*

Spooky action under Geneva : violation of Bell's inequality by photons 10 km apart

by Nicolas GISIN / University of Geneva

Maintaining the quantum coherence between particles over long times and distances is relevant for several distinct different reasons:

1. it is a pre-request for the promising field of quantum information processing,
2. it can already be used for quantum cryptography,
3. it confronts us with the subtleties of quantum nonlocality.

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/>

In this colloquium, experiments on photon pairs in telecom optical fibres will be presented and discussed in the light of the above-mentioned motivations.

Organiser : Luigi Di Lella / EP Division

* Tea & coffee will be served at 16.00 hrs.

POUR INFORMATION / FOR INFORMATION

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Fridy 24 April

PARTICLE PHYSICS SEMINAR

at 16.00 hrs – Stückelberg Auditorium

Evidence for the rare Kaon decay $K^+ \rightarrow \pi^+ \nu \bar{\nu}$

by Christoph WITZIG / Brookhaven National Laboratory

We report on the search for the rare Kaon decay $K^+ \rightarrow \pi^+ \nu \bar{\nu}$ done by the E787 collaboration at the AGS at Brookhaven National Laboratory. We give an overview of the theoretical interest in $K^+ \rightarrow \pi^+ \nu \bar{\nu}$ (the branching ratio of this decay is sensitive to the CKM Matrix element V_{td}) and describe the analysis done with the data taken in 1995.

ACADEMIC TRAINING ENSEIGNEMENT ACADEMIC

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3rd TERM (20 April to 26 June 1998) LECTURE SERIES FOR ACADEMIC TRAINING

22, 23 & 24 April

11.00 to 12.00 – Auditorium

Global warming

by M. HULME / UEA Norwich, GB

4, 5, 6, 7 & 8 May

11.00 to 12.00 – Auditorium

Introduction to superconductivity

by P. DARRIULAT / CERN-EP

11, 12, 13, 14 & 15 May

11.00 to 12.00 – Auditorium

Advances in high speed communications on and off the internet

by B. CARPENTER / IBM United Kingdom Laboratories, Winchester, GB

25, 26, 27, 28 & 29 May

11.00 to 12.00 – Auditorium

Bayesian reasoning in HEP - principles and applications

by G. D'AGOSTINI / Univ. di Roma, I

2, 3, 4 & 5 June

11.00 to 12.00 – Auditorium

Industrial, technical applications of accelerators

by K. BETHGE / Goethe Univ. Frankfurt, D

8 & 9 June

11.00 to 12.00 – Auditorium

Medical applications of accelerators

by S. ROSSI / CERN-EP

The lectures are open to all those interested, without application.

The abstract of the lectures, as well as any change to the above information (title, dates, time, place, etc.) will be published in the CERN Bulletin, the WWW and by Notices before each Term and for each series of lectures.