

SEMINARS SEMINAIRES

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For information on these seminars, please see
<http://wwwas.cern.ch/Bulletin/Seminars/current.html>

Monday 29 March

EXCEPTIONAL SEMINAR

at 14.00 hrs – TH Conference Room, bldg 4

Precise calculations of the neutral Higgs masses in the MSSM

by W. HOLLIK / CERN-TH

Feynman-diagrammatic calculations are presented for the masses of the neutral CP-even Higgs bosons in the Minimal Supersymmetric Standard Model (MSSM), complete at the one-loop level and including the two-loop leading QCD corrections. The results are valid for arbitrary values of the parameters of the MSSM and represent the currently most precise predictions within the Feynman-graph approach. In particular the mass of the lightest Higgs boson is discussed and a comparison with the results obtained by the renormalization group method is performed. A simple analytical approximation is also presented.

Monday 29 March

CERN EP SEMINAR

at 16.30 hrs – Auditorium, bldg 500*

New results from CLEO

by Vladimir SAVINOV / SLAC

With 15 fb^{-1} of integrated luminosity collected with the CLEO II detector at CESR we have achieved the level of sensitivity where New Physics may be discovered. I will talk about our new experimental results on rare decays of B mesons including the first observation of the hadronic $b \rightarrow u$ exclusive transitions and studies of decays sensitive to possible new classes of Flavor Changing Neutral Currents. I will also review some of the recent CLEO results on semileptonic decays of bottom and charmed mesons, the $b \rightarrow s\gamma$ and Υ radiative transitions and hadronic structure in τ decays. Finally, I will touch upon the plans to search for direct CP violation with the CLEO III detector at the symmetric B factory at Cornell.

Organiser : *Fabiola GIANOTTI / EP Division*

* Tea & coffee will be served at 16.00 hrs.

Tuesday 30 March

SPS AND PS EXPERIMENTS COMMITTEE

Open session

at 09.00 hrs – Auditorium, bldg 500

1. Status report from NA48 : P. Debu. 30 min
2. Status report from NA54 : E. Nolte. 30 min
3. Status report from NA56 : S. Ragazzi. 30 min
4. European collaboration for high-resolution measurements of neutron cross-sections between 1 eV and 250 MeV: N. Pavlopoulos. 30 min

Closed session

at 13.00 hrs – 6th floor Conference room, Main Building

Tuesday 30 March

DUALITY WORKSHOP

at 14.00 hrs – TH Conference Room, bldg 4

See title and abstract in the WEB

by Nissan ITZHAKI / UC Santa Barbara

Tuesday 30 March

CERN PARTICLE PHYSICS SEMINAR

at 16.30 hrs – Auditorium, bldg 500*

Neutrinos and 700 days of Super-Kamiokande data

by Kai MARTENS / SUNY at Stony Brook, USA

The 50 kton water Cherenkov detector Super-Kamiokande at Kamioka in Japan is measuring solar as well as atmospheric neutrinos. For solar neutrinos the energy spectrum and a possible day/night flux difference for Boron-8 neutrinos are used as tools to investigate neutrino oscillation hypotheses. Various measurements with atmospheric neutrinos provide evidence for oscillation of muon neutrinos. Updated results from the 700d data sets will be presented.

Organiser : *Jasper KIRKBY / EP Division*

* Tea & coffee will be served at 16.00 hrs.

Wednesday 31 March

THEORETICAL SEMINAR

at 14.00 hrs – TH Conference Room, bldg 4

Lowering the Fundamental Scales of Physics via Large Extra Dimensions

by Keith DIENES / CERN-TH

I will give an elementary introduction to some of the recent ideas concerning lowering the fundamental scales of physics using large extra dimensions. I will summarize what has been accomplished thus far, and indicate some remaining outstanding questions. This will be an informal discussion.

Thursday 1 April

SL SEMINAR

at 16.00 hrs* – SL Auditorium, bldg 864, Prévessin

A prototype ATM network for LHC beam control

by Thijs WIJNANDS / CERN

ATM (Asynchronous Transfer Mode) is a networking technology that can handle time critical data communication between computers. It is based on small sized cells instead of the usual packets, which allows for rapid switching (from Gbit/s to Tbit/s). Another advantage of using cells is that data can be statistically multiplexed on a single line so that every application is only using the bandwidth it actually needs.

ATM technology could be used in the LHC where real time control of tune, global orbit and possibly chromaticity and momentum is envisaged.

In this seminar, an introduction to ATM will be given for non-specialists. The performance of an existing prototype ATM network will be demonstrated for two applications: tune feedback control in the SPS and simulation of closed orbit control in the LHC.

Organiser: Werner Herr / SL Division

Information: <http://www.cern.ch/CERN/Divisions/SL/news/news.html>

* Tea and coffee will be served at 15.30 hrs in front of the Auditorium

Tuesday 6 April

CERN PARTICLE PHYSICS SEMINAR

at 16.30 hrs – Auditorium, bldg 500*

Plasma Accelerators

by Robert BINGHAM / Rutherford Appleton Laboratory, UK

The study of acceleration processes remains one of the most important areas of research in laboratory, space and astrophysical plasmas. In this talk we will describe particle acceleration to relativistic energies by laser plasma accelerators. Generation of relativistic plasma waves in low density plasmas is important in the quest for ultra-high accelerating gradients for particle accelerators. At present, lasers and electron beams are being investigated as drivers for relativistic plasma waves. Fields greater than 1 GeV/cm have been generated, and particles accelerated to more than 100 MeV. This talk will review the present status of plasma accelerators, as well as the future programme.

Organiser : Jasper Kirkby / EP Division

* Tea & coffee will be served at 16.00 hrs.

Friday 9 April

MEETING ON PARTICLE PHYSICS PHENOMENOLOGY

at 14.00 hrs – TH Conference Room, bldg 4

Multiplicity in quark and gluon jets (QCD and experiment)

by I.M. DREMIN & J.W. GARY / Moscow and Riverside

We review theoretical and experimental results on hadron multiplicities in high energy particle collisions. Special emphasis is placed on e^+e^- annihilations since they allow a level of detail and conclusiveness difficult to achieve with other types of reactions. The methods yielding QCD predictions for multiplicity distributions are described. The solutions of QCD equations for the generating functions of the multiplicity distributions in gluon and quark jets are presented both for fixed and running coupling constants. The energy dependence of the average multiplicity, the ratio of multiplicities in quark and gluon jets, and the higher moments of the distributions including their oscillations are among the main global features predicted by QCD and which are tested by experiment. Experimental data which emphasize a close correspondence to the theoretical treatment of jets have only recently become available for gluon jets. The theoretical predictions are generally rather successful when compared with the experimental data.

Friday 9 April

CERN HEAVY ION FORUM

at 15.00 hrs – Conference Room 13/2-005

Baryon Stopping and Hyperon Enhancement

by Alphonse CAPELLA / Laboratoire de Physique Théorique, Orsay

We present an improved version of the dual parton model which contains a new realization of the diquark breaking mechanism of baryon stopping. We reproduce in this way the net baryon yield in nuclear collisions. The model, which also considers strings originating from diquark-antidiquark pairs in the nucleon sea, reproduces the observed yields of p and Lambda and their antiparticles and underestimates Cascades only slightly. However, Omegas are underestimated by almost an order of magnitude. Agreement with data is restored by final state interaction, with an averaged cross-section as small as $\sigma = 0.14$ mb. Hyperon yields increase significantly faster than antihyperons, in agreement with experiment.

Event-by-Event fluctuations, effects of shadowing and predictions for LHC will be also discussed.

Organisers: Yiota Foka and Ulrich Heinz

<http://home.cern.ch/a/alicedoc/www/chic/>

Tuesday 13 April

CERN PARTICLE PHYSICS SEMINAR

at 16.30 hrs – Auditorium, bldg 500*

Searching for the dark side of the Universe

by Rita BERNABEI / Univ. Roma II and INFN

Experimental evidence and theoretical considerations support the idea that most of the Universe is in the form of dark matter and - in large part - in the form of weakly interacting massive particles (WIMPs). A large experimental activity is in progress on this topic. In particular, the two independent efforts of the DAMA and UK collaborations have already proved that scintillators are well suited for a successful search. Further experimental improvements are possible for this kind of target detector. This talk will be mainly devoted to the results achieved by the DAMA collaboration at Gran Sasso, investigating the WIMP annual modulation signature in a detector of about 100 kg low-radioactivity NaI(Tl). The presence of a modulation with the proper features and in the energy region of interest for the direct detection of dark matter particles has been found in two years of data taking, suggesting the possible presence of a relic candidate. A suitable analysis allows us to estimate the mass and the WIMP-proton cross-section. Investigation of possible systematic sources with yearly modulations has not offered up to now an alternative explanation. This effect is being further investigated by the continuous running of the experiment.

Organiser : Jasper KIRKBY / EP Division

* Tea & coffee will be served at 16.00 hrs.

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Mercredi 31 mars

SÉMINAIRE DE PHYSIQUE CORPUSCULAIRE

à 17.00 h – Auditoire Stückelberg

Les ions lourds ultrarelativistes et la quête du plasma

par Laurent ROSSELET/Université de Genève/DPNC

Les collisions ultrarelativistes des ions lourds permettent l'observation de la matière nucléaire à grande densité et haute température, proche des conditions existant au début de l'univers. Le but ultime de cette quête est la mise en évidence et l'étude d'un nouvel état de la matière, le plasma de quarks et de gluons.

Bien qu'aucune preuve directe ne montre que ce stade ait été atteint, certaines observations s'expliquent difficilement en termes de physique hadronique conventionnelle.

Nous tenterons une approche didactique de ce domaine de la physique en passant en revue certains résultats obtenus avec l'actuel faisceau de Pb du CERN, ainsi que les espoirs portés par les futurs collisionneurs.

LAPP - Laboratoire d'Annecy de physique des Particules
F74941 – Annecy-le-Vieux
Informations : Pascal Perrodo, tél. 04 50 09 16 00

Vendredi 2 Avril

à 14.00 h – Amphithéâtre du LAPP

La recherche de particules supersymétriques à LEP2

par Pierpaolo REBECCHI / INFN, Padoue

Présentation des résultats les plus importants de la recherche de particules supersymétriques. L'accent sera mis sur les résultats de DELPHI et des autres expériences de LEP (avec comparaison des résultats obtenus auprès d'autres accélérateurs). J'introduirai le séminaire avec la description de la Hot Line de DELPHI, chaîne de reconstruction et d'identification rapide des événements. Après une introduction sur MSSM je parlerai de la méthode de rapport de vraisemblance appliquée à la recherche des charginos et des méthodes utilisées à LEP pour combiner plusieurs canaux et analyses. Seront ensuite présentés les derniers résultats obtenus dans le modèle MSUGRA (avec et sans conservation de la parité R) et dans le modèle GMSB.

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/>

ENSEIGNEMENT ACADEMIQUE ACADEMIC TRAINING

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ACADEMIC TRAINING LECTURE SERIES

12, 13, 14, 15, 16 April

from 11.00 to 12.00 hrs – Auditorium, bldg 500

Astroparticle Physics

by G. RAFFELT / Max-Planck Institut, Muenchen, D

Over the past decade Astroparticle Physics has established itself as a main-stream field of research which complements both accelerator-based particle physics and telescope-based astronomy. At the present time the field is primarily driven by experimental and observational progress. I will give a broad introduction to Astroparticle Physics, focusing in my five lectures on the following topics:

1. Astroparticle Physics: Overview and Highlights
2. Dark Matter: Motivation, Candidates and Searches
3. Neutrino Astronomy: A New Window to the Universe
4. Astrophysical and Cosmological Particle Bounds
5. The Highest-Energy Cosmic Rays: A New Fundamental Problem?

ACADEMIC TRAINING LECTURE SERIES

19, 20, 21, 22, 23 April

from 11.00 to 12.00 hrs – Auditorium, bldg 500

Deterministic Chaos

by J.-P. ECKMANN / Geneva University

In these lectures, I will give an overview of the mathematical and physical aspects of deterministic chaotic systems. Starting from simple examples, I plan to cover some crucial notions of the theory such as : Hyperbolicity, shadowing, and ergodic properties.