

SEMINARS SEMINAIRES

Tuesday 24 January

SPS AND LEAR EXPERIMENTS COMMITTEE

OPEN SESSION

at 9.00 hrs – Auditorium.

1. Lifetime measurements of $\pi^+\pi^-$ atoms to test low energy QCD predictions (LAPP Annecy - Bern Univ. - IAP Bucharest - CERN - JINR Dubna - LNF-INFN Frascati - KEK Tsukuba-shi - Kyoto-Sangyo Univ. - Industrille-Kyushu Univ. - NPI Moscow - Osaka City Univ. - CdF Paris - INP Orsay - LNS Saclay - Santiago de Compostela Univ.; SPSLC 95-1/P284): L. Nemenov.
2. Status report on BEATRICE (WA92) - : L. Rossi.
3. Status report on NA48: M. Calvetti.
4. Capture, electron-cooling, and compression of antiprotons in a large Penning trap and physics experiments with an ultra-low energy extracted antiproton beam; (SPSLC 95-2/P285): M. Holzscheiter.

CLOSED SESSION

on Tuesday 24 January at 13.30 hrs to be continued on Wednesday 25 January at 9.00 hrs, 6th floor Conference Room.

Tuesday 24 January

TECHNICAL PRESENTATION

at 10.00 hrs – CN Amphitheatre
bldg 31/3-005

Workshop on key software technologies for the next ten years...

by Gianluigi CASTELLI, Director of the Technology & Software Engineering Division, ETNOTEAM, Italy.

Software development nowadays isn't any more a matter of personal skill of a single programmer, but a more and more complex process based on well formulated rules and technologies. Furthermore, the diversity and heterogeneity of hardware platforms makes the maintenance of what is already developed even more complicated. This presentation proposes a unique combination of the hottest subjects in software technologies:-

- Application portability: Engineering or Guesswork?
- Complex interactive sensing systems.
- Towards software usability, showing how easy these matters can result, using the right tools and, of course, know-how.

G. Castelli is Director of the Technology and Software Engineering Division of ETNOTEAM, and a researcher at "Dep. of Information Science" of the University of Milan. He has been working on software technologies for more than 20 years, and also participates in many European projects (ESPRIT) on these subjects. ETNOTEAM is a leading Italian Software Company founded in 1978, employing about 300 people.

Organiser : S. Cannon / CN / 5036

COGNE Meeting of the SPS and LEAR Committee

A special meeting of the SPSLC will be held in Cogne/Val d'Aosta from 23rd to 28th April 1995.

The purpose of the meeting is to review present and near-future activities at the SPS and LEAR, and to consider possibilities and options for the longer-term future.

The Chairman would like the groups working at the SPS and LEAR, or groups which have in mind to submit proposals, to forward a short report on their plans before 28 February 1995. It should be understood that these prospective ideas would not be regarded as binding for the future plans of the group, but they will be extremely useful to help orient the SPS and LEAR programmes and to guide policy.

Interested physicists should contact their Spokespersons.

SPSLC Secretariat (tel.: 4270)

E-mail : SPSC@CERNVM

Wednesday 25 January

THEORETICAL SEMINAR

at 14.00 hrs – TH Conference Room

Non-minimal SUSY breaking, hierarchy and squark degeneracy

by Hitoshi MURAYAMA / LBL, Berkeley

Almost all the phenomenological analyses of SUSY models rely on the "minimal supergravity" framework, where you assume universal SUSY breaking terms at the GUT scale. However, it is likely that SUSY breaking terms are non-universal at the GUT scale or scale of flavour physics in many popular models. We show that there is a variety of new phenomena if one relaxes the universality. The first striking consequence is that hierarchy can be spoiled by the SUSY breaking effect. However, hierarchy is preserved as far as SUSY is broken in a "hidden" sector, where we give a precise definition of "hidden". String-derived GUT models may have problems. The second consequence is that one obtains relatively complicated new contributions to the SUSY breaking masses of the light fields by integrating out heavy fields. This could spoil the quark degeneracy, and puts a new stringent constraint on the model building of flavour scenarios. Finally, we argue that this non-universality at the scale of new physics provides us with experimental signatures which could be studied at experiments in the near future.

Thursday 26 January

TWENTY-SIXTH MEETING OF THE DETECTOR R & D COMMITTEE

at 09.00 hrs – Council Chamber

OPEN SESSION

1. Introductory remarks (L. Foà).
2. RD-18 Status Report: R&D for the study of new fast and radiation hard scintillators for calorimetry at LHC (Crystal Clear Collaboration; DRDC 94-53; P. Lecoq).

3. RD-19 Status Report: Development of hybrid and monolithic silicon micropattern detectors (CERN–Collège de France–CPP Marseille–EPF Lausanne–ETH Zurich–IMEC Leuven–Bari–Catania–Genova–Milano–Modena–Padova–Perugia–Pisa–Roma–Trieste–GHS Wuppertal–TU Athens–Praha–Glasgow–Canberra Semiconductor NV–GEC Marconi Materials Technology–SmartSilicon Systems SA; DRDC 94-51; E.H.M. Heijne).
4. RD-26 Status Report: Development of a large area advanced fast rich detector for particle identification at the LHC operated with heavy ions (CSI-RICH Collaboration; DRDC 94-49; F. Piuz).
5. RD-27 Status Report: First-level trigger systems for LHC experiments (Birmingham–CERN–Heidelberg–Linköping–MPI Munich–Queen Mary and Westfield College–RAL–Royal Holloway and Bedford New College–La Sapienza & Tor Vergata Rome–Stockholm–Wisconsin; DRDC 94-52; N. Ellis).
6. RD-28 Status Report: Development of microstrip gas chambers for radiation detection and tracking at high rates (CERN–BINP Novosibirsk–CRN Strasbourg–CRPP Carleton–DAPNIA Saclay–Torino–FERMILAB–FPNT Cracow–HEP Santiago–IIHE Bruxelles–NRCPS Demokritos–Prague–Comenius–Kosice–IPN Lyon–ISR Aarhus–ITEP, LPI & NPI Moscow–JINR Dubna–LIP Coinbra–Frascati–Legnaro–Gran Sasso–LPPE Mons–MPI Heidelberg–NIKHEF–Carleton–Michigan–Northwestern–Birmingham–Liverpool–Manchester–PHASE CRN Strasbourg–RAL–SUNY Stony Brook–Texas A&M–TRIUMF–UC London–Weizmann Institute; DRDC 94-45; F. Sauli).
7. RD-36 Status Report: A shashlik + preshower detector as electromagnetic calorimeter for LHC (CERN–TIFR Bombay–RAL–JINR Dubna–Ioannina–LIP & IST Centre Lisbon–Imperial College–INR, ITEP & IHEP Moscow–Ecole Polytechnique–UC San Diego–FESB Split–Texas Tech. Univ.–Brunel; DRDC 94-47; L. Dobrzynski).
8. RD-37 Status Report: Very forward hadron calorimetry at the LHC using parallel plate chambers (CERN–CIEMAT Madrid–Florence–ITEP Moscow–ATOMKI Debrecen–KFKI RMKI Budapest–PNPI St. Petersburg–IHEP Protvino; DRDC 94-46; A. Ferrando).

CLOSED SESSION

Thursday 26 January, following the Open Session continuing on Friday 27 January at 09.00 hrs, 6th floor Conference Room.

Thursday 26 January

ISOLDE SEMINAR

at 16.00 hrs – TH Conference Room

Production and Stability of the New Elements 110 and 111

by Sigurd Hofman / GSI, Darmstadt

The elements 110 and 111 were synthesised for the first time in experiments at SHIP, the heavy ion recoil separator at GSI in Darmstadt. Two isotopes of element 110 with mass numbers $A=269$ and $A=271$ were produced in reactions of ^{62}Ni and ^{64}Ni beams with targets of ^{208}Pb , one isotope with mass number $A=272$ in the reaction $^{64}\text{Ni} + ^{209}\text{Bi}$. All three isotopes decay by α emission as a result of the shell stabilisation at $Z=108$ and $N=162$. The isotopes were unambiguously identified by delayed α - α coincidences. Altogether four chains were measured for $^{269}\text{110}$, nine chains for $^{271}\text{110}$ and three chains for $^{272}\text{111}$.

In a series of preparatory experiments the excitation functions for the fusion reactions $^{50}\text{Ti} + ^{208}\text{Pb} \rightarrow ^{257}\text{104} + \text{1n}$ and $^{58}\text{Fe} + ^{208}\text{Pb} \rightarrow ^{265}\text{108} + \text{1n}$ were measured with high precision in order to determine the optimum projectile energies for the maximum production rates of these heavy elements. These experiments showed that the maximum production cross-sections are measured at subbarrier energies. A theoretically expected increased of fusion barriers as a result of extrapush is not observed. The fusion of these heavy nuclei appears to be a very rare, large scale nucleon rearrangement process of high symmetry at a minimum of excitation energy.

Significant improvements in both the detector and accelerator technology were the prerequisite for taking these data in a reasonable span of time. The results obtained on cross-sections and stability of the new elements as well as the experience gained performing experiments sensitive to picobarn cross-sections gives new hope to approach the spherical superheavy nuclei at $Z=114$ and $N=184$.

Friday 27 January

MEETING ON PARTICLE PHYSICS PHENOMENOLOGY

at 14.00 hrs – TH Conference Room

Photon Colliders. Physical Program

by I. F. Ginzburg / ENSLAPP and Institute of Mathematics, Novosibirsk, Russia

1. PHOTON COLLIDERS (PLC). Brief description. Comparison with other colliders. Basic strategy. Stages in Linear Colliders and main features of Physical Program for them.
2. PHYSICAL PROBLEMS. EW SM. Higgs physics. Gauge bosons. Main estimations. Basic processes. Physical problems in EW gauge boson physics at LC. The problem of quantization of QFT with unstable fields as practical one for PLC. Processes of higher order. QCD AND HADRON PHYSICS (briefly). Soft and semihard processes. The opportunity to see in detail perturbative Pomeron and Odderon. Dependence on virtuality. Signature of QCD validity. Jets with intermediate $p_{\perp}$ and limitations for factorization relations. Photon structure function. NEW PARTICLES AND INTERACTIONS (briefly). SUSY, excited leptons and quarks, leptoquarks, heavier W, manifestations of underlying interactions via jets or Higgs production, ... Exotics (point-like monopole, ...).
3. PROCESSES IN CONVERSION REGION – byproduct (very briefly). (Conversion region is $e\gamma$ collider with $\sqrt{s} \approx 1.2 \div 1.4$ MeV but luminosity $L \sim 10^{38} \div 10^{39} \text{ cm}^{-2} \text{ s}^{-1}$. Besides, that is the region of the extremely high electromagnetic field). Hunting for new light particles, coupled with matter very weakly. Testing of nonlinear effects in QED.

Friday 27 January

CERN COMPUTING COLLOQUIUM

at 16.00 hrs – Auditorium*)

Optoelectronics

by Volker Graf / IBM Rueschlikon Lab.

Semiconductor laser diodes, first demonstrated by AT&T, GE and IBM in 1962, have now emerged from research into consumer, computing and telecommunications industry. As small as a grain of salt and brighter than the sun, they are the

smallest, most efficient and most reliable light sources. They are used for many commercial applications such as low-cost commodity items in CD-audio disks, optical storage drives, laser printers, bar code readers and public telephone optical fibre networks as well as for sophisticated devices in long-haul telecommunications or as pump sources for solid-state lasers and optical amplifiers. The recent improvements in laser technology promise to broaden the range of applications even further, especially with the availability of visible red and even blue lasers. Applications ranging from projection displays to medical and sensor applications are entering the market. The talk will give an overview of the R&D work in Optoelectronics at the IBM Lab in Rueschlikon. First the materials, structures, and fabrication technologies for semiconductor lasers will be reviewed. Then details will be given for different application areas, especially for exploratory communications technology presenting a photonic cross-connect based on WDM and photonic switches.

Dr. Volker Graf, IBM Research Lab, Rueschlikon

Dr. Volker Graf received his Ph.D. in physics from the University of Stuttgart in 1980. He joined the IBM Research Lab in 1982 and has been working in the field of ion implantation and epitaxy of lasers for compound semiconductors for electronic (MESFETs) and optoelectronic device applications. Since 1989 he is responsible for IBM's R&D in semiconductor lasers at the Rueschlikon Lab. In 1992 he formed Laser Enterprise, a unit within the IBM Lab to manufacture and sell high-power 980nm pump laser chips for Fibre Amplifiers.

In 1992 he was elected into the IBM Academy of Technology. Dr. Graf is also a member of the German and the American Physical Society.

*) Coffee and tea will be served at 15.30

Monday 30 January

TECHNICAL PRESENTATION

at 10.00 hrs – CN Auditorium
bldg 31/3-005

An MPP with the manners of an HP workstation

by Greg Astfalk, Staff Scientist Convex Computer Corporation

Convex Computer Corp has developed a Scalable Parallel Processor based on the Hewlett-Packard RISC chip. The machine is named the Exemplar and can grow from 2 to 128 processors configured with 128 Mbytes to 32 Gbytes of memory. The I/O system can support over 1 Tbyte of disk. The Exemplar supports Application Binary Interface (ABI) compatibility with HP/UX. Executables and object modules can be shared by the Exemplar and H-P workstations, and the operating system is compatible at the system call level.

Among its many advanced features are: 8-way multi-processor nodes, fully cache coherent Globally Shared Memory (GSM), auto-parallelizing Fortran and C compilers, and a parallel debugger and profiler that are hardware aware.

The talk will cover the architecture, software and hardware of the machine.

Organiser : S. Cannon / CN / 5036

Mardi 31 janvier

PRESENTATION TECHNIQUE

à 09.00 hrs – bât. 54/2-035

Protection d'appareils à pression, normalisation

séminaire par Groupe SEBIM : RSBD, SARASIN (F)

Thursday 2 February

FIRST GENERAL MEETING OF THE LEP2 WORKSHOP

at 09.00 hrs – Main Auditorium (Bldg. 500)

The different Working Groups will present a status report and a programme of their forthcoming activities.

POUR INFORMATION

Wednesday 25 January 1995

SEMINAR ON PARTICLE PHYSICS

at 17.00 hrs – Auditoire Stuckelberg

Nuclear spin dependent amplitudes of neutron scattering in physics and biology

by Prof. Dr. Heinrich STUHRMANN/
Forschungszentrum, Geesthacht, Germany

EDUCATION SERVICES EDUCATIFS

ENSEIGNEMENT GÉNÉRAL

Tél. 5811

Jedi 26 janvier

à 13.00 h – Amphithéâtre

Science pour tous

par Rafel CARRERAS