

People and things

technique. The apparent size of each of these galaxies on the sky (its angular diameter) is known, and so is its red shift (the shift in the wavelength of its light due to its recession). The calculated linear size of each galaxy depends only on its angular diameter and the value assigned to the Hubble constant.

To make the average size of all these galaxies match the average size of nearby galaxies, H must be about 50, and the Universe must be at least 13 billion years old, according to the standard Big Bang theory.

Until a few weeks ago, the best estimates for the ages of the oldest stars were about 14 billion years, and estimates for the age of the Universe were about 11 billion years, or less (May, page 20).

Data from the European Space Agency's Hipparcos satellite have reduced values of the ages of the oldest stars from 14 to 12 billion years, while the new UK study has increased the calculated time since the Big Bang to 13 billion years. Pushing up the bar in the cosmic limbo dance and decreasing the age 'height' of the oldest stars gives a time slot just wide enough for the stars to have squeezed into the Universe after the Big Bang.

New director for Gran Sasso National Laboratory

Alessandro Bettini has been appointed Director of the Italian Gran Sasso National Laboratory, replacing Piero Monacelli. As full professor of Physics at the University of Padua, he first worked in the Padua bubble chamber group, and developed an automatic measuring device for bubble chamber pictures (PEPR). Then he took part in the construction and operation of the European Hybrid Spectrometer and was member of the UA1 collaboration at CERN. Recently his research interests have concentrated in developing the liquid Argon TPC proposed by Carlo Rubbia for the ICARUS experiment. Prof. Bettini has served in various INFN positions of responsibility: he chaired the National Scientific Committee for Experimental Subnuclear Physics with Visual Techniques from 1978 - 84, was Director of the Padua Section from 1983 - 1990, a member of the Executive Council from 1990 -

96 and INFN vice-president from 1994 - 1996.

On people

David Norman, Assistant Director of the Synchrotron Radiation Department at the UK Daresbury Laboratory, becomes its Director, succeeding Ian Munro, who retired at the end of May after more than 30 years in synchrotron radiation research, beginning at the then new NINA electron synchrotron.

Bjorn Jonson, distinguished nuclear and atomic physicist at Chalmers University of Technology, Goteborg, Sweden, longtime Group Leader at CERN's ISOLDE on-line isotope separator, and formerly chairman of the ISOLDE Committee at CERN, has received a prestigious Alexander von Humboldt Research Award from Germany for his accomplishments in research and teaching. He is particularly well known for his role in the discoveries of new forms of radioactivity and seminal work on halo nuclei.

An electrical fire in a power supply at CERN will delay the restart of operations at the SPS proton synchrotron and the LEP electron-positron collider. Specialist personnel are working round the clock to repair the damage, exacerbated by acid soot contamination of adjoining areas



Bjorn Jonson - von Humboldt award

CERN Director General Chris Llewellyn Smith (left) welcomes UK Ambassador to Switzerland Christopher Hulse on 13 May.



Robert Serber 1909-97

Talented and highly respected US theorist Robert Serber died on 1 June. As one of the early collaborators of J. Robert Oppenheimer in California, with whom he developed important astrophysics and cosmic ray ideas, he was a first generation US theorist. In the 1930s, he was one of the pioneers of 'renormalization' techniques to make field theory tractable. His name also became enshrined in the annals of machine physics when in 1941, at Illinois, he developed with Donald Kerst the orbit theory of betatrons, opening the way to the successful operation of such a machine. Before moving to the war effort, he developed with his student Sidney Dancoff what would become standard work in meson theory. Moving from Illinois to Berkeley after the war, he introduced the fruitful concept of the optical model to describe collision processes, and

carried out seminal work on deuteron stripping. In the early 50s, Serber migrated from Berkeley to Columbia.

In addition to pursuing his own ideas, sometimes difficult and offbeat, he was a prolific source of inspiration to his colleagues. Murray Gell-Mann's historic 1964 quark paper credits Serber for having stimulated the idea when Gell-Mann visited Columbia in 1963. Serber was also a major influence for the physics of kaon interactions. Credits and acknowledgements to him abound in the literature. In 1971 he was elected President of the American Physical Society, and, appropriately, as longtime Oppenheimer collaborator, was awarded the Oppenheimer Prize in 1972 for his contributions to theoretical physics.

In his fascinating 1994 reminiscences published in *Annual Review of Nuclear and Particle Physics*, he recalls his teaching experience: 'I dreamt I died and went to heaven, and Saint Peter led me into the presence of God. And God said "You won't remember me, but I

took your Quantum Mechanics Course in Berkeley in 1947"'.

CERN Accelerator School

The CERN Accelerator School (CAS) continues its full programme.

Forthcoming courses are:

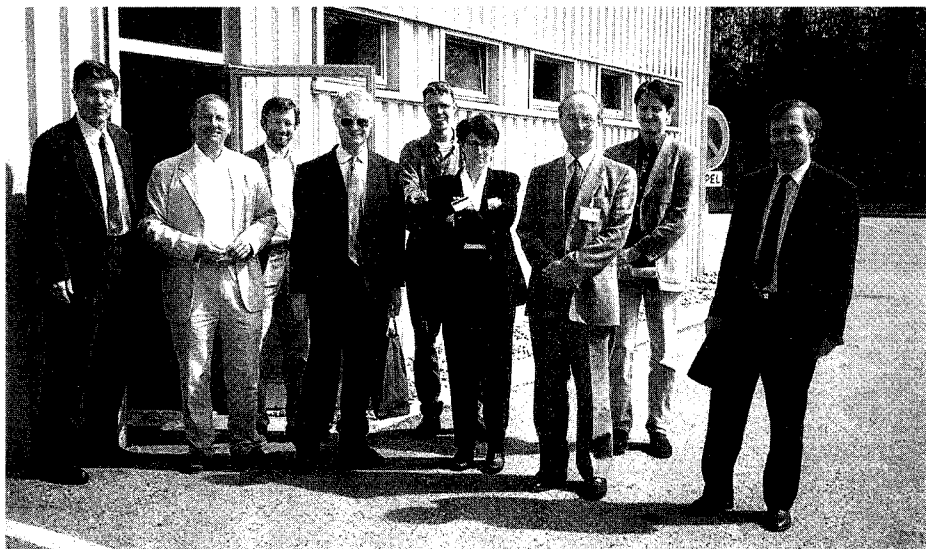
Intermediate Level Accelerator Physics, at the Rica Park hotel, Gjøvik, Norway, 1-12 September 1997;

Joint School on Beam Dynamics and Measurements, organized by the CERN, US, KEK and Russian accelerator schools, Montreux and CERN, Switzerland, 11-20 May 1998;

Introduction to Accelerator Physics, Lady Margaret Hall, Oxford, UK, 14-25 September 1998.

Future proposed courses include: Linacs, perhaps in Spain in late 1998, and Vacuum Technology, probably in Denmark in Spring 1999. Further information is available on the Web at <http://www.cern.ch/Schools/CAS/> or by e-mail,

During a visit of Dutch physics notables to CERN on 14 May:
left to right - W. Kittel (Nijmegen), M. Pohl (ETH Zurich), G. de Rijk (CERN), G. Bobbink (CERN), M. Sanders (Nijmegen), H. van Pinxteren (FOM Secretary), A. de Monchy (FOM Chairman), A. Colijn (NIKHEF, Amsterdam), G. van Middelkoop (Director, NIKHEF).



Suzanne.von.Wartburg@cern.ch or
fax +41 22 767 5460.

PAC'97

Over 1200 accelerator scientists got together in May for the 1997 Particle Accelerator Conference in Vancouver, Canada. Accelerators have come a long way since pioneers like Rolf Wideröe and Ernest Lawrence developed machines for particle physics, and this was reflected in the size and diversity of the conference. Although particle physics applications formed a major part of the proceedings, other outlets for accelerator technology were equally well represented. From

Participants in the CAS 'Introduction to Accelerator Physics' course held at the hotel Estoril Sol, Cascais, Portugal in October 1996. The many students coming from CERN Member States were joined, in some cases with the help of UNESCO and European Physical Society Interdivisional Group on Accelerators scholarships, by representatives from Brazil, India, Mexico, Nigeria, Roumania, Russia, Ukraine and USA.

Photo S. Turner

applied research in structural biology at synchrotron light sources to contraband detection in harbours and airports, accelerators are becoming increasingly prevalent in modern society.

Present and future shared the honours as the US Particle Accelerator School prize was awarded at the conference to CERN's Daniel Boussard and

UCLA's Chandrashekhar Joshi. Boussard was cited for his "original contributions to the fields of RF, longitudinal beam dynamics, and feedback, and for the realization of superconducting acceleration systems", Joshi for his "pioneering experiments on high gradient, laser-driven, plasma beat-wave acceleration". Ka-Ngo Leung and David F. Sutter received the IEEE Particle Accelerator Conference award, Leung for work on ion sources, and Sutter for his management of the US federal R&D programme for accelerator technologies.

A full conference report by James Gillies will appear in the September issue of the CERN Courier.

Meetings

The Strange Particle Jubilee Conference will be held in Manchester on 16 -17 September to celebrate the discovery of V-particles by Rochester and Butler in the Department of Physics, Manchester, in 1947.



At the inauguration of the Quark2000 exhibition in Rome, INFN and CERN Council President Luciano Maiani (right) guides Italian President Oscar Luigi Scalfato and accompanying VIPs.

(Photo Stefano Gris)



the City of Rome to present to the general public, and in particular to high school students, the current and planned researches in nuclear, elementary particle and astroparticle physics, relating them to their history and stressing the contributions of these sciences to the culture of our century.

Attention has also been paid to spinoffs of fundamental research in high technology, biology and medicine, environmental control and fine arts. The exhibition was inaugurated by the President of the Italian Republic on April 16 and closed on June 9, registering nearly 80 000 visitors. The main world laboratories, and in particular CERN, contributed to the exhibition with apparatus, pictures and audiovisuals: internet links allowed virtual visits to the laboratories, science museums

Speakers will include Sir Clifford Butler, John Ellis, Ken Peach, Samuel C. C. Ting, Sir Arnold Wolfendale, George Rochester (on video) and Sir Bernard Lovell (Blackett Centenary Lecture). Preliminary registration can be made by e-mail to strange@m2.ph.man.ac.uk or by post to Prof. Robin Marshall, Dept of Physics and Astronomy, The University of Manchester, M13 9PL, England.

posted at Website <http://neutrinos.uv>.

Quark2000 in 1997

Quark2000, an exhibition on perspectives in fundamental physics research at the opening of the new millennium, has been produced by the Istituto Nazionale di Fisica Nucleare (INFN) in cooperation with

Antonino Zichichi (centre) explains LAA detector development work at CERN to Italian Ambassador G. Baldocci. Left are F. Menzinger and A. Contin, with R. De Salvo on the right.
(Photo CERN HI 22.4.97)

The XXVII International Symposium on Multiparticle Dynamics will be held from 8 - 12 September at the Laboratori Nazionali di Frascati dell'INFN, Frascati, Italy.
<http://www.lnf.infn.it/conference/ismd97.html>

The fourth biennial meeting in the series Frontiers in High Energy and Astroparticle Physics initiated in Valencia in 1991 will take place in Valencia, Spain, October 13-17. The 1997 meeting "Beyond the Standard Model: from Theory to Experiment" is organized by Ignatius Antoniadis, Luis Ibanez and Jose' W. F. Valle. Subsequent information will be





UNIVERSITY OF OXFORD

Department of Physics

Posts in Experimental Particle Physics

Research Officer and

Post Doctoral Research Assistant

Applications are invited for these two posts from experimental particle physicists, preferably with a few years postdoctoral experience in research.

Oxford has the largest particle physics group in the UK, with a wide ranging and very active research programme. This includes the DELPHI experiment at LEP (CERN), the ZEUS experiment at HERA (DESY), the Soudan 2 and MINOS experiments (USA), the Sudbury Neutrino Observatory (SNO) project (Canada), the development of cryogenic detectors and the CRESST experiment (Gran Sasso), plus the development of the ATLAS and LHC-B experiments in high energy *pp* physics.

The **Research Officer position** is a fixed-term academic appointment with the same salary and conditions as a Lecturer, but with a limited teaching load. The successful applicant would be expected to participate in the above programme and contribute to the teaching activities of the Department. Preference may be given to candidates wishing to participate in one of the new projects (MINOS, CRESST, ATLAS or LHC-B). The appointment will be for three years in the first instance, with the possibility of extension for a further two years. The salary will be on the University Lecturer Scale (£16,045 - £29,875 pa, depending on age). Further particulars including details of duties and range of emoluments can be obtained from the Deputy Administrator, Nuclear and Astrophysics Laboratory, Keble Road, Oxford OX1 3RH (e-mail: P.Dobbs1@physics.oxford.ac.uk).

Letters of application supported by a full curriculum vitae, a list of publications, a statement of research interests and teaching experience plus the names of three referees should be forwarded to the Deputy Administrator, Mr PF Dobbs, at the above address to arrive no later than 31 August 1997. The referees should be asked to send references directly to Dr G Myatt, Head of Particle & Nuclear Physics at the same address to arrive by the closing date.

It is expected that the short-listed candidates will be interviewed in Oxford in September 1997. Applicants are asked to indicate an e-mail address, and a fax or telephone number where they can be contacted.

The **Post Doctoral Research Assistant** in RS1A grade is also to support the above programmes. This appointment would be for 2 years in the first instance with possible extension and the salary will be in the range of £15,159 to £22,785 pa depending upon experience. The successful candidate will be expected to teach up to 3 hours per week during term.

Letters of application supported by a full curriculum vitae, a list of publications and a statement of research interests, together with the names and addresses of two referees should be sent to Mr PF Dobbs at the above address, by 31 August 1997.

The University is an Equal Opportunities Employer.

Rheinisch - Westfälische Technische Hochschule Aachen

In der Mathematisch-Naturwissenschaftlichen
Fakultät / Fachbereich I ist eine

Universitätsprofessur (C4 BBesG) für Theoretische Physik Nachfolge Prof. H. Kastrup

zu besetzen.

Bewerberinnen und Bewerber sollen im Bereich "Theoretische Elementarteilchenphysik" arbeiten und dieses Fach in Forschung und Lehre vertreten. Außerdem wird in der Lehre die Beteiligung an den allgemeinen Kursen in Theoretischer Physik erwartet. Die Zusammenarbeit mit bestehenden Gruppen der Theoretischen Physik und Gruppen der experimentellen Elementarteilchenphysik ist erwünscht.

Einstellungsvoraussetzungen sind Habilitation oder gleichwertige wissenschaftliche Leistungen sowie pädagogische Eignung.

Die Bewerbung von Schwerbehinderten ist erwünscht.

Die RWTH Aachen strebt eine Erhöhung des Anteils der Frauen in Forschung und Lehre an. Bewerberinnen und Bewerber werden gebeten, sich mit den üblichen Unterlagen (Lebenslauf, Darstellung des wissenschaftlichen bzw. beruflichen Werdeganges, Schriftenverzeichnis) bis zum

10. Oktober 1997

an den

**Dekan der Mathematisch-Naturwissenschaftlichen
Fakultät / Fachbereich I
RWTH Aachen
D-52056 Aachen**

zu wenden.

CENTRE DE PHYSIQUE DES PARTICULES DE MARSEILLE IN2P3/CNRS - UNIVERSITE DE LA MEDITERRANEE

In the course of the development of the neutrino astrophysics activity Antares in Marseilles, the CPPM is expecting to recruit an applied physicist to work on development and implementation of software (simulation, reconstruction, analysis).

Experienced candidates in software for particle physics or astroparticle physics are invited to apply.

Applications with CV, publications list and names of referees should be addressed to :

CPPM - Caroline BERNARD

Case 907 - 163, Avenue de Luminy 13288

MARSEILLE Cedex 9

Fax : 04 91 82 72 99 E-mail :

bernard@cppm.in2p3.fr



ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

THE SWISS FEDERAL INSTITUTE OF TECHNOLOGY LAUSANNE
(EPFL) INVITES APPLICATIONS FOR THE FOLLOWING POSITION:

PROFESSOR FOR STRUCTURES in the Department of Architecture

The position will involve important teaching responsibilities in the fields of the design and construction of building structures as an integral part of the wider approach to architecture.

The future professor would be expected to:

- be committed to a multidisciplinary approach to teaching and architecture;
- animate and lead a permanent team of collaborators whilst participating in the management of the Institute of Building Technology (ITB) to which he will be attached;
- organise the teaching of structures courses within the Department of Architecture;
- organise and teach seminars, exercises, course work, diploma projects and doctoral theses.

Holder of a degree in civil engineering, the future professor should also have a good practical background and extensive professional experience, highlighted by important and innovative contributions in various areas of construction, especially in the building sector. Applicants should be able to demonstrate a skill for managing multidisciplinary projects, as well as a proficiency in the design and construction of structures. The ability and the talent to form and guide students and young researchers are indispensable. *Deadline for applications: 20 August 1997.* Starting date: as mutually convenient.

Applications from women are particularly welcome. For further information, please write to: **Présidence de l'Ecole polytechnique fédérale de Lausanne, CE-Ecublens, CH 1015 Lausanne, Switzerland, fax ++41.21.693.70.84**

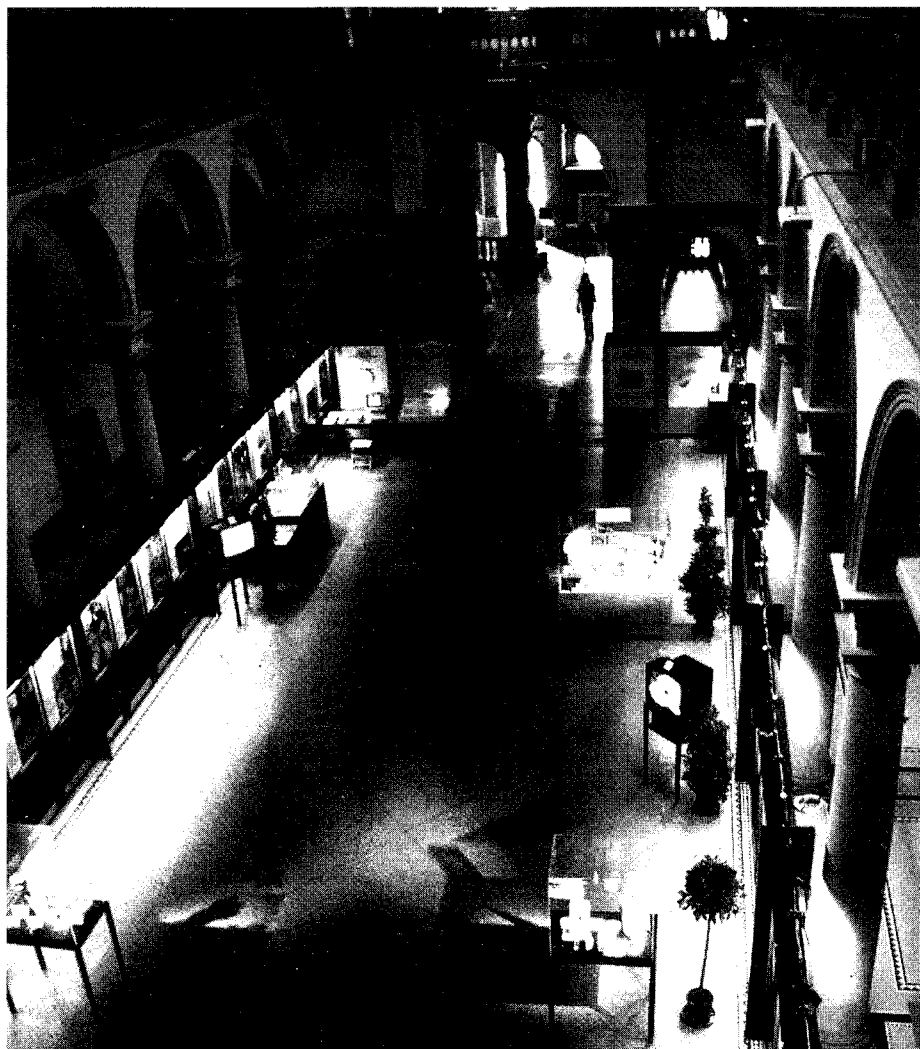
Top, an international symposium on mathematical physics in Kiev in May celebrated the 70th birthday of eminent Austrian theorist Walter Thirring. On this occasion the new Walter Thirring International Prize was awarded to an Austrian, Julius Wess, and to a Ukrainian, the late Dimitri Volkov, for the discovery of supersymmetry. This photo by André Martin shows Thirring (centre) between his ex-student Wess (left), currently a Director of the Max Planck Institute, Munich, and Alex G. Sitenko, Director of the Bogolyubov Institute for Theoretical Physics of the National Academy of Sciences of the Ukraine.

Below, CERN's Medical Technology Exhibition is now in its second year of touring Europe, having visited 10 cities in 12 months in 1995/6. On its way north, it visited Zurich, where the photo shows the impressive setting at the venerable ETH (Federal Technical University) building. From Zurich the exhibition moved to Darmstadt for the official opening of the Therapy Centre at the GSI heavy ion laboratory, followed by Berlin's Humboldt University and Hahn Meitner Institute this summer. Oslo, Venice and Athens are also on the 1987 plan, with no shortage of candidate sites for 1998.



and science centres. The exhibition was completed by a programme of meetings and conferences, the

publication of a book, the production of a film and of several audiovisuals.



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Inquiries for Europe:

Micheline FALCIOLA / CERN COURIER - CERN

CH - 1211 Genève 23 Suisse

Telephone: 022/767 41 03

Telefax: 022/782 19 06

Inquiries for the rest of the world:

please see page III

Second Annual LANSCE

User Group Meeting

-AUGUST 6-8, 1997-

• Top 10 Reasons to Attend:

1. Hear about interesting science by LANSCE users
2. Learn about funded upgrades at LANSCE
3. Discuss new neutron scattering instruments
4. Hear DOE leaders discuss plans for defense and basic science uses of neutrons
5. Nominate members to the User Group Executive and Program Advisory Committees
6. Find out who wins the Rosen Prize (see below)
7. Participate in short courses/workshops
8. Contribute a poster describing your research
9. Help improve LANSCE as a User Facility
10. Enjoy the beauty of Northern New Mexico!

• 15th annual LOUIS ROSEN PRIZE awarded at the meeting will consist of \$1,000 and a plaque for the outstanding thesis based on research performed at LANSCE. Deadline for Rosen Prize submissions is June 27, 1997.

• For students, travel funding and registration fee waiver available.

<http://www.lansce.lanl.gov/AnnualMtg.html>

or contact the LANSCE User Office at
lansce_users@lanl.gov or 505-665-1010

LANSCE
Los Alamos Neutron Science Center

NATIONAL INSTITUTE FOR NUCLEAR PHYSICS

INFN

POST-DOCTORAL FELLOWSHIPS FOR NON ITALIAN CITIZENS IN THE FOLLOWING RESEARCH AREAS:

THEORETICAL PHYSICS (N. 10)

EXPERIMENTAL PHYSICS (N. 20)

The INFN Fellowship Programme 1997-98 offers thirty positions for non Italian citizens for research activity in theoretical or experimental physics.

Fellowships are intended for young post-graduates not more than 35 years of age at the time of deadline.

Each fellowship is granted for one year (which may start during the period from September to November 1998), and may be extended for a second year.

The annual gross salary is 30.000.000 Italian Lire, plus travel expenses for round trip transportation from the home fellows to the I.N.F.N. Section or Laboratory. Lunch tickets are provided for work days.

Candidates should submit an application form and a statement of their research interests, including three letters of reference.

Applications should be sent to I.N.F.N. not later than *October 31, 1997*.

Candidates will be informed by the end of April 1998 about the decisions taken by I.N.F.N.'s committee.

The successful applicants may carry out their research activity in Italy, at any of the following Laboratories and Sections of I.N.F.N.:

National Laboratories of Frascati (Rome), National Laboratories of Legnaro (Padua), Southern National Laboratory (Catania) and National Gran Sasso Laboratories (L'Aquila).

I.N.F.N. Sections in the Universities of:

Turin, Milan, Padua, Genoa, Bologna, Pisa, Rome 'La Sapienza', Rome 'Tor Vergata', Naples, Catania, Trieste, Florence, Bari, Pavia, Perugia, Ferrara, Cagliari, Lecce and National Institute for Health (Rome).

Information, requests for application forms, and applications should be addressed to Personnel Office - Fellowship Service, National Institute of Nuclear Physics (I.N.F.N.) - Post Box 56 - 00044 Frascati (Rome) Italy.



MECHANICAL ENGINEER

The Thomas Jefferson National Accelerator Facility (Jefferson Lab, formerly known as CEBAF) is a nuclear physics basic research laboratory in Newport News, Virginia. The CW electron accelerator is providing three experimental areas with simultaneous beams with an initial maximum energy of 4 GeV. The experimental Halls A and C are equipped with focusing magnetic spectrometers for charged particle detection; Hall B houses the large acceptance spectrometer CLAS for the detection of multi-particle final states. The CLAS spectrometer makes use of a superconducting toroidal magnet and large size detection systems for charged and neutral particles.

The Jefferson Lab invites applications for a Staff Engineer III position in the Physics Division for the lead mechanical engineer on the Hall B program. The successful applicant should have a BS (MS preferred) degree in Mechanical Engineering from an accredited college (or an equivalent combination of education, training, and experience). Expertise in several of the following areas are required: design, fabrication, and operation of resistive and superconducting magnets; design, fabrication, and installation of the mechanical structures for particle detectors; high vacuum technology; finite element analysis, fluid flow and heat transfer calculations; safety analysis; preparation of specifications, schedule, and test procedures; and experience interacting with procurement, vendors, internal service groups, and outside facility users. A minimum of 10 years of experience in a directly related field are required (minimum of 5 years in a supervisory role).

Applicants should submit a curriculum to:

SURA/Jefferson Lab
Attn: Employment Manager
12000 Jefferson Avenue
Newport News, VA 23606
U.S.A.

Please specify position #PR3204 and job title when applying.

Proud to Be An Equal Opportunity, Affirmative Action Employer

Best performance by a ladies' team in this year's traditional CERN relay race was by 'The Mercenaries' - left to right Paula Collins, Helenka Przysiezniak, Renilde Vanden Broeck, Ainsley Normand, Catriona Gillies and Helen Korsmo.



CERN Courier contributions

The Editor welcomes contributions. These should be sent via electronic mail to cern.courier@cern.ch

Plain text (ASCII) is preferred. Illustrations should follow by mail (CERN Courier, 1211 Geneva 23, Switzerland).

Contributors, particularly conference organizers, contemplating lengthy efforts (more than about 500 words) should contact the Editor (by e-mail, or fax +41 22 782 1906) beforehand.

Books received

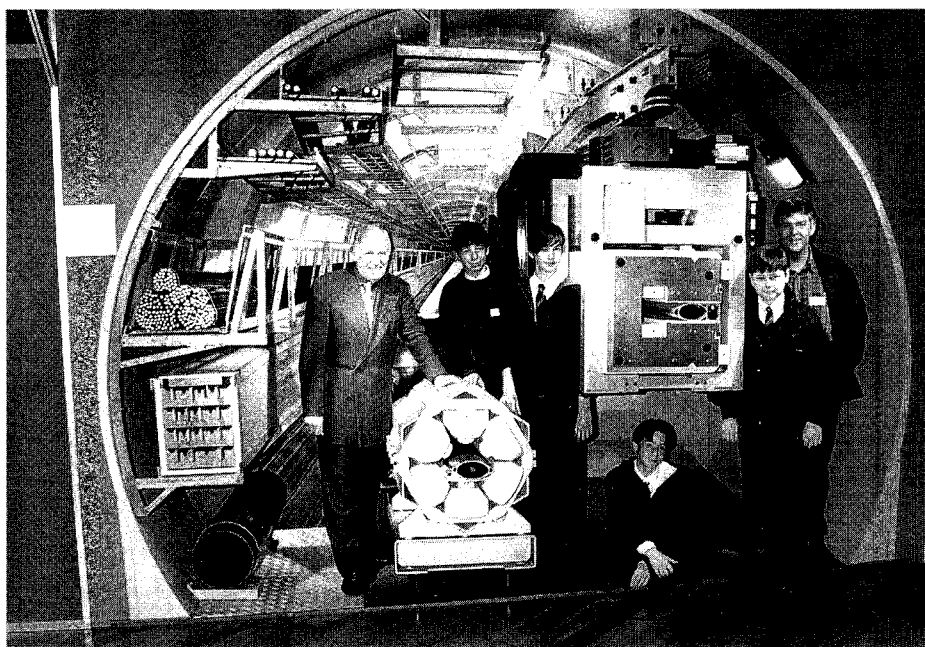
Collider Physics - Updated Edition, by Vernon D. Barger and Roger J.N. Phillips in Addison Wesley's *Frontiers of Physics* series, ISBN 0 201 14945 1

A new edition of this useful book, which first appeared in 1987.

Harmonic Maps, Loop Groups, and Integrable Systems, by Martin A Guest, Cambridge University Press, ISBN 0 521 58085 4 (£40, \$59.95, hbk), 0 521 58932 0 (£14.95, \$21.95, pbk)

In the series of Student Texts of the London Mathematical Society.

Centrepiece of the *Electron100* extravaganza at the University of Glasgow was the CERN Particle Physics Exhibition in the University's Hunterian Museum. Glasgow University Rector (elected by the students) and UK TV personality Richard Wilson poses with some young visitors.





DESY announces several

"DESY-Fellowships"

for young scientists in experimental particle physics to participate in the research mainly with the HERA collider experiments H1 and ZEUS or with the fixed target experiments HERA-B and HERMES. New fellows are selected twice a year in April and October.

DESY fellowships in experimental particle physics are awarded for a duration of two years with the possibility for prolongation by one additional year.

The salary for the fellowship is determined according to tariffs applicable for public service work (IIa MTV Ang.).

Interested persons, who have recently completed their Ph.D. and who should be younger than 32 years are invited to send their application including a résumé and the usual documents (curriculum vitae, list of publications, copies of university degrees) until 30 of September 1997 to **DESY, Personalabteilung - V2 -, Notkestraße 85, D-22607 Hamburg**. They should also arrange for three letters of reference to be sent until the same date to the address given above.

Handicapped applicants with equal qualifications will be preferred.

DESY encourages especially women to apply.

As DESY has laboratories at two sites, in Hamburg and Zeuthen near Berlin, applicants may indicate at which location they would prefer to work.



POSTDOCTORAL RESEARCH POSITIONS EXPERIMENTAL HIGH ENERGY PHYSICS UNIVERSITY OF CALIFORNIA AT SAN DIEGO

The Department of Physics at the University of California, San Diego, invites applications from outstanding candidates for one or two Postdoctoral Researcher positions in experimental High Energy Physics. UCSD is a member of the BABAR experiment at the PEP II B Factory at SLAC. The goal of BABAR and PEP-II is to explore CP violation in B decays as a precision test of the Standard Model, beginning with first collider data in 1999. The successful applicants will participate in the commissioning of the BABAR detector, and thereafter in data taking and physics analysis. It is expected that UCSD will contribute to the initial operation of the Drift Chamber, as well as to both detector-specific and global software development. Candidates with interest and experience in these areas and in data analysis are particularly encouraged to apply. A Ph.D. in particle physics or a related field is required. Applicants should send a copy of their curriculum vitae, including a statement of physics interest, and arrange for three letters of recommendation to be sent to:

Professor David MacFarlane,
Physics Department, 0319
University of California at San Diego
9500 Gilman Drive, La Jolla, CA 92093-0319
email: pdsearch@heppl.ucsd.edu
phone: +(619) 534 1943
fax: +(619) 534 0173

The nominal deadline for the receipt of the application is 15 September 1997, but the search will continue until the positions are filled.



University of Alberta
Edmonton

Department of Physics Assistant Professor Experimental Particle Physics

The Department of Physics invites applications for a tenure track position in experimental collider physics at the Assistant Professor level to begin July 1, 1998. Candidates must have a PhD or equivalent, and postdoctoral experience. We are looking for an individual with demonstrated ability and outstanding potential for excellence in teaching and research.

The Department of Physics has excellent support facilities to complement the research of its 36 faculty and 70 graduate students, including well equipped electronics and machine shops and experienced technical staff. Members of the department are currently collaborating on OPAL and ATLAS at CERN, HERMES at HERA, E787 at BROOKHAVEN, and E614 at TRIUMF. We expect to fill a number of tenure track positions in particle physics and other areas during the next three years.

In accordance with Canadian Immigration requirements, priority will be given to Canadian citizens and permanent residents of Canada. If suitable Canadian citizens and permanent residents cannot be found, other individuals will be considered. Applicants should submit a complete curriculum vitae, including a research proposal and a teaching profile, and arrange to have at least three confidential letters of recommendation sent on their behalf to:

J. Samson, Chair
Department of Physics
University of Alberta
412 Avadh Bhatia Physics Lab
Edmonton, Alberta T6G 2J1

Early responses are encouraged, closing date for applications is January 1, 1998.

The University of Alberta is committed to the principle of equity in employment. As an employer we welcome diversity in the workplace and encourage applications from all qualified women and men, including Aboriginal peoples, persons with disabilities, and members of visible minorities.

...it makes sense.

UNIVERSITY OF ALBERTA

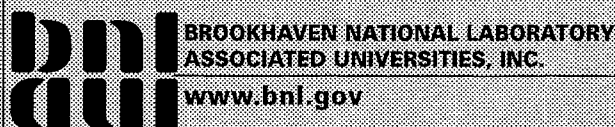
PROJECT ENGINEERS ELECTRICAL/MECHANICAL

Brookhaven National Laboratory's Physics Department has two challenging opportunities available for senior-level Project Engineers to work within our U.S. ATLAS Project Office.

The U.S. ATLAS Project will be carried out over an 8-year period by 30 U.S. institutions and is a part of the international ATLAS experiment which is being constructed at CERN in Geneva, Switzerland.

Responsibilities will include supervising the technical aspects of the project including costs, scheduling, QA and project integration. Requirements include a BS/MS in electrical or mechanical engineering and extensive experience in the design, procurement, fabrication and installation of complex and varied components for multi-million dollar projects. Experience with detectors used in particle physics is a plus.

Brookhaven, located on Long Island, NY, offers a stimulating work environment and a comprehensive benefits package. For consideration, please forward your resume referring to Position #NS-225OC, to: Nancy L. Sobrito, Brookhaven National Laboratory, Associated Universities, Inc., HR Division, Bldg. 185, PO Box 5000, Upton, Long Island, NY 11973-5000. For the hearing disabled: TDD 516-344-6018. BNL is an equal opportunity employer committed to workforce diversity.



RESEARCH ASSOCIATE POSITION EXPERIMENTAL HIGH ENERGY PHYSICS INDIANA UNIVERSITY

The Department of Physics at Indiana University invites applicants for a research associate position to work with the high energy physics group on the OPAL experiment at CERN. The position will be available beginning September 1997.

In OPAL the Indiana University Group has been playing a leading role in the development of the silicon microvertex detectors and their radiation monitoring. In physics analysis our interests are in searches for new particles at LEP2 and in heavy flavor physics. We also have developed and maintain the offline analysis facility, SHIFT.

Applicants should have experience in physics analysis and an interest in silicon microvertex detectors. Candidates must have a Ph.D. degree. Applications, including vitae, list of publications, and three reference letters, should be sent to:

High Energy Physics Secretary
Department of Physics
Indiana University
Bloomington, IN 47405

by **August 15, 1997**. Indiana University is an Equal Opportunity/Affirmative Action Employer.



THE SWISS FEDERAL INSTITUTE OF TECHNOLOGY
LAUSANNE (EPFL) INVITES APPLICATIONS FOR
THE FOUR FOLLOWING POSITIONS OF

ASSISTANT PROFESSOR for

1. THEORETICAL COMPUTER SCIENCE in the Computer Science Department

The concerned area will be theoretical computer science: computational geometry, algorithms, complexity theory. Information about the activities of the Department can be obtained on the WWW at <http://diwww.epfl.ch/>

2. DISTRIBUTED SYSTEMS in the Computer Science Department

The concerned area will be distributed systems: reliability, open standards (eg. CORBA), temporal constraints in distributed information systems. Information about the activities of the Department can be obtained on the WWW at <http://diwww.epfl.ch/>

3. ELECTRONICS FOR MICROSYSTEMS in the Electrical Engineering Department

The new professor will have a strong professional experience in microsystems applications. This experience should cover sensor and actuator interfaces, data acquisition, analogue and/or digital signal processing, as well as overall microsystems design. A skill in integrated circuits technology, silicon micromachining, silicon sensors and microactuators would be greatly appreciated.

4. NON-NEWTONIAN FLUID MECHANICS in the Mechanical Engineering Department

For this position in the Laboratory of Fluid Mechanics of the EPFL, the teaching activity of the new professor will include specialized courses of the Mechanical Engineering Department in non-Newtonian fluid mechanics. It is expected that he/she possesses a demonstrated mastery of at least two of the following three aspects of non-Newtonian Fluid Mechanics: theoretical modelling (principal theme), experimental diagnostics (adapted to the study of non-Newtonian fluids) and numerical simulation.

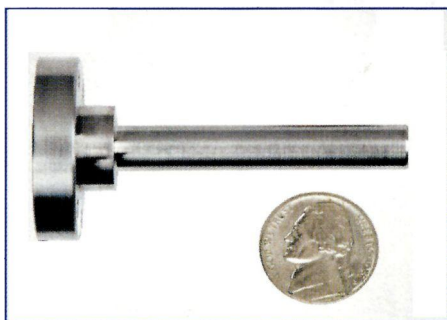
For the four positions: the activities will take place within the concerned Departments and will also involve other units of the EPFL as well as other Swiss and international academic institutions and manufacturers. An aptitude for teaching to students of graduate and undergraduate level and for conducting original and high level research projects is essential. The new professors will also be called on to supervise and guide students on semester projects, on engineering degrees and Ph.D. degree work. They should possess a confirmed skill in leading projects. Candidates are invited to propose and send an original research program together with their application form. Applications are encouraged from people who fulfill the requirements of the Swiss program for ensuring the continuity of competent university faculty. *Deadline for applications: October 16, 1997.* Starting date: as mutually convenient. The EPFL has about 4000 undergraduate and 600 doctoral students. It consists of 12 departments in all the major engineering sciences. Applications from women are particularly welcome. For further information, please contact by writing to: **Présidence de l'Ecole polytechnique fédérale de Lausanne, CE-Ecublens, CH 1015 Lausanne, Switzerland.**

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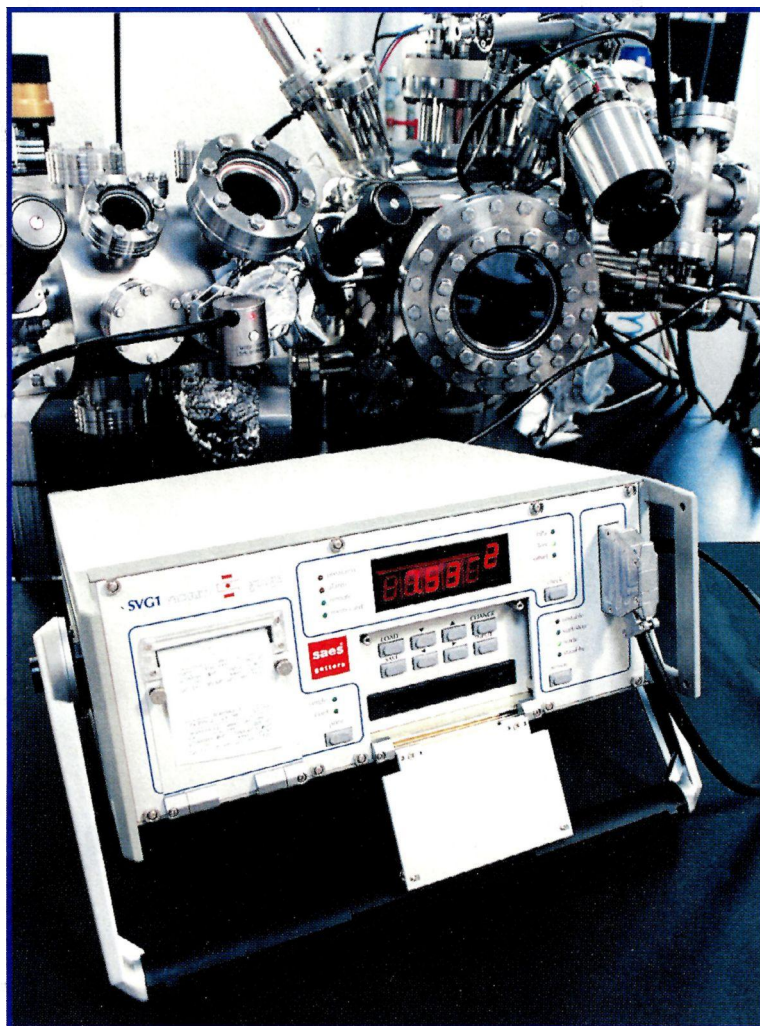
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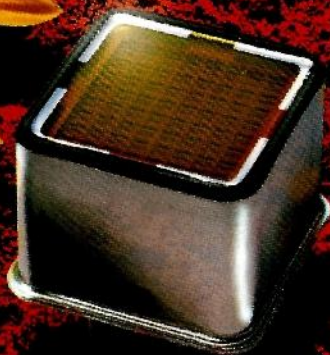
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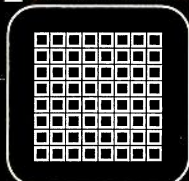
Anodes New Standard



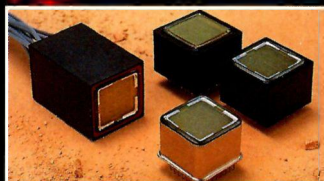
SPECIFICATION DATA

TYPE	ANODE SIZE	APPLICATIONS
R5900	□ 18mm	Calorimeter, Trigger counter, TOF etc.
R5900-M4	□ 8.9mm (×4 Channels)	γ-ray Telescope
R5900-M16	□ 4.0mm (×16 Channels)	SCIFI Read Out, RICH
R5900-L16	0.8mm×16mm (×16 Channels)	SCIFI Read Out, DIRC
R5900-C8	Cross Wire X4 +Y4	PET, γ-ray Imaging
R5900-M64	□ 2.0mm (×64 Channels)	SCIFI Read Out, RICH

Anode Pattern



8×8 MATRIX



MULTI ANODE PMT

28mm×28mm Square
20mm Height
22.5g Weight(Approx)

Front:R5900 Left:H6568(4×4 Multi Anode) Back:R5900U-00-M4(2×2 Multi Anode)
Right:R5900U-L16(16 Linear Anode)

HAMAMATSU PHOTONICS K.K., Electron Tube Center <http://www.hamamatsu.com>
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