

People and things

Royal visit: Prince Philippe of Belgium (right) at CERN on 29 September accompanied by Belgian deputy Prime Minister and Minister for Commerce and Communications Elio Di Rupo, with explanations by Kathy Huet of Mons. (CERN HI 27.9.97)

Peter A. Carruthers

Peter A. Carruthers died at the age of 61 in his home in Tucson, Arizona on 3 August. His career as a theoretical physicist spanned a remarkably broad spectrum ranging from elementary particles and field theory to condensed matter physics, astrophysics and nonlinear dynamics. In the past few years he had become an acknowledged leader in the area of multiparticle production.

After a PhD in theoretical physics from Cornell in 1961 under Hans Bethe, he joined Cornell and rapidly climbed to full professor. He supervised many outstanding PhD students and post-doctoral fellows, many of whom have had distinguished careers. In 1973 he became Leader of Los Alamos Theoretical Division, where he had a major impact on its growth, reputation, and scientific excellence. He attracted many outstanding scientists and established a highly visible broadly-based basic research programme of international repute.

In 1980, he stepped down from the Division Leadership to return to research. He was named a Senior Fellow of the Laboratory and became the Leader of the Elementary Particle and Field Theory Group. In 1986 Pete moved to Arizona as Professor and Head of the Physics Department and, later, as Director of the Center for the Study of Complex Systems. Together with Murray Gell-Mann and others he was instrumental in creating the much-heralded Santa Fe Institute. Peter was an eloquent spokesman for the Supercollider, and for the importance of basic research across all of science. He was a man of ideas, an accomplished musician



and a bon vivant. His presence will be sorely missed.

Mladen Paic 1905-97

Mladen Paic, regarded as the founder of modern experimental physics in Zagreb and for 30 years the head of experimental physics at the university, passed away on 8 July. In the 50s he was one of the founders of the Institute Rudjer Boskovic, the leading institute for natural sciences in Croatia, and in the 60s founded Zagreb's Institute of Physics, devoted to condensed matter, where until recently he relentlessly investigated the optical properties of ionic superconductors.

One notable student was the distinguished theoretician Vladimir Jurko Glaser (1924-84). The building, with collaborators, of a neutron generator led to the emergence of a whole generation of talented nuclear and particle physicists who, despite scarce funding, have pursued successful careers.

The long-standing international involvement of Croatian physicists was formalized by the 1991 CERN-Croatia agreement. Today about 20 Croatian researchers collaborate in

ongoing experiments, including Alice and CMS for the LHC. This continuing involvement will continue to be an enduring tribute to his memory.

From Daniel Denegri

Heavy elements

After lengthy discussion, a special committee of the International Union of Pure and Applied Chemistry has recommended definitive names for elements 101-109, where some nuclei previously had been known under different titles, according to taste.

The ruling is: element 101 is Mendelevium (Md), 102 Nobelium (No), 103 Lawrencium (Lr), 104 Rutherfordium (Rf), 105 Dubnium (Db), 106 Seaborgium (Sg), 107 Bohrium (Bh), 108 Hassium (Hs) and 109 Meitnerium (Mt).

As well as honouring important scientists, the significant roles played by the Joint Institute for Nuclear Research (JINR) Dubna and the German GSI (Darmstadt, in Hesse, Hassia in Latin) Laboratory are also commemorated.

However with GSI also having discovered elements 110, 111 and

112 (April 1996, page 1), the committee still has some decisions to make. The tradition is that the discoverer of an element has first option on choosing its title.

Feynman video

The final touches have been completed and the video of Richard P. Feynman delivering the first Dirac Memorial Lecture on 'The Reason for Antiparticles' is now available. Recorded in 1986, this video has never before been available to the public. By special arrangement with Cambridge University (where the lecture was delivered), this video has been produced complete with copies of Feynman's lecture notes in his own handwriting. Included are new material written by Ralph Leighton, Lawrence Krauss, and John Gribbin.

The video is available in NTSC and PAL formats for \$45 US (NTSC) and \$57 (PAL) postage included. The video may be ordered from Friends of Tuva (fot@sprintmail.com) or from the address below. All proceeds from the sale of this video are being

donated to charity, half to Marie Curie Cancer Care in the UK and half to the John Wayne Cancer Clinic in the US. This price includes public performance rights provided no fee is charged for admittance. Transparencies may be duplicated for educational use.

(The text of the lecture, with that of Steven Weinberg, is available as 'Elementary Particles and the Laws of Physics' by Richard P. Feynman and Steven Weinberg, published by Cambridge University Press, ISBN 0 521 340004.)

J. Eric Slone Scientific Consulting Services 5500 Holmes Run Parkway, Suite 501 Alexandria, Virginia 22304-2851 Phone: (703) 461-7078 Fax (703) 751-6639 eslone@patriot.net <http://www.patriot.net/users/eslone>

Meetings

The 10th biennial Advanced Study Institute on Techniques and

Concepts of High Energy Physics, directed by Tom Ferbel of Rochester, will be held June 18-29, 1998, in St. Croix, US Virgin Islands. Advanced graduate students or recent PhDs in experimental high energy physics should submit a letter of application, with a vita, a list of publications and a supporting letter. The cost of local accommodations is estimated to be about \$1100, including a copy of the proceedings. There will be limited funds for partial support of needy students. The letter of inquiry should make it clear what financial support will be required. The deadline for application is February 1, 1998, but it is advisable to apply early.

Further information from Ms. C. Jones, Dept of Physics/ASI-1998, University of Rochester, River Campus, B&L Bldg, Rochester, NY 14627-0171 USA WWW <http://server-mac.pas.rochester.edu/Asiinfo.html> e-mail: CONNIE@PAS.ROCHESTER.EDU phone: (716) 275-5306 fax: (716) 275-8527

CERN Courier index

The names and subject indexes for the 1996 issues of the CERN Courier can be accessed via <http://www.cern.ch/CERN/Courier/1996/ListE.html>

At CERN on 17 September was Professor Dagmar Schipanski (second from left), President of the German Scientific Council, with, left, the Council's General Secretary W. Benz, and Professor Wegener of Dortmund. Among the CERN researchers they met were Doris Forkel-Wirth (far right), physics coordinator at CERN's ISOLDE on-line isotope separator and Georg Bollen, ISOLDE physics group leader. (Photo CERN HI 16.9.97)



A unique advertising medium for scientific and technical equipment

CERN COURIER is the internationally recognized news magazine of high energy physics. Distributed to all the major Laboratories of the world active in this dynamic field of fundamental research, it is compulsive reading for scientists, engineers, administrators, information media and buyers. Written in simple language and published simultaneously in English and French it has become the natural communication medium for particle physicists in Europe, the USA, Russia, Japan – everywhere where the fundamental nature of matter is studied.

Published from CERN, Switzerland, it also has correspondents in the Laboratories of Argonne, Berkeley, Brookhaven, Cornell, Fermi, Los Alamos and Stanford in the USA, Darmstadt, DESY and Karlsruhe in Germany, Orsay and Saclay in France, Frascati in Italy, Rutherford in the U.K., PSI in Switzerland, Serpukhov, Dubna and Novosibirsk in Russia, KEK in Japan, TRIUMF in Canada and Beijing in China.

The annual expenditure on high energy physics in Europe is about 1800 million Swiss francs. The expenditure in the USA is about \$ 1100 million. There is also considerable expenditure in Russia.

CERN COURIER is the way into all high energy physics research Laboratories. If you have a market in this field, there is no surer way to make your products known than by advertising in CERN COURIER.

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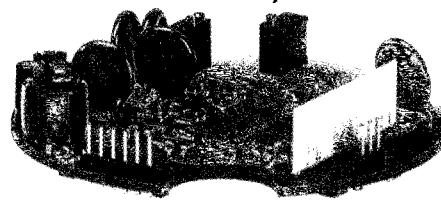


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At a colloquium in memory of distinguished theorist Abdus Salam (1926 - 96) at CERN on 23 September (Photos CERN HI24.9.97):

1 - Tom Kibble of London's Imperial College recalled Salam's spectacular career.

2 - Carlo Rubbia (centre), 1984 Nobel prizewinner and Director General of CERN from 1989 - 93, stressed the importance of Salam's work in CERN's experimental research programme past, present and future.



1

CERN Director Chris Llewellyn Smith (right) underlined the importance of Salam's main creation, the International Centre for Theoretical Physics in Trieste, for the world theoretical physics community. On the left is Louise Johnson (Mrs. Salam).

3 - Sheldon Glashow, who shared the 1979 Nobel Physics Prize with Salam and Steven Weinberg, recalled Salam as 'one of the warmest, gentlest and most gracious people I have ever known'.



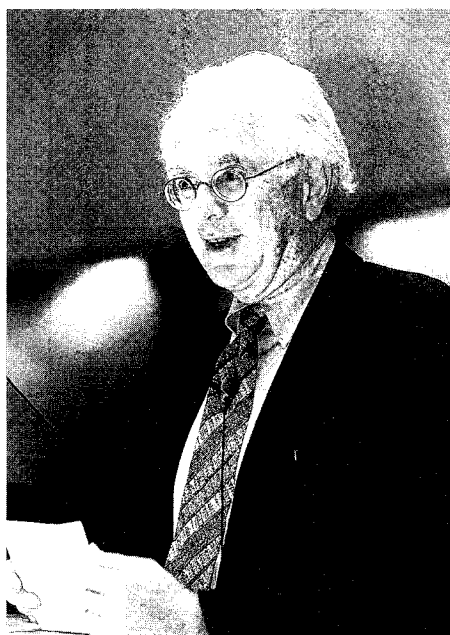
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CERN PS intensity record

Just one month after a previous record of 3.02×10^{13} protons accelerated up to transition energy in CERN's veteran PS Proton Synchrotron, a new step was reached on 26 September with more than 3.1×10^{13} protons.

The proton Linac was again working near its top performance with a current of 163 mA delivered to the PS Booster which accelerated more than 3.45×10^{13} protons and extracted 3.32×10^{13} protons towards the PS.

The main improvements were at the Booster (acceleration, bunch shape and synchronization). PS losses were minimized by optimizing injection, low energy working points and the acceleration process. Proton intensity finally reached a new peak of 3.115×10^{13} protons with the vital intensity at extraction at 14 GeV as 3.05×10^{13} .



3

Vanna Cocconi-Tongiorgi (1917 - 1997)

Vanna Cocconi, who passed away peacefully on the first of October, was a wonderful colleague and great friend. She was the heart of the European High Energy bubble chamber collaboration for 18 years so when she retired in 1982, we gave her a many-tiered cake with 65 candles. As each candle was lit, we retraced her life. First she studied the interactions of cosmic rays. Her first paper in 1939 was written with a young physicist, Giuseppe Cocconi who later became her husband. Moving to Cornell, her next 15 years were spent bringing up her daughter and son, and interacting with the many exceptional physicists there. She continued her cosmic ray work begun in Italy, and was the first to observe that when cosmic rays hit a heavy element target, an unexpectedly large number of neutrons are

C++/Object Oriented Software Engineer

At Fermi National Accelerator Laboratory, our high energy physics program is dedicated to unlocking the secrets of the universe as we explore the fundamental nature of matter using the highest energy particle accelerator in the world — the Tevatron.

To support this mission, we are embarking on a major upgrade of our software from FORTRAN and C to C++ (with some FORTRAN and C legacy remaining). This endeavor, which is scheduled for completion by late 1999, has created an excellent professional opportunity for an experienced software programming expert with proven experience in C++/Object Oriented project design and implementation, as well as exposure to large-scale systems projects (e.g., equivalent to 100+ FTE years of effort). The selected individual will provide coding and design assistance to large collaborations of physicists and other computing professionals.

Qualified candidates will be seasoned professionals who possess a minimum of 3 years experience with C++ coding, OO design and STL (or earlier implementations of templates and specialized container classes), and a Master's degree in computer science (or equivalent). Also necessary is thorough knowledge of object oriented design techniques that includes the ability to implement systems using such techniques. Experience working with large scientific/technical groups to design and implement project standards (e.g., interface, templates, data models, documentation, etc.) is preferred. An understanding of other programming and modern scripting languages, and a familiarity with scientific/technical computing enterprises are desirable.

Located 40 miles west of downtown Chicago, we offer a competitive salary and an excellent benefits package. For consideration, please send a resume to: **Employment Department/970110, Fermi National Accelerator Laboratory, P.O. Box 500, Batavia, IL 60510-0500, U.S.A.** To access Employment Opportunities at Fermilab, our URL is [<http://fnalpubs.fnal.gov/employ/jobs.html>]. EOE M/F/D/V.



VACUUM SCIENTIST (Research Associate II)

Vacuum Scientist at the Laboratory of Nuclear Studies, Cornell University, to join the Vacuum Group responsible for maintaining and improving the vacuum systems of the high energy particle accelerators, consisting of the CESR electron-positron storage ring and its injectors (a Synchrotron and a Linac), [Webpage:<http://www.lns.cornell.edu/>]. The ultra high vacuum system of CESR is being upgraded, presenting a considerable challenge and an opportunity to participate in the design and fabrication of a system using innovative UHV concepts. The Laboratory maintains a well-equipped Vacuum Laboratory with a staff of trained vacuum technicians. The responsibilities of the position include: research into materials, processes and equipment for improving the vacuum systems for high beam current operation; design and assembly of laboratory apparatus and evaluation of new design concepts, surface preparation, etc.; and generally assisting in improving accelerator performance, including further training of technicians. A Ph.D. or Master's degree with equivalent experience in vacuum science is required. Experience with accelerator or other large vacuum systems is highly desirable. Complete job description provided on request. Contact Dr. N. B. Mistry, search@lns62.lns.cornell.edu, FAX: 607-254-4552, Tel: 607-255-4951. Mailing address: Newman Laboratory, Cornell University, Ithaca, NY 14853-5001, Attn: Vacuum Scientist Search.

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UNIVERSITY OF TORONTO TENURE TRACK FACULTY POSITION DEPARTMENT OF PHYSICS

The Department of Physics plans to make a tenure track appointment in High Energy Physics at the rank of Assistant Professor, subject to budgetary approval, with a starting date of July 1, 1998.

We seek candidates with a Ph.D. in Physics, proven or potential excellence in both research and teaching, whose research interests are in Theoretical Particle Physics. Salary will be commensurate with qualifications and experience.

Applications, including a curriculum vitae and three letters of reference should be sent to:

Professor Pekka Sinervo
Chair
Department of Physics
University of Toronto
60 St. George Street
Toronto, Ontario ... M5S 1A7
Canada

The deadline for the receipt of applications and letters of recommendation is December 31, 1997.

In accordance with Canadian immigration requirements, priority will be given to Canadian citizens and permanent residents of Canada. The University of Toronto is committed to employment equity and encourages applications from all qualified individuals including women, members of visible minorities, aboriginal persons, and persons with disabilities.

Vanna Cocconi-Tongiorgi (1917 - 1997)



being an excellent physicist, she had a unique maturity and infallible judgement which she expressed with kindness. Every collaboration paper, over 100 of them, had to pass the ultimate test, being read and checked by Vanna. She re-organized each paper and brought out the logic and the physics more clearly - even improving the English. All this without ever leaving anyone unhappy; she never had an argument - it was always a friendly and fair discussion.

She was truly international - wherever she travelled, people would stop her in the street and ask directions - they thought she was one of them, and was a person they instantly judged was sympathetic and reliable.

She loved art and the mountains; every Saturday morning she and Giuseppe would visit the art galleries in Geneva's old town. Her gentle guidance was always appreciated, whether advising other physicists or, with her husband, introducing their colleagues to their first descent of the Vallee Blanche.

Following the poet Robert Burns,
A thought ungentle cannot be,
The thought of Vanna Cocconi.

Friends of Vanna.

produced - now called spallation! Later she carried out experiments in a diffusion chamber in Cornell and working with Ralph Shutt at Brookhaven, producing many important results with photon and proton beams. Vanna first worked at the SC and PS of CERN in 1959-60 before returning to become a staff member in 1963. She helped set up the high energy bubble chamber collaboration. As well as working hard and

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.



Physicists and mathematicians from all over the world came to Marseille-Luminy for a conference on the diversified contributions of Alex Grossmann (on the right in the photo - including the invention of wavelets) on the occasion of his becoming emeritus. With him are Raymond Stora (left) of LAPP, Annecy, and Mohamed Mekboub, honorary president of Luminy campus. Grossman recently received a French Physical Society prize.

(Photo A. Martin)

Accelerator Physicists (2 Posts)

Based at Daresbury Laboratory (DL), Warrington, Cheshire

Opportunities exist for physicists to join a small team of experts who design, build and operate advanced high-energy particle accelerators and associated systems, based at CLRC Daresbury Laboratory in North Cheshire.

At present the team supports the synchrotron radiation source (SRS), the UK national facility exploiting a 2 GeV electron storage ring to provide radiation to a very large community of academic and industrial users. Maintaining this world-class facility has required a continuous process of upgrades, including the current project to introduce two multipole wiggler sources into the SRS, and a programme of basic accelerator studies. In order to remain internationally competitive, design activities are now underway on DIAMOND, the proposed replacement for the SRS. You would be expected to make a major contribution to both of these exciting new developments. The group also provides expertise to external bodies, including some important links with industrial customers and universities, as well as overseas laboratories.

We are looking for highly motivated scientists with an independent outlook, who must be able to work in a team. You would be joining a laboratory with an international reputation to maintain - a challenge implying a determined commitment to work and a willingness to take on a variety of tasks, both theoretical and experimental. Previous accelerator experience, although welcome, is not essential and recent graduates are invited to apply as full training in accelerator physics will be available.

You should have a good honours degree in physics or a related subject, or an equivalent qualification. Postdoctoral scientists are also encouraged to apply.

These appointments are within Salary Band 6, £12,040 to £21,210 or Salary Band 5, £15,180 to £24,820, depending on qualifications and experience. Appointment will normally be at the minimum but relevant experience will be taken into account. Further progression is dependent upon performance. A non-contributory pension scheme, flexible working hours and a generous leave allowance are also offered. Further information is available from Mike Poole, DL, phone (01925) 603256, fax. (01925) 603192 or e-mail (m.w.poole@dl.ac.uk), also from (<http://www.dl.ac.uk/srs/index.html>).

Application forms and a more detailed job description can be obtained from: Recruitment Office, Personnel Division, Rutherford Appleton Laboratory, Chilton, Didcot, Oxfordshire OX11 0QX. Telephone (01235) 445435 (answerphone) quoting reference VN 1539/97. More information about CLRC is available from CCLRC's World Wide Web pages at (<http://www.cclrc.ac.uk>).

All applications must be returned by **27 November 1997**.

The CCLRC is committed to Equal Opportunities and has a no-smoking policy.

COUNCIL FOR THE CENTRAL LABORATORY OF THE RESEARCH COUNCILS



Associate Scientist Beams Division

Fermi National Accelerator Laboratory is one of the leading laboratories in high energy physics and accelerator research. As part of the U.S.- Large Hadron Collider (LHC) Accelerator Project, the Beams Division is currently involved in accelerator physics studies of the LHC. The LHC is being built at CERN and is scheduled to be operational in 2005.

These exciting studies, which are part of the U.S. collaboration centered at Fermilab, have created an excellent scientific opportunity to participate in the design of the LHC interaction regions (IR), for which the U.S. has a substantial hardware responsibility. The topics include beam optics, beam-beam interactions, dynamic aperture tracking, tolerance and correction of magnet harmonics, misalignment, ground motion, and power supply ripple. The selected candidate will assume responsibility for a variety of accelerator physics calculations and design studies, as well as generating technical design reports, and communicating accomplishments and findings to the collaboration. Some domestic and international travel will be involved.

Qualified candidates will have a Ph.D. in physics and a minimum of five years of experience in accelerator physics (or the equivalent). Accomplished communication skills are also essential. Familiarity with hadron colliders and IR design is desired. The Associate Scientist position is a term appointment, initially for three years, with possible extensions.

Located 40 miles west of downtown Chicago, Fermilab provides a competitive salary and an excellent benefits package, as well as an attractive campus setting. Applicants need to forward their curriculum vitae, publication list and the names of three references to: **Dr. David Finley, Head, Beams Division, Fermi National Accelerator Laboratory, P.O. Box 500, M.S. 306, Batavia, IL 60510-0500, U.S.A.** To access Employment Opportunities at Fermilab, our URL is [<http://fnalpubs.fnal.gov/employment/jobs.html>]. EOE M/F/D/V.



Life in Venice

At the opening of the 'Hadrons for Health' exhibition in Venice sponsored by the TERA Foundation and the Italian PTT - front row, left to right: TERA Foundation President Ugo Amaldi, Italian President Oscar Luigi Scalfaro, Marianna Scalfaro, and Vito Marchese of the Italian PTT.

The latest venue for the travelling exhibition - 'Hadrons for Health', covering a hundred years from X-rays to quarks in the service of health - was Venice. It shows how the application of knowledge from subatomic physics now extends from the introduction of X-ray radiography at the end of the 19th century to the use of hadron beams for cancer therapy. The latter is poised to become a major new medical tool for the 21st.

Under the title 'Atomi per la Salute', the exhibition, put together by Werner Kienzle of CERN and Alessandro Pascolini of Padua, was formally inaugurated on 30 September by Italian President Oscar Luigi Scalfaro and the Minister for Public Health Rosamaria Bindi. The event was staged in the historic 'Fondaco dei Tedeschi' palace close to the Rialto Bridge on Canal Grande, chosen by the Italian PTT, which for the occasion had launched a fundraising campaign for the TERA Foundation.

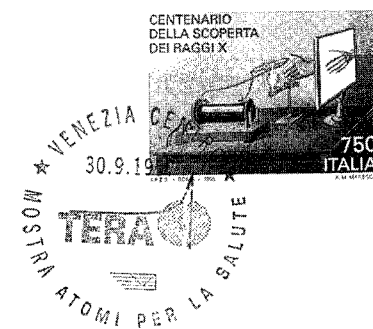
Before the President's address, TERA Foundation President Ugo Amaldi and CERN Council and INFN President Luciano Maiani underlined the importance of fundamental research and its value for spinoff in the medical sector. Among other notables were CERN Research Director Lorenzo Foà, Italian Physical Society President Renato Angelo Ricci, and former CERN Director General Herwig Schopper.

Left to right, Italian Minister of Public Health Rosamaria Bindi, CERN Council and INFN President Luciano Maiani, CERN Research Director Lorenzo Foà, and (back to camera) exhibition co-organizer Alessandro Pascolini of Padua.



The Hadrons for Health exhibition in Venice warranted a special postmark.

VII - art. dir. e corr. - graf. - a. amato - P. produzione Vietan



Oak Ridge National Laboratory

Spallation Neutron Source Directors, Physicists, Engineers

The Oak Ridge National Laboratory (ORNL) invites applications for key positions with the Spallation Neutron Source (SNS) project, a next-generation source for the U.S. Department of Energy's (DOE) Office Of Energy Research. The SNS is a collaborative project among 5 DOE National Laboratories. The SNS will consist of a 1-mA H⁺ front-end, a 1-GeV proton linac, and a 221-m circumference accumulator ring. This accelerator system will produce short-pulse neutron beams from a 1 MW beam of protons bombarding a liquid Hg target, for use by a variety of state-of-the-art instruments. The facility is scheduled for completion in 2005.

PROJECT DIRECTOR

Will manage the design and construction of the SNS with responsibility for overall coordination, systems integration, and day-to-day operations. Successful candidates must have an advanced degree in science or engineering and demonstrated expertise in neutron scattering, accelerator design and/or facility construction. Extensive experience in the execution and completion of major DOE construction projects desired.

SCIENTIFIC DIRECTOR

Will lead the research and development program planning and execution, establish and maintain close ties to the neutron science user community, guide design and construction of instrumentation, and assemble a team of neutron-scattering and instrumentation-development scientists/engineers. Successful candidate must be a nationally recognized leader in neutron scattering science with demonstrated achievements in promoting collaborative relationships and building research teams.

ACCELERATOR PHYSICISTS/ENGINEERS

Will be responsible for design, construction, operations, maintenance, and upgrades of the accelerator systems. Successful candidates must have a PhD in physics or engineering or equivalent experience in accelerator physics. Positions available for both junior- and senior-level candidates who desire to work on technically challenging projects and have demonstrated records of outstanding achievement in the design, construction, development, and operation of accelerator facilities, commensurate with their experience.

NEUTRON SCATTERING/INSTRUMENTATION SCIENTISTS

Will participate in scientific research and lead multi-laboratory teams to design, construct, test, install, and operate new neutron scattering instruments. Successful candidate must have a PhD or equivalent experience in science or engineering with professional experience in neutron scattering and scientific research. A demonstrated record of accomplishments in design, development, and operation of neutron scattering instruments, and experience with pulsed spallation neutron sources is desirable.

The initial assignment for these positions may be at a collaborating laboratory or university. Qualified candidates should identify the position of interest and submit a curriculum vitae with a list of 3 or more references to: **SNS Selection Committee, Attn: Dr. Bill R. Appleton, Oak Ridge National Laboratory, PO Box 2008, Dept-CERN, Oak Ridge, TN 37831-6240 or e-mail to gxb@ornl.gov.**

More information about ORNL and the SNS is available by visiting our web sites at:

www.ornl.gov and www.ornl.gov/~nsns/nsns

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The CERN-Asia Fellows and Associates Programme

Within the framework of the CERN-Asia Fellows and Associates Programme, CERN offers 3 grants every year to young East, Southeast and South Asia* postgraduates, below 33 years of age, to participate in its Scientific Programme in the areas of Experimental and Theoretical Physics and of Accelerator Technologies.

Applications will be considered by the CERN Fellowship Selection Committee at its meeting on the 27th of January 1998.

An application consists of a 'completed application form' where it should be stated 'CERN-Asia Programme', three separated reference letters, a curriculum vitae including the list of scientific publications and any other information in favour of the quality of the candidate.

Application, reference letters and any other information should be provided only in the English language.

Application forms can be obtained from:
Recruitment Service-CERN-Personnel Division
CH-1211 Geneva 23 - Switzerland
E-mail: Recruitment.Service@cern.ch
Telefax: +41-22-767 2750

Applications should reach the Recruitment Service at CERN before the deadline on the 12th of November 1997.

The duration of the appointment will be for one year, which might, exceptionally, be renewed up to a maximum length of two years.

Applications for a short term Associate position will also be considered for Scientists of less than 40 years of age, who wish to spend a fraction of the year at CERN or a Japanese laboratory and who are 'on leave' from their institute.

Applications are accepted from Scientists who are nationals of the East, Southeast and South Asian countries and from Members of the CERN personnel (Member State nationals only).

* Candidates are accepted from Afghanistan, Bangladesh, Bhutan, Brunei, Cambodia, China, India, Indonesia, Japan, Korea, the Lao Republic, Malaysia, the Maldives, Mongolia, Myanmar, Nepal, Pakistan, the Philippines, Singapore, Sri Lanka, Taiwan, Thailand and Vietnam.

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Telefax: 022/782 19 06

Inquiries for the rest of the world:

please see page III

Faculty Positions Department of Physics University of California, Davis

The Department of Physics at the University of California at Davis invites applications for tenure-track faculty positions which will be available July 1, 1998.

Theoretical or observational cosmology

This is the first of what are expected to be four positions available in cosmology during the next several years. Outstanding persons in all areas of cosmology will be considered. However, we are particularly interested in applicants who will interact with our existing programs in particle physics and observational astrophysics. Faculty at UC Davis have full access to both the Lick and Keck Observatories. The successful candidate will have a Ph.D. in physics or astrophysics and will be expected to teach at the undergraduate and graduate levels and to conduct an active research program in cosmology. The level of appointment will be open and commensurate with qualifications and experience.

Theoretical high energy physics

The successful candidate will join the existing high energy group of four theoretical and five experimental faculty members. There is particular interest in a theorist with a broad range of model building experience and related phenomenological skills relevant to physics at the next generation of hadron and lepton supercolliders. Interest/expertise in particle cosmology is also desirable. The successful candidate will have a Ph.D. in physics, will be expected to teach at the undergraduate and graduate levels, and will have an outstanding research record and demonstrated potential for leadership in the field. The appointment will be at the Assistant or Associate Professor level as determined by qualifications and experience.

These positions are open until filled; but to assure full consideration, applications should be received by November 14, 1997. To initiate the application process, request an application package by writing an e-mail message to forms@physics.ucdavis.edu. Those who do not have access to e-mail should send curriculum vitae, publication list, research statement, and the names (including address, e-mail, fax, and phone number) of three or more references to:

Professor Barry M. Klein, Chair
Department of Physics
University of California, Davis
One Shields Avenue
Davis, CA 95616-8677

Further information about the department may be found on our website at:

<http://www.physics.ucdavis.edu>

The University of California, Davis, is an affirmative action/equal opportunity employer with a strong institutional commitment to the achievement of diversity among its faculty and staff.

RESEARCH ASSOCIATE POSITION
Experimental High Energy Physics
Carnegie Mellon University

The Department of Physics at Carnegie Mellon University invites applications for a postdoctoral Research Associate position in experimental high energy physics. The individual who fills this position will work on detector development for the future CMS experiment at the LHC, in particular, the front-end anode electronics for the CMS endcap muon system. Participation in data analysis for the on-going L3 experiment at LEP will also be encouraged. The successful candidate will work both at Fermilab and at CERN. Applicants should submit a curriculum vitae and arrange to have three letters of recommendation sent directly and as soon as possible to:

Professor Thomas Ferguson
Department of Physics
Carnegie Mellon University
Pittsburgh, PA 15213, USA
(e-mail: ferguson@cmphys.phys.cmu.edu)

The vitae and recommendations can be sent either by normal or electronic mail. We will begin to consider applications on Nov. 15, 1997.

*Carnegie Mellon is an equal opportunity /
affirmative action employer*



invites applications for a position of

**PROFESSOR IN COMPUTER LANGUAGES
AND METHODS**

The new professor will develop teaching and research activities in the area computer languages, in particular programming languages, and development methods based on them. S/he will give courses, and supervise student diploma and doctoral projects. The teaching activities will be in the computer science and communication systems divisions as well as in other divisions of EPFL. Candidates should have a proven track record in leading and managing research projects of the highest quality. Industrial experience would be an advantage. Ability and interest in teaching at all levels is indispensable. The new professor will start collaborations, especially with industry. Female candidatures are particularly welcome.

Deadline for applications: January 12, 1998.
Start date: as mutually convenient.

For further information, please ask for the documentation and the application form by writing to:
*Présidence de l'Ecole polytechnique fédérale de Lausanne,
CE-Ecublens, CH 1015 Lausanne, Suisse*

Research Associate Posts in Particle Physics Department

Fixed Term - 3 Years

Rutherford Appleton Laboratory (RAL)

There are vacancies for researchers to work in the Particle Physics Department, at the Rutherford Appleton Laboratory. RAL is involved in a number of experiments at CERN, DESY, SLAC and elsewhere. There are also vacancies in the Particle Physics Theory Group. The successful applicants will be based at RAL but experimentalists are likely to spend time at the experiment, depending on the requirements of the work. All experiments include UK university personnel, with whom a particularly close collaboration is maintained.

Applicants should have a PhD in Particle Physics or be close to finishing their thesis.

The appointments are for a fixed term of up to 3 years but with the possibility of extensions of up to two years. The salary levels are between £15,180 & £24,820, depending upon the amount of experience. A non-contributory pension scheme, flexible working hours and a generous leave allowance are also offered.

For an informal discussion about the experimental posts, please contact Prof. C J S Damerell, phone (+44) 1235 446298, e-mail C.J.S.Damerell@rl.ac.uk. For the theory posts please contact Prof. R G Roberts, phone (+44) 1235 445259, e-mail R.G.Roberts@rl.ac.uk. Application forms and a more detailed job description can be obtained from: Recruitment Office, Personnel Division, Rutherford Appleton Laboratory, Chilton, Didcot, Oxfordshire OX11 0QX. Telephone (+44) 1235 445435 (answerphone) quoting reference VN1513/97. More information about CLRC is available from CCLRC's World Wide Web pages at (<http://www.cclrc.ac.uk>).

All experimental applications must be returned by **1 December 1997**.

All theory applications must be returned by the **31 December 1997**.

The CCLRC is committed to Equal Opportunities and has a no-smoking policy.

COUNCIL FOR THE CENTRAL LABORATORY OF THE RESEARCH COUNCILS





DESY, one of the leading laboratories in particle physics and synchrotron radiation research is offering a position for a

Post-Doctoral Researcher in Cryogenics

in the cryogenics group MKS. The position is limited to a duration of three years and the salary will be according to the German civil services II a MTV Angestellte.

The successful applicant will contribute to a collaborative program between Deutsches Elektronen-Synchrotron DESY in Hamburg, Germany and the National High Magnetic Field Laboratory (NHMFL) at Florida State University. This program is primarily involved in the development of He II cooling systems for future accelerators.

The Researcher will spend 50% of his/her time working at DESY and 50% at the NHMFL. He or she will be involved in a variety of tasks including: experiment design, low temperature measurements, distribution of cryogenic fluids and numerical modeling of fluid dynamics.

Applicants should have experience with cryogenic techniques. Specifically, this includes: handling of cryogenic systems, measurement and understanding of experimental data, numerical analysis and presentation of results. A familiarity with large scale cryogenic systems is desirable.

Preference will be given to applicants with experimental experience; however, strong analytical skills are also desirable. Excellence with written and oral communication is required as is an ability to work independently and as a member of a group. A doctoral degree in Engineering, Physics or closely related field or an equivalent combination of education and experience is required.

Interested applicants with these qualifications should send their letter of application and three names of referees before 15 December, 1997 to **Deutsches Elektronen-Synchrotron DESY, Personalabteilung, Notkestr. 85, 22607 Hamburg, Tel.-Nr. 49-40 8998 3239 or Fax 49-40 8998 2858 Code Nr. 61/97**

Handicapped applicants will be given preference to other applicants with the same qualification. Women are especially encouraged to apply for this position.

FACULTY POSITIONS IN PHYSICS University of California, Berkeley

The Physics Department of the University of California, Berkeley intends to make one or more faculty appointments effective July 1, 1998. Candidates from all fields of physics are encouraged to apply. Appointments at both tenure-track assistant professor and tenured levels will be considered.

Please send a curriculum vitae, bibliography, statement of research interests, and a list of references to:

**Professor Roger W. Falcone, Chairman
Department of Physics
366 LeConte Hall #7300
University of California
Berkeley, CA 94720-7300**

by Tuesday, November 25, 1997. E-mail applications will not be accepted. Applications submitted after the deadline will not be considered. The University of California is an Equal Opportunity, Affirmative Action Employer.



For its Department of microengineering, the Swiss Federal Institute of Technology Lausanne (EPFL) invites applications for a full professor position:

PROFESSOR IN BIOMEDICAL OPTICS

Applicants should have a university education in science or engineering, several years of recent research and development experience in the field of biomedical photonics, and well established collaborations with medical research groups. Priority will be given to candidates who can give evidence of original and creative activity in the industrial or academic sphere and who are ready to develop and maintain collaboration with industries. The candidate should possess a good leadership as well as a marked interest and talent for teaching at the undergraduate and graduate level. In particular, he/she should have a personal vision in his/her field and enjoy to be a mentor to students and young researchers.

Deadline for applications: February 15, 1998.

Start 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, Suisse*

POSTDOCTORAL RESEARCH POSITION RELATIVISTIC HEAVY ION COLLISIONS

The Ohio State University

The Relativistic Heavy Ion Group at The Ohio State University invites applications for a postdoctoral research position available immediately. The successful candidate will spend most of his/her time on the LHC ALICE experiment carrying out software development for physics simulations for the Inner Tracker System (ITS). The ALICE ITS consists of two layers each of pixels, silicon drift detectors and silicon strip detectors. The OSU group is also involved in the RHIC STAR Silicon Vertex Tracker (SVT), so some overlap with that project is also possible. The candidate should have strong programming skills. The OSU Relativistic Heavy Ion Group currently consists of three faculty members, three postdoctoral researchers, six graduate students, three undergraduate students and an electrical engineer. Interested candidates should send an application consisting of a curriculum vitae, a description of research experience and interest and the names of three references to Thomas J. Humanic, Department of Physics, Smith Laboratory, The Ohio State University, Columbus, OH 43210 or via E-mail to humanic@mps.ohio-state.edu. The Ohio State University is an equal opportunity and affirmative action employer and encourages all qualified candidates to apply.

Poste de Professeur
Université Claude Bernard Lyon-1
Institut de Physique Nucléaire de Lyon

Un poste de Professeur est susceptible d'être créé dans le domaine de la Physique Expérimentale Subatomique et Astrophysique des Particules. A Lyon, il concerne actuellement la Recherche expérimentale de Matière Noire non Baryonique au moyen de bolomètres dans le cadre de la collaboration EDELWEISS.

Des candidats Physiciens spécialistes de Physique Nucléaire, de Physique des Particules ou d'Astrophysique des Particules sont invités à présenter leur candidature. Le poste requiert aussi une solide expérience d'enseignement dans le premier ou deuxième cycle. Dans l'attente de l'ouverture officielle du poste qui aura lieu à la fin 1997, les candidats intéressés sont priés d'envoyer un curriculum vitae avec une liste bibliographique et projets de recherche à :

Directeur de l'IPN Lyon

Jean-Eudes AUGUSTIN

Bâtiment 210

43 bd du 11 Novembre 1918

F-69622 VILLEURBANNE Cedex

ACCELERATOR PHYSICIST
RF TECHNOLOGY
(Research Associate)

The Laboratory of Nuclear Studies has a Research Associate position available in Accelerator Physics with a focus on RF systems. These RF systems include the systems associated with the injector accelerators for CESR and the CESR system and range in operating frequency from 500 to 2856 MHz. The CESR RF system is in a period of transition with the present normal conducting 500 MHz cavities being replaced with new superconducting cavities.

This is a staff appointment for a three year period with the experience of continued renewal, subject to mutual satisfaction and the availability of funds under our NSF contract. A Ph.D. in physics or engineering is required and at least three years of experience with accelerator RF systems is very desirable. Applicants with significant experience in the operation of other complex systems will also be considered. Please send an application with curriculum vitae and arrange for at least two letters of recommendation to be sent to:

Prof. Donald Hartill

Cornell University

Newman Laboratory

Ithaca, NY 14853-5001

E-mail to: SEARCH@LNS62.LNS.CORNELL.EDU

Cornell University is an equal opportunity,
affirmative-action employer.

Faculty Position
Experimental Relativistic
Heavy-ion Physics
Department of Physics
University of California, Davis

The Department of Physics at the University of California at Davis invites applications for a tenure-track faculty position in experimental relativistic heavy-ion physics which will be available no later than July 1, 1999, contingent upon final administrative approval. We seek a candidate who will strengthen our existing program in relativistic heavy-ion physics which is currently centered on analysis of data from the E895(AGS) and NA49(SPS) experiments; and on design, software development, and fabrication of the FTPC subsystem of STAR(RHIC). We expect to hire the candidate who will provide leadership in the ongoing STAR effort and also in future efforts at the LHC. The successful candidate will have a doctoral degree and an excellent record of accomplishments in relativistic heavy-ion physics. Dedication to high quality undergraduate and graduate teaching and supervision of graduate students is essential. The appointment will be at the Assistant or Associate Professor level as determined by qualifications and experience.

This position is open until filled; but to assure full consideration, applications should be received by December 15, 1997. To initiate the application process, request an application package by writing an e-mail message to forms@physics.ucdavis.edu. Those who do not have access to e-mail should send curriculum vitae, publication list, research statement, and the names (including address, e-mail, fax, and phone number) of three or more references to:

Professor Barry M. Klein, Chair
Department of Physics
University of California, Davis
One Shields Avenue
Davis, CA 95616-8677

Further information about the department may be found on our website at:

<http://www.physics.ucdavis.edu>

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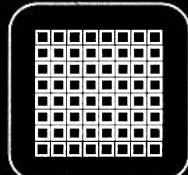
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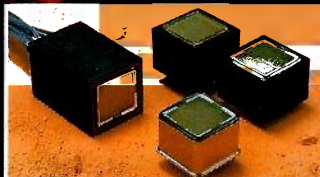
■ SPECIFICATION DATA

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>

314-5 Shimokanzo, Toyooka-village, Iwata-gun, Shizuoka-ken, 438-01 Japan. TEL:81-539-62-5248 FAX:81-539-62-2205 TLX:4289-625

United Kingdom:Hamamatsu Photonics UK Limited. TEL:(44)181-367-3560 FAX:(44)181-367-6384

North Europe: Hamamatsu Photonics Norden AB. TEL:(46)8-703-29-50 FAX:(46)8-750-58-95

Italy: Hamamatsu Photonics Italia S.R.L. TEL:(39) 2-935 81 733 FAX:(39) 2-935 81 741

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Germany: Hamamatsu Photonics Deutschland GmbH. TEL:(49)8152-3750 FAX:(49)8152-2658

France: Hamamatsu Photonics France S.A.R.L. TEL:(33) 1 69 53 71 00 FAX:(33) 1 69 53 71 10

Switzerland: CERN Liaison Office TEL:(41)31/879 13 33 FAX:(41)31/879 18 74