

People and things

Opposing points of view amongst scientists gathered at the intergovernmental conference in Paris in December 1951 risked undermining the progress towards a European Laboratory. It was this Resolution, proposed by the Dutch delegation, which saved the day by offering something to all parties.



UNESCO/NS/NUC/6 (Rev. 3)

Paris, 19 December 1951.

UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION

Conference on the organization of studies relating to
the establishment of a European Nuclear Research Laboratory

Paris, 17 - 21 December 1951

Draft Resolution proposed by the Netherlands Delegation

The Conference recommends :

- 1 - Setting up a Board of Representatives from the participating countries, with headquarters in Geneva, to supervise the programme embodied in items 1 to 5.
- 2 - Accepting the offer made by the United Kingdom representative to use the Liverpool synchro-cyclotron for 400 MeV protons as an instrument to be operated on a European basis.
- 3 - Accepting the offer made by the Danish representative to use the Institute of Theoretical Physics in Copenhagen to assemble a study group for theoretical research on a European basis. It should provide theoretical guidance for experimental work, to be carried out with the machines.
- 4 - Establishing a planning group for an intermediate machine.
- 5 - Establishing a planning group for a big machine.
- 6 - Establishing a planning group for the organization of the European Laboratory for Nuclear Research. In this Laboratory, the machines should be installed and advanced studies should be carried out.

Engineering Research Council and the Social Science Research Council, United Kingdom; LK-NES Foundation, Denmark (private industry); Netherlands Organization for the Advancement of Pure Research (Z.W.O.); Norwegian Research Council; République et Canton de Genève, Département de l'Instruction Publique; University of Milan,

Italy; Volkswagen Foundation, Federal Republic of Germany.

On people

Theoretician Julius Wess of Karlsruhe has been awarded a Leibnitz Prize and the prestigious Max Planck Medal of the German Physical Society. This is partly in recognition of work on supersymmetry carried out at CERN in collaboration with Bruno Zumino.

Another Leibnitz Prize recipient is Albert Walenta of Siegen for his landmark contributions to the development of particle detectors, especially the drift chamber. The Leibnitz prizes are awarded by the Deutsche Forschungsgemeinschaft to stimulate and encourage frontier research.

Gerson Goldhaber of the University of California and the Lawrence Berkeley Laboratory has been presented with an honorary doctorate by the University of Stockholm. Goldhaber is currently visiting CERN, where he is collaborating in the UA1 experiment at the proton-antiproton Collider.

American Physical Society Awards

After being attributed the Enrico Fermi Award (together with the late Stanley Livingston) by the US Department of Energy, Ernest Courant of Brookhaven has been nominated as the first recipient of the new Robert R. Wilson Prize of the American Physical Society. The award comes in recognition of Courant's role in the invention of the strong focusing technique, and for his work in beam dynamics. It will be presented at the APS Spring Meeting.

EXPERIMENTAL HIGH ENERGY PHYSICS

The Department of Physics at Indiana University invites applications for a tenure-track faculty position in experimental high-energy physics.

The appointment is authorized at the assistant professor level, but the position may be upgraded to associate professor for a person with outstanding accomplishments.

The high-energy physics group has an active program in accelerator-based experiments at SLAC (SLC: MARK-II and polarized beams), Fermilab (DO and E672) and Brookhaven (search for glueballs and hybrid states).

To apply please send a complete vita, a description of research interests and accomplishments, a list of publications and a minimum of three letters of reference to:

Professor Alex Dzierba
Chairperson,
Search and Screen Committee
Indiana University,
Bloomington,
IN 47405.

Applications should be received by **April 15, 1987.**
Indiana University is an Equal Opportunity/Affirmative Action Employer.

An error was made in last month's advertisement.
This position is not associated with the Indiana University Cyclotron Facility.

GSi DARMSTADT

eine vom Bund und dem Land Hessen getragene Grossforschungseinrichtung, die physikalische Forschung mit einem Schwerionenbeschleuniger betreibt, sucht für die Planung, den Bau und Betrieb eines supraleitenden Magnetspektrometers

Diplom-Ingenieur (FH) Kz. 45.000 - 87.4

Der Bewerber soll bei der technischen Koordination des Projektes mitwirken. Bevorzugt wird ein Ingenieur der Fachrichtung Kryotechnik/Hochvakuumtechnik, der neben soliden Kenntnissen und Erfahrung insbesondere die aktive Bereitschaft besitzt, sich in die zukunftsweisende Technik der Supraleitung einzuarbeiten.

Die Bezahlung erfolgt nach dem Bundesangestelltentarifvertrag.

Männliche und weibliche Bewerber haben grundsätzlich gleiche Chancen. Schwerbehinderte erhalten bei gleicher Eignung den Vorzug.

Ihre Bewerbung mit den üblichen Unterlagen richten Sie bitte unter Angabe der Kennziffer an:

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für Schwerionenforschung MBH
Personalabteilung
Planckstrasse 1 - Postfach 110552
6100 Darmstadt - 11

ISTITUTO NAZIONALE DI FISICA NUCLEARE (INFN)

Five post-doctoral fellowships in theoretical nuclear and particle physics

For one year, starting November 1987, for non Italian citizens. The successful applicants can pursue their research at any of the following Laboratories and Sections of INFN:

- National Laboratories of Frascati (Rome)
- National Laboratories of Legnaro (Padua)
- National Southern Laboratory (Catania)
- INFN Section of Turin
- INFN Section of Genoa
- INFN Section of Milan
- INFN Section of Pavia
- INFN Section of Padua
- INFN Section of Trieste
- INFN Section of Bologna
- INFN Section of Florence
- INFN Section of Pisa
- INFN Section of Rome
- INFN Section of Naples
- INFN Section of Bari
- INFN Section of Catania
- INFN Section of Sanità (Rome)

The annual gross salary will be 24.000.000 Italian lire, corresponding to 1.600.000 net Italian lire each month, plus travel expenses from home institution to Laboratory or INFN Section and return.

The application deadline is March 31, 1987.

Applicants should submit a curriculum vitae, including a list of publications and three letters of reference.

Send applications and requests for further information to:

Prof. Nicola CABIBBO,
President National Institute
of Nuclear Physics (INFN)
Casella Postale, 56
00044 FRASCATI (Roma) ITALY.

FACILITY OPERATIONS MANAGER

The Department of Physics at the University of Illinois at Urbana-Champaign has an immediate opening for a Facility Operations Manager in its Nuclear Physics Laboratory. The successful applicant will be responsible for managing the day-to-day operation of our 100 MeV, 10 uA, 100 % duty factor electron accelerator, its associated experimental facilities, and its technical support services. These services include an electronics shop, a machine shop, and drafting facilities.

Our present accelerator is a 9-pass microtron. A proposal for the construction of a new accelerator at Illinois (450 MeV, 100 uA, 100 % duty factor) is pending before the NSF. The Manager will have a major role in the development, construction, and operation of this new facility.

We seek an individual with technical expertise and aptitude, good judgment, and good management skills. Two (2) years of experience in management at a large-scale accelerator or similar highly technical facility is highly desirable. Minimum qualifications include an undergraduate degree in engineering or physical science. This is a full-time position on the UIUC academic professional staff. Salary will be competitive, depending on training and experience. The starting date is Spring of 1987. For full consideration, applications should be received by April 1, 1987. Interviews may take place prior to the applications deadline; no final decision, however, will be made until after that date.

For technical information, contact Prof. Robert A. Eisenstein, Nuclear Physics Laboratory, University of Illinois at Urbana-Champaign, 23 Stadium Drive, Champaign, Illinois 61820. Telephone # 217 / 333-3190.

To apply, please send resumes and the names of three references to: **Mr. Raymond F. Borelli (NFOM).**

Department of Physics,
University of Illinois at Urbana-Champaign,
1110 West Green Street,
Urbana, Illinois 61801.
Telephone # 217 / 333-0570.

The University of Illinois is an Affirmative Action / Equal Opportunity Employer.

Bernard Frois of the Centre d'Etudes Nucléaires de Saclay and Ingo Sick of Basle have been named recipients of the 1987 Tom W. Bonner Prize 'For their elegant studies of nuclei using high energy electron scattering. In particular, their precision measurements of nuclear charge and current densities have offered novel perspectives on ground states and valence orbitals. Their studies of few-nucleon systems have demonstrated the need for subnucleon degrees of freedom in a complete description of the nucleus. This body of work has provided firm benchmarks against which to test our understanding of the nuclear many-body problem.'

R. Baxter of the Australian National University has been named recipient of the 1987 Dannie Heineman Prize for Mathematical Physics 'For his novel use of mathematical analysis to solve in exact analytical form problems of fundamental importance in statistical mechanics relating directly to cooperative phenomena, phase transitions and quantum field theory.'

John Iliopoulos of Ecole Normale Supérieure and Luciano Maiani of Rome have been named recipients of the 1987 J. J. Sakurai Prize 'For their work on the weak interactions of charmed particles, a crucial step in the development of the modern theory of the fundamental interactions.'

Louise Dolan of Rockefeller University has been named recipient of the 1987 Maria Goeppert-Mayer Award 'For her work on the theory of elementary particles, particularly for the identification and study of Kac-Moody algebras and their applications to Yang-Mills fields and relativistic string theory.'

T. D. Lee - 'Happiness is when old friends come from far away'.

(Photo M. Jacob)



T. D. Lee Symposium

A symposium to celebrate the sixtieth birthday of T. D. Lee and to commemorate the thirtieth anniversary of the discovery of parity (left-right symmetry) nonconservation was held at Columbia in November. A distinguished lineup of speakers and chairpersons reflected T. D. Lee's physics interests and background. His own speech was poignantly entitled 'Happiness is when old friends come from far away'.

Protvino workshop

Last year's traditional annual summer Workshop on High Energy Physics and Field Theory was held in Protvino near Serpukhov, USSR, under the sponsorship of the Institute for High Energy Physics.

The wide range of items and highly informal atmosphere at the

summer Protvino workshops always attract participants not only from Soviet institutions but also from abroad.

This time the Workshop started with the superstring theories (Bonora, Perelomov, Pron'ko, Isaev et al.), then proceeded through classical (Logunov et al.) and quantum gravity cosmological aspects of the field theory (Abbott, Tkachev et al.), theory and phenomenology of supersymmetry (Volkov, Zinoviev et al.), composite models (Pirogov, Farhi, Andrianov et al.) and finished with numerous discussions in soft and hard quantum chromodynamics, including nuclear aspects and quark-gluon plasma (Arbuzov, Matveev, Petrov, McLerran, Levin, Smirnov et al.). In total more than 50 talks were presented.

Future Protvino summer meetings hope to retain the fortunate combination of theoretical ideas and front line phenomenology.

(From V. A. Petrov)

UNIVERSITY OF OXFORD
Department of Nuclear Physics
Appointment
of Research Officer
and Postdoctoral
Research Associates

Applications are invited for the above posts from experimental physicists who hold a Ph D degree. The research programme of the Department includes:

- Experiments at the Nuclear Structure Facility, Daresbury
- Determination of neutrino mass using tritium beta-decay
- Solar neutrino detection
- Proton decay (Soudan II)
- Preparation for the DELPHI experiment at LEP (CERN) and the ZEUS experiment at HERA (DESY)
- Development of cryogenic detectors for dark matter searches
- Development of precision proton microprobe and applications in material sciences, medicine, earth and biological sciences

The appointments will be for three years in the first instance, and salary will be on the University Lecturer scale for the Research Officer (£8,020 to £16,760) and the Research Support Grade 1 A scale (£8,020 to £12,780) for the Research Associates. Both scales are currently under review, and starting salaries will be according to age and experience.

Applications with a Curriculum Vitae, statement of research interests and the names and addresses of two referees should be sent to:

Mr. A. Jones,
General Administrator,
Department of Nuclear Physics,
Keble Road,
Oxford OX1 3RH

by 28 March 1987.

Continuous Electron Beam
Accelerator Facility
ACCELERATOR SCIENTISTS

Located in Newport News, Virginia, the CONTINUOUS ELECTRON BEAM ACCELERATOR FACILITY (CEBAF) is building a 4 GeV high intensity, continuous beam electron accelerator for nuclear physics research. This machine will be a 4-pass recirculating electron linac utilizing superconducting RF technology and will provide a beam of exceptionally low emittance and energy spread. Acceleration will be provided by 418 five-cell, 1.5 GHz superconducting cavities, each fed with ≤ 5 kW average RF power. The Accelerator Physics Division of CEBAF has staff positions at various levels for accelerator scientists with expertise in the following:

- **accelerator operations**
- **magnet design**
- **injector design**
- **transport optics and beam dynamics**
- **RF and feedback**
- **instrumentation and control**
- **collective effects**
- **E&M calculations and cavity design**
- **computer simulation**

Interested applicants should submit a curriculum vitae, list of publications and three professional references to:

Personnel Director
CEBAF
12070 Jefferson Avenue
Newport News, VA 23606

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- Several years of experience in the design of instrument enclosures

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If you are willing to accept a new challenge and believe that you could qualify for the above-mentioned position, please send us your complete application to the attention of "Personnel Department".

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1217 Meyrin 1
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18-year old Janne Wallenius wins the 48 000 Swedish kronor (about 12 000 Swiss francs) jackpot in the Swedish TV programme 'Quits or Doubles' answering questions on particle physics.

(Photo Pressens Bild AB)



Saturday night physics fever

Towards the end of last year, over four million Swedes sat glued to their TV sets four Saturday nights in a row to follow the progress of 18-year old Janne Wallenius who eventually walked off with the 48 000 Swedish kronor (about 12 000 Swiss francs) jackpot in 'Quits or Doubles', the nation's most popular TV series, after bravely battling with questions on particle physics.

On his way to the big money

Janne had to negotiate a tricky sequence of questions, compiled by Sverker Fredriksson of Stockholm's Royal Institute of Technology, concluding with a six-part grilling on the discovery of the W and Z carriers of the weak nuclear force (not yet in most of the textbooks).

Janne's performance and the courage of Swedish TV in taking up such a 'difficult' topic were widely applauded in both the press and in the universities. In addition to the cash came invitations to visit CERN and other major world Laboratories.

Meetings

The 1987 International Cryogenic Materials Conference and Cryogenic Engineering Conference will be held from 14-18 June at St. Charles, Illinois, hosted by nearby Fermilab. The seventh joint meeting of its kind, it is a multidisciplinary event with contributions from materials scientists, metallurgists, physicists and engineers. Further information from W.B. Fowler, Fermi National Accelerator Laboratory, PO Box 500, MS 347, Batavia IL 60510, USA.

UNIVERSITY OF GENEVA

The Department of Nuclear and Particle Physics has an opening for a position of

RESEARCH ASSOCIATE (maître-assistant)

to join a group participating in the L3 experiment at LEP. The candidate must have a Ph. D. or equivalent experience in high energy physics.

This is a non permanent position limited to a maximum of 6 years.

Applications should be sent before April 15 to:

**Prof. E. Heer, Director
of Département de physique
nucléaire et corpusculaire
24, quai Ernest-Ansermet
CH - 1211 Geneva 4
Switzerland**

UNIVERSITY OF TORONTO

The Department of Physics plans to make

several tenure-stream appointments

in the next few years, of which at least one will be in Experimental High Energy Physics.

In anticipation, the Department invites applications for this position from qualified candidates for NSERC University Research Fellowships, which could begin July 1, 1988. NSERC University Research Fellows must be Canadian citizens or permanent residents. Fellows carry out research, supervise graduate students and have teaching loads comparable to starting assistant professors.

Successful candidates may in special circumstances be considered directly for a tenure-stream position as assistant professors.

Applications, consisting of a CV, list of publications, summary of research interests, a detailed research proposal, and the names of three (3) referees should be sent before June 1, 1987 to:

**Professor R.E. Azuma
Chairman, Department of Physics
University of Toronto
Toronto, Ontario, Canada M5S 1A7.**

CONTINUOUS ELECTRON BEAM ACCELERATOR FACILITY Newport News, Virginia

SUPERCONDUCTING RF TECHNOLOGY

The Continuous Electron Beam Accelerator Facility (CEBAF) is building a superconducting 4-GeV, high-intensity, continuous beam electron accelerator for nuclear physics research. This four-pass recirculating linac, the largest-scale application to date of superconducting rf technology, will produce a beam of exceptionally low emittance and energy spread. Acceleration will be provided by 418 five-cell, 1.5-GHz superconducting cavities, each fed with < 5 kW average rf power.

The Superconducting RF Technology division of CEBAF will also be engaging in an active research and development program to advance the state of the art.

The Superconducting RF Technology division has staff positions for scientists, technical associates, and engineers with expertise in the following:

- SRF technology
- superconducting cavities and cryostats- i.e. design, development, operation, and maintenance
- recirculating electron linear acceleration
- quality assurance
- designing electrical, electronic, computer, mechanical, vacuum, cryogenic, chemical, RF, and/or other new equipment

Applicants should submit a curriculum vitae, three professional references, and a five year salary history to:

**Joyce Donald
Employment Manager
CEBAF
12070 Jefferson Avenue
Newport News, VA 23606**

Newport News is in southeastern Virginia near Williamsburg and located on the Chesapeake Bay.

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These rates are effective for the year 1987.

All enquiries to:

**Micheline FALCIOLA / CERN COURIER - CERN
CH-1211 Geneva 23 Switzerland
Tel. (022) 83 41 03 Telex 2 36 98**

A Topical Seminal on Heavy Flavours will be held in San Miniato, Tuscany, from 25-29 May, following a successful meeting on 'Few and Many Quark Systems' held there two years ago. Further information from Topical Seminar Secretary, Dipartimento di Fisica, Università di Bologna, Via Irnerio 46, 40126 Bologna, Italy.

An international conference marking the 40th anniversary of the discovery of the pion is being held in Bristol, UK, from 22-24 July. Further information from B. Foster, University of Bristol, H. H. Wills Physics Laboratory, Royal Fort, Tyndall Avenue, Bristol, BS8 1TL, UK.

The fifth Conference on Real-Time Computer Applications in Nuclear, Particle and Plasma Physics will

The Birth of Particle Physics

In May 1980, an International Symposium on the History of Particle Physics held at Fermilab traced the evolution of elementary particle physics from cosmic ray and nuclear physics during the years 1930-50, and the parallel development of relativistic quantum field theory which underpins its interpretation. This material has been carefully and imaginatively edited into a book 'The Birth of Particle Physics' by the organizers of the Symposium, Laurie M. Brown of Northwestern and Lillian Hoddeson of Urbana-Champaign and Fermilab. It is published by Cambridge University Press.

be held from 11-15 May in San Francisco, preceded by a short course on Laboratory Network Systems. The Conference programme concentrates on laboratory experimental systems. Further information from Dennis W. O'Brien, Electronics Engineering Department, Lawrence Livermore National Laboratory, PO Box 5504, Livermore, CA 94550, USA.

Proca Jubilee

A special symposium at the University of Timisoara, Roumania, in November marked the 50th anniversary of the landmark contributions to the physics of vector fields by the Roumanian theoretician Alexandru Proca (1897-1955). At the meeting, prominent physicists from Timisoara, Bucharest, Brasov and Jassy described Proca's work and its implications for modern field theory.

New award

The Computer Applications in Nuclear and Plasma Sciences Technical Committee of the Nuclear and Plasma Physics Society, US Institute of Electrical and Electronics Engineers, has set up a new individual award 'for outstanding professional contributions to the profession of using computers in nuclear and/or plasma scientific research', regardless of nationality. Those interested in making a nomination can get further information from Dr. Lester Welch, Argonne National Laboratory, Physics Division 203/G-125, Argonne, Illinois 60439-4843 USA.

X-ray microprobe

A resolution of better than 10 microns, with a high enough intensity to measure trace concentrations of atomic elements, has been obtained using a new X-ray microprobe designed at Berkeley.

In tests at Brookhaven the new microprobe measured the concentration and spatial distribution of many elements quickly and simultaneously in a sample area of less than 100 square microns. An even higher resolution appears possible in the near future. In a 300 second counting time, picogram quantities of elements from potassium to zinc were measured.

Working at Brookhaven's National Synchrotron Light Source, the research team obtained a 10 micron by 10 micron focal spot of 10 keV X-rays, with an intensity of 100 million photons per second. The beam was focused by a pair of multilayer-coated mirrors and the characteristic spectral lines from elements in the sample were recorded by a lithium-drifted silicon detector.

The mirrors to focus the X-rays consist of standard fused-silica mirrors with alternate layers of sputtered tungsten and carbon.

Unlike electron microprobes, the new probe does not require that samples be placed in a vacuum. Consequently it permits a wider variety of samples, including living biological specimens, to be studied.

So far it has been used in a medical study to reveal the distribution of toxic concentrations of trace elements in biological tissue, and to locate internal cracks and flaws in ceramics. An experiment using the new microprobe to reveal the geological history of rocks is scheduled to get under way soon.

A spectacular illustrated journey
into the subatomic world

T·H·E·P·A·R·T·I·C·L·E E·X·P·L·O·S·I·O·N

by Frank Close · Michael Marten
and Christine Sutton

- The first major illustrated book on particle physics
- A unique collection of pictures, both historical and from the latest experiments
- A collaboration of distinguished authors
- Lengthy captions provide a detailed historical account of the course of experimental particle physics
- Comprehensible to the general reader – no mathematics is used

The Particle Explosion is a lavishly illustrated guide to the subatomic world discovered by physicists during the last hundred years. In lucid, straightforward language, the authors describe the fundamental discoveries and the developments in equipment which have led to our current understanding of the nature of matter in the Universe and the forces which govern its behaviour. And they give detailed, non-technical 'portraits' of all the major subatomic particles, from the electron, proton, and neutron, through to quarks.

The book contains almost 300 photographs of the leading personalities in the field, the increasingly vast and complex machines they use, and the striking images of tracks produced by the particles themselves. It is the first book to bring together, and to present in the style they deserve, the classic images of particle tracks produced with cloud chambers, photographic emulsions, bubble chambers, and modern electronic detectors.

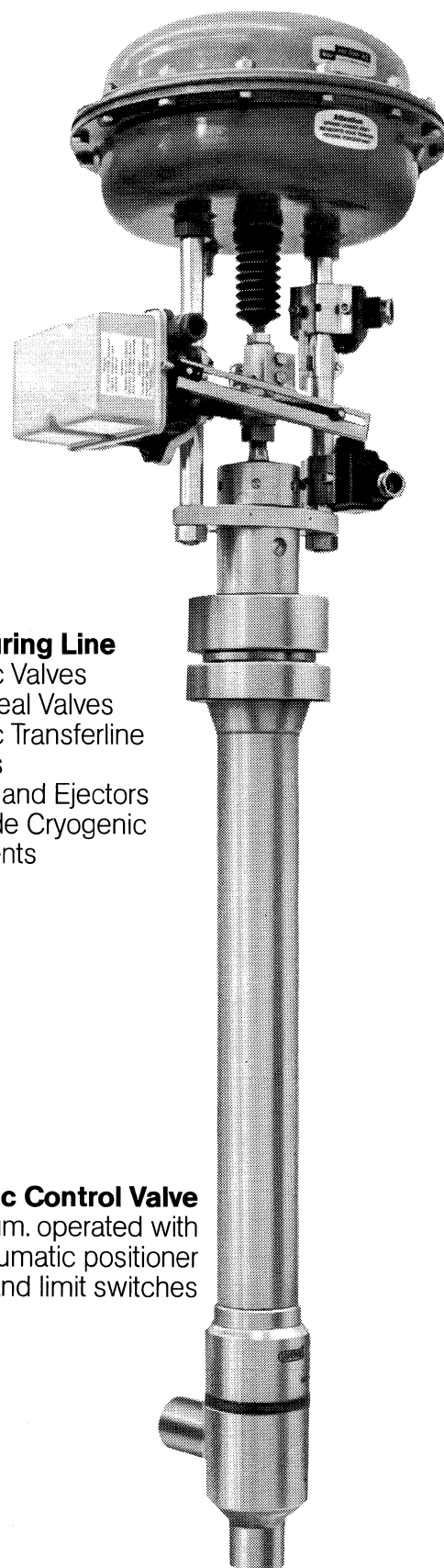
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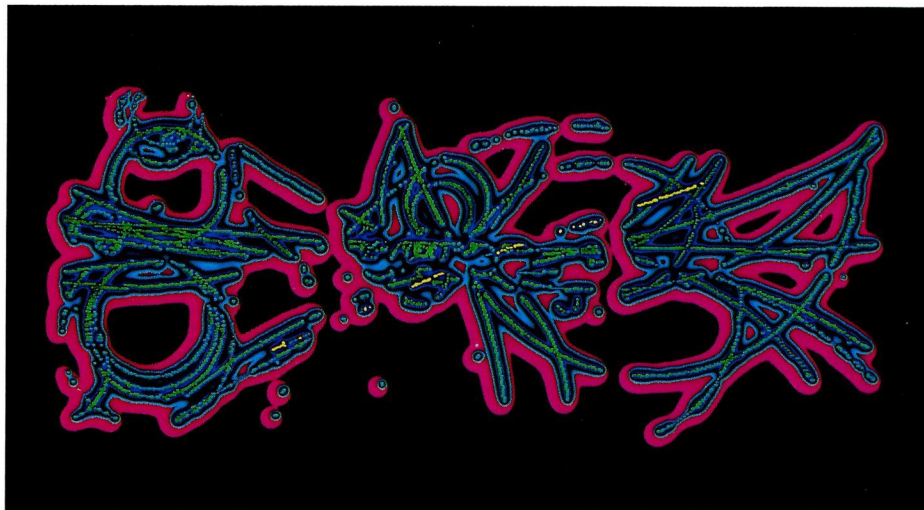
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One of the illustrations from 'The Particle Explosion' — an event from the UA1 detector at CERN's proton-antiproton Collider, showing the decay of a Z^0 into two electrons (yellow tracks).

(P. Loiez, CERN)



Electronic Mail

The CERN Courier editorial desk can be contacted through electronic mail using the EARN/BITNET communications network. The Editor's address is

GFR. DB@GEN. BITNET

Stanford Collider gets ready

At the end of January, electrons were accelerated in the two mile Stanford linear accelerator to 50 GeV, the energy required for the Stanford Linear Collider (SLC) project.

This was achieved with some 24 of the 30 accelerator sectors equipped with new high power klystrons; the rest of the sectors were still operating with 'old' klystrons. The remaining sectors will soon be converted to the new tubes, and there should be little difficulty in producing Zs (mass 93 GeV) in electron-positron collisions at the SLC. The plan is now to run the big linac routinely at 47 GeV. Running at 43 GeV, the linac produced single bunches of 1.5×10^{10} electrons whose behaviour conformed with design values.

Beam has been transmitted from the end of the linac through the north arc of the collider as far as the reverse bend section ($\frac{1}{3}$ of north arc) with total transmission.

The north (electron) damping ring is in routine operation and the south ring is being prepared for positrons. Positron production has been measured and the beam sent back to the linac, and accelerated in sector 1.

The Particle Explosion

Many people, even some of those involved in the field, think that particle physics is a difficult subject that delves into an invisible subatomic world, where quantum theory rules and cherished notions from everyday experience no longer hold. Some 'popularizers' of the subject even seem to encourage the idea that particle physicists are somehow losing touch with reality. Yet anyone who works at CERN, or any of the other labs, knows that particle physics is immensely practical. It involves large experiments in which physicists go to great lengths to study the reality of particle physics. A recently published book attempts to bring this reality to a wider audience.

In January, Oxford University Press published 'The Particle Explosion', a highly illustrated account of the development of particle physics, from the work of Thomson and Rutherford in the late 19th century, to the present day. It is written by theoretician and popular lecturer and broadcaster Frank Close; Christine Sutton, well known for her physics writing, especially in New Scientist; and Michael Marten who runs the Science Photo Library in London.

The book contains almost 300 photographs, many in colour, of the leading personalities in the field, the machines and apparatus they use, and many specially prepared images of particle tracks.