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Cryophysics

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#### ● Optics Literature Prices Vary by 4000%

A survey of the (US) subscription price per word of 63 journals publishing "optics literature" revealed that the price varied by almost 40 times (from 4.75 to 162.27 cents/1000 words), with journals published by commercial companies as opposed to societies such as the Optical Society of America (OSA), AIP, IEEE, and SPIE heavily concentrated in the upper price range above 34 cents/1000 words, close to the median price of about 37 cents/1000 words. The survey was commissioned by OSA and was based on 1992 subscription prices. [See *Optics & Photonics News*, Nov. 1993, p. 36.]

#### ● New Headquarters for the CNRS

France's *Centre National de la Recherche Scientifique* has opened new headquarters last month on the Michel-Ange campus in south-west Paris, thus collecting activities previously distributed over seven sites.

#### ● EC Prospective Studies Institute

The European Commission announced in October that the Joint Research Centre's new Institute for Prospective Technological Studies will be established in Seville, Spain.

#### ● German Media Meeting

The German Physical Society held a one-day meeting with representatives of the German media to discuss ways to improve science communication. The main conclusion was that, for the media, science news is like any other news. A practical outcome is to try to ensure that science is represented along with other social groups in the commission that oversees public TV channels. The meeting was also the occasion to present the Society's first *Medaille für Naturwissenschaftliche Publizistik* to Dr. Joachim Bulbath who hosts the remarkably successful, and soon to be imitated, *Knoff-hoff-Show* (Know-how Show) on Saturday evening TV.

#### ● Faraday Cup Nominations

Nominations for the \$US 5000 1994 Faraday Cup for "innovative achievements in accelerator beam instrumentation" are due by 15 May 1994. For information, contact: G. Mackenzie, TRIUMF, 4004 Westbrook Mall, Vancouver, BC, V6T 2A3, Canada.

#### ● Institute to Ease Fund Collection

The Directors of several Russia centres firmly rooted in theoretical physics have come together under the auspices of NORDITA and the P.N. Lebedev Institute to create the International Centre for Fundamental Physics in Moscow (ICFPM). Based at the Lebedev, the main initial activity will be to fund research grants and workshops and the like. Activities start once about \$US 250000 is pledged. There is a possibility of matching funds from the Russian government, although precedents for this are rare in spite of B.G. Saltykov, the Russian Minister for Science, indicating to the ICFPM's Governing Board last month soon after its first meeting that he recognized the need for matching to stimulate international donations. Professor L. Brink, the NORDITA Director, is the Chairman of the Board and the contact for informa-

## AMENDMENTS TO THE CONSTITUTION AND BY-LAWS

### Proposals to Council (effective 1.1.1995)

Following consultation with national societies and endorsement by the Council of EPS, the Executive Committee has prepared a draft of the *EPS Constitution and By-laws* that essentially reflects the desire to open up EPS Divisional and Group activities to members of national societies. Individual Ordinary Members (IOMs) of EPS will find inserted in this month's *Europhysics News* a copy of a draft of a new Constitution and By-laws which will be proposed by the Executive Committee to Council in Cracow on 25-26 March 1994 (copies of the present *Constitution and By-laws* are available from the EPS Secretariat on request).

According to Article 26 of the present Constitution, any proposal to amend the Constitution must be presented to the Society's ordinary members at least three months before Council (by-laws can be amended by Council without prior communication, with the exception of the present Rule 34 relating to the unit fee).

The Executive has decided to publish the complete draft to give members the opportunity to send comments before Council meets to either Council delegates or to the Executive Committee via the EPS Secretariat. Regardless of Council decisions, the draft of the new *Constitution and By-laws* will be submitted to a legal advisor for comment. The major changes are detailed below.

### Articles of the Constitution

2.2: The term "specialized" for Divisions is deleted and Divisions are referred to as "Divisions and Interdivisional Groups".

4: Individual members of National Societies (NS) acquire a status by being defined as National Society Members (NSMs). The category "groups or laboratories" is deleted since all such members are now NS.

5: Following the 1993 Council decision, the category of "Fellow" is suppressed.

6: Now refers to (more clearly defined) Associate Members.

15e: Council can expel IOMs (not NSMs).

16: Representation in Council recalculated.

17 (new Article): Reassigns voting rights in Council.

20 (formerly 19): Election procedures for, and the status of, the Executive Committee are reformulated. Its members now have no voting rights in Council and the President is elected for two years.

### By-laws

1 (new): Defines *Europhysics News* as the means for communicating with members.

11: Voting rights in the General Meeting are reformulated (each IOM now has 4 votes).

29: NSMs are given the opportunity to become members of EPS Divisions and/or Interdivisional Groups

34b (formerly 35): All NS pay one unit fee per full member and a proportional fee for other membership categories.

under 20 are invited to submit papers of a research character and dealing with physics topics or topics related to physics. The prize is a month's stay, accommodation included, in the Institute of Physics, Warsaw. Some 134 papers were submitted for the first competition (in 1992/3) won by Melvin Leok Boon Tiong from Singapore for the paper "Estimating the Attractor Dimension of the Equatorial Weather System". Further information from:



## Europhysics Notes

### ● Second First Step Competition

The second round of the *First Step to a Nobel Prize in Physics* competition takes place in the 1993/4 school year. Sponsored by the Polish Physical Society and the UK's Institute of Physics, secondary school pupils



Members of the Governing Board of the International Centre for Theoretical Physics in Moscow outside the Ministry of Science and Technological Policy. L. Brink, the Chairman, is second from the right and L. Keldysh, the Deputy-Chairman, is in the middle.

tion is the Deputy-Chairman (Professor L. Keldysh, Director, P.N. Lebedev Institute, Leninsky prospect 5, Moscow 117924, Russia).

#### ● Marian Smoluchowski Medal

The Polish Physical Society's 1993 Marian Smoluchowski Medal has been awarded to Stanislaw Kielich for achievements in non-linear optics. It is sad to report, however, that he died on 15 October. Professor Kielich had been with the Adam Mickiewicz University in Poznań since 1971 and was well known as the editor and coauthor of *Modern Nonlinear Optics* (Vol. 1; 1993).

#### ● Accelerator-based Reactor Proposed

Carlo Rubbia, CERN's Director-General whose term of office ends on 31 December, stirred up a storm by presenting at CERN on 24 November what he called "a first attempt at a new life". Together with five co-workers, he has made a proposal to the Isolde Experiments Committee for a roughly 1 MSFR calorimeter-based experiment to test the scientific feasibility of using hadron accelerator-induced nuclear cascades in a moderated nuclear fuel medium to produce thermal energy (the idea resembles Los Alamos proposals for incinerating nuclear waste). C. Llewellyn Smith, the next Director-General, said "he imagined there could be some experiments next year" although carrying out this style of work at CERN would need to be raised with the Organization's Science Policy Committee.

#### ● Back Issues

The Nuclear and Particle Physics Library at CE-Saclay wants to give away back issues of 12 major journals (recipients must pay for delivery). For information, contact: E.W.A. Lingeman (fax: +31-20-592 21 65; email: ed@nikhef.nikhef.nl).

## FOR SALE: RFQ

A compact acceleration (or deceleration) system including a buncher, a RF quadrupole and a debuncher is proposed for sale. The system has been designed for protons with input kinetic energy of 0.2 MeV and output energy of 2 MeV. The RF transmitter is not included.

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## Department of Applied Physics

The research in the Department of Applied Physics is grouped in three themes: Material Science, Optics and Physics of Fluids. Part of the Material Science is the Applied Solid State Research Division and, more particularly, research on low temperature physics and superconducting materials.

Applications are invited for the position of a **part time**

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**The field of research.** The research of the group is mainly focused on the study and development of superconducting materials and superconducting magnet systems for large-scale applications and high magnetic fields as applied in particle accelerators and nuclear fusion, energy transport, storage and conversion, and medical diagnostics. Important aspects are electro-dynamics, ac losses, stability, propagation phenomena, current sharing, and degradation under the influence of pulsed magnetic fields and forces. The current research programme is carried out in collaboration with many national and international institutes, and is supported by research councils in The Netherlands, European research programs and industrial contracts.

**Qualifications.** Applicants should have a broad knowledge of superconductivity, superconducting materials and superconducting magnet development appearing from a PhD in physics in this field of research and a considerable number of relevant publications. Besides an inspiring contribution, capabilities to initiate new research and to raise external funding, knowledge of international developments and expertise relevant for the Dutch industry involved in applied superconductivity are requested. Moreover, proven teaching capabilities are required.

**Information.** The appointment is for a 3 year period after which an evaluation will follow. The excess salary is according to the volume of the part time position and depends on experience and present position.

Additional information can be obtained from the chairman of the selection advisory committee, Prof. A. van Silfhout, telephone (+31) 53 893 146. People are encouraged to suggest suitable candidates to the committee.

**Application.** Letters of application including a *curriculum vitae* and a list of publications can be sent within 4 weeks of publication of this advertisement to the Director of the Faculty of Applied Physics, Drs. E.W. ten Napel, University of Twente, P.O. Box 217, NL-7500 AE Enschede, The Netherlands. The job reference number 93/391 should be indicated.



Twente University  
the Netherlands

### ● High- $T_c$ 's Advance

Metal-sheathed high-temperature superconducting tapes for high-field applications [see *EN 22* (1991) 157] took a major step forward with announcements this year of increases in critical current densities  $J_c$  at 77 K and zero magnetic field of about 50%. The work concerns Ag-clad tapes of the Bi-substituted (2223) oxide made by hot rolling, which is essentially the only viable industrial process for achieving the necessary texturing in long lengths. A Geneva University group also reported that a 10 m long tape achieved a record 48000 A/cm<sup>2</sup> at 4.2 K and 20 T [*Physica C 217* (1993) 375] as compared to 20000 A/cm<sup>2</sup> for Nb<sub>3</sub>Sn. High- $T_c$ 's can thus be envisaged for winding coils producing the highest fields provided the tapes can be adequately reinforced (Nb<sub>3</sub>Sn conductors of the type used by Sumitomo to generate a recently announced record 21.5 T at 4.2 K are reinforced), produced in long lengths, and limitations to the packing density of the high- $T_c$  can be allowed for. R. Fluckiger who heads the Geneva group speaks of considerable interest in developing cryo-cooled high- $T_c$  magnets operating at 20 K without a cryogen, and in seeing if hot rolling gives high  $J_c$ 's for the isotropic Tl-substituted compound.

### ● 11-Year Plan for CERN

C. Llewellyn Smith, CERN's incoming Director-General, has outlined the proposals that will be made to the CERN Council on December 17 for the proposed LHC collider. The cost is certainly above 2000 MSFR and a 11 year plan to 2005 for "somewhat in excess" of 10000 MSFR will be submitted. This is more than can perhaps be expected

## One of the First to Move

The European Mobility Scheme for Physics Students to exchange students between participating institutions (138 at the latest count) set off this autumn with around 100 students planning to move. Katarzyna Grzegorzczuk was among the first. She was about to start her fourth year at Śląski University in Katowice, Poland, but decided instead to profit from the scheme (thanks in part by a mobility grant organized by EPS) to take courses in theoretical physics at the University of Geneva's Physics Department. In keeping with her secondary school's long tradition, she had learnt excellent French and was thus able to appreciate that things were "sympa" and well organized (the Department provided lodging in a hall of residence close by). She feels that while there is little difference between the levels of the courses in Geneva and back home, this is not the case for the overall programme (Katowice's is structured whereas Geneva's is flexible). The solution was to choose courses normally given in different years (she is taking 3rd and 4th year courses in statistical physics, field theory and relativity before returning home to write her 5th year thesis on cosmology). Exams are naturally Katarzyna's main concern. The scheme is somewhat unique in that course credits are transferred so she must sit several exams over a short period in the summer; regular students, on the other hand, tend to have a more relaxed continuous assessment. She is confident, however, that her Coordinator will be able to help make the Department understand that she has this additional pressure.



from the regular budget (now about 950 MSFR p.a.). Discussion in Council would decide if modifications are needed to fit the resources allocated and any external contributions. The existing LEP machine would run until 2000, with LHC starting in 2002 after a 2-year shutdown (the original proposals envisaged alternate operation).

CERN will wait to see what US particle physicists want before considering cooperation. The US High-Energy Advisory Commit-

tee's report on balancing short- and medium-term ambitions after the SSC closure is due next June, so moves towards a LHC decision are pushed back to mid-1994, along with requests for technical proposals for detectors. Unknown is the reaction of Germany, CERN's largest contributor, which has argued that investments made in the 1980's should first be fully exploited. Meanwhile, the principle of equal access without at least charging user-related costs needs review.

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- *List processing*: Erf[{1.1,2.5,-3.4}] → {0.7747609, 0.9991862, -0.9999965}
- *Functional programming with pattern recognition*: Factorial function → fac[n\_Integer;n>0]:=n fac[n-1]; fac[0]=1

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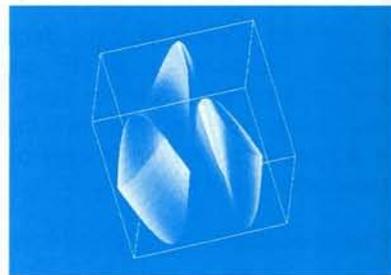
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Visualization of a parametric surface



A figure produced with the statement: View[{{Cos[u],Sin[v],u\*v/10},{u,-Pi,Pi},{v,-Pi,Pi}}]. *Descartes Visualization* acts as the link between *Mathematica* and the AVS™ visualization program. The rigorously defined object could, for example, represent stream flow.