The Award of the 1997 High Energy and Particle Physics Prize of the European Physical Society

The High Energy and Particle Physics Prize for 1997 has been awarded to Robert Brout and Francois Englert at the Université Libre, Brussels and to Peter W. Higgs at the University of Edinburgh "for formulating for the first time a self-consistent theory of massive vector bosons which has become the foundation of the electromagnetic theory of elementary particles.," *the Prize Committee.*

The unification of the electromagnetic and weak interactions in the electroweak theory of elementary particles has, since 1970, received experimental verification to a precision unprecedented in the history of physics. This fundamental theory of nature is based upon a close relationship between the photon, the massless quantum of electromagnetism, and analogous mediators (gauge-bosons) for weak interactions, which have non-zero mass. Unifying massless and massive particles in a single theory appeared to be an insurmountable problem in the mid-60s.

In 1964, Robert Brout and Francois Englert at the Université Libre, Brussels were the first to point out that this could be resolved by the concept of spontaneous symmetry breaking – this was previously well known in condensed matter physics where it describes, for example, the sudden alignment of the magnetization of a ferromagnetic material when it is cooled below a certain temperature.

The idea, developed in an elegant field-theory formulation by Peter W. Higgs (1964), laid the foundations of the present unified view of the basic laws of nature.

The prize is awarded every two years. This year's award ceremony will take place on 24 August at the Europhysics Conference on High Energy Physics, Jerusalem.

An article on the work of Brout, Englert and Higgs will appear in the September/ October issue of Europhysics News, written by Martinus Veltman who won this prize in 1993 for his work on the role of massive Yang-Mills theories in weak interactions. A report on the High Energy Physics conference will also appear.

For further information on the High Energy and Particle Physics prize please contact
Wolfgang Kummer
Chairman of the High Energy and Particle Physics Prize Committee,
Vienna University of Technology,
Institute for Theoretical Physics,
Wiedner Hauptstr. 8-10, A-1040 Vienna
tel +43 1 588 01 5690; *fax* +43 1 586 7760

The European Register of Physicists: The Professional Qualification for European Physicists

Professional qualifications exist in many occupations. Generally, a person receives such a qualification on the basis of a combination of academic attainments and work experience. However, for some professions there are wide differences between formal systems of recognition, in the body awarding the qualification, in the criteria applied, and in the code of conduct an applicant is expected to abide by, *EPS Secretariat.*

Such differences can restrict the opportunities for citizens of a particular country to exercise their profession elsewhere. In the case of the European Union, the European Commission, which has been active in promoting the mutual recognition of academic degrees, is now also taking initiatives regarding professional qualifications.

Partly in response to this, national societies and institutes covering various fields of science and technology have collaborated in establishing several European registers for qualified professionals.

In physics, the situation is somewhat different from that found in most other disciplines, because there exists the European Physical Society (EPS) which one can join directly or through a national physical society. Moreover, the EPS is not confined geographically to the European Union, but represents physicists from all over Europe with 36 national physical societies as members. Because of its unique position, EPS has been able to set up the European Register of Physicists and the necessary procedures for handling applications for entry onto this register, which already contains 67 names.

Some may question whether there is a need for this, arguing that physicists are often employed not so much on the basis of what they have done in the past, but rather on their potential for the future. However, working conditions are changing: long-term positions have become the exception rather than the rule, and self-employment as a consultant is becoming more common. In this environment, the professional qualification of European Physicist could be a valuable asset.

Requirements for Admission to the Register

- The academic qualification must be in physics or in a physics-related area which is acceptable to the Register Commission. It may have involved at least the equivalent of three years' full-time university-level education.
- Evidence of at least two years' appropriate experience gained in a

European Physical Society
Published by *Europhysics News*
e-mail eneditor@univ-mulhouse.fr
34 rue Marc Seguin, F-68060 Mulhouse, France
tel +33 3 89 32 94 44; *fax* +33 3 89 32 94 49

Do you know any future Nobel winners in solid state physics? Turn to last page of News from EPS if you do...

Stefan Kubsky: the future of the Society, last page...

professional capacity after graduating is also required. This experience could include research and development, project management, supervision and the training of others, and safety management.

- The remaining period, which must have lasted for at least two years, may consist of either education leading to an academic qualification or appropriate experience involving responsibilities and deemed satisfactory by the Register Commission. It must also include a period of training during which the applicant has acquired aptitudes or skills needed to exercise in the chosen profession and in a responsible capacity.

If you are included on the European Register of Physicists you will be,

- able to use the designation European Physicist and its abbreviation Eur Phys,
- kept informed of developments in the way physicists are being recognized professionally.

How To Apply for Registration as a European Physicist

An application form can be obtained either from the Secretariat of the EPS or from many of the national physical societies.

A European Regional Monitoring Committee evaluates applications and receives the non-refundable application fee. It is assisted in its work by independent experts familiar with the countries in which you have trained and worked. The Committee then makes a short summary and a recommendation to the Register Commission. The Commission reviews the summary and recommendation to ensure uniform, high standards. If it is satisfied, you will be invited to pay the registration fee for admission to the European Register of Physicists (250 CHF) for an initial period lasting five years.

Thereafter, registration will be renewable without the need to submit a new application (although you might be asked to update your first application). You will be provided with a formal certificate of registration. From then on you will be able to use the designation European Physicist.

See *epswww.epfl.ch/eurphys/index.html*.
For further information please contact the European Physical Society (address previous page) or *e-mail* g.thomas@univ-mulhouse.fr.

The need for some pan-European recognition of academic qualifications is undeniable. In some cases a PhD can be considered a mark of achievement, but even as a bench-mark it has some limitations. Many research institutes in Europe insist that all the scientists they employ must possess a PhD. They believe that this qualification is enough of a guarantee of experience. However, British and German scientists for example, have, because of the different national PhD training schemes, very different levels of experience; which is certainly noticeable when one visits these institutes. German scientists are at least 30 years old, whereas their British colleagues are in their mid-20s, and the amount of laboratory experience demonstrated in these groups is concomitantly variable. The management in each of these institutes is trying to use the PhD as a common bench-mark within Europe. This is a novel and important, but not perhaps perfect, future role for a PhD. Universities all over Europe are seeking to make higher level studies more readily available, and the European Union wishes there to be a freedom of movement and employment for citizens throughout the territory of the European Union. However, there are obstacles, as European Physicist **Boudewijn van Milligen** found out while working in Spain.

I was excluded from the selection on the grounds that I did not possess titles that are valid in Spain

"I am Dutch and a Doctor in Physics. In 1992, I started working in Spain with a European Community funded grant at a state institute for scientific research. In the two and a half years that the grant lasted I did not worry about my academic qualifications, thinking (erroneously) that my Dutch titles would be valid throughout Europe. When the grant expired the institute offered me a temporary contract of a year's duration, which I accepted. This type of contract (being temporary) did not require full legalization of the titles. Then, in 1996, it was decided that I should have a more permanent position. The institute created a position with a description matching my work at that time – it was one of a sizable list of job offers (about 150 in all). Positions are filled in open competition, and I duly presented myself for the mentioned position in order to be included in the selection procedure. Among other things, the job requirements included an academic title (or higher education diploma).

At this point I was informed that my title should be formally legalized in Spain. So I proceeded to submit all relevant documents (Dutch titles, translated and legalized in Holland, and various other supportive documents, all costing considerable time and money) to the Spanish Ministries that perform the necessary legalization: the Ministry of Education and Culture (which performs a full equivalence check between courses followed, *etc* in Spain and in Holland, and which therefore can take up to about one year), and the Ministry of Industry (which implements a more rapid procedure following the Directive of the European Council 89/48/CEE that results, within four months, in a statement that enables the applicant to exercise his or her profession in Spain). These Ministries provided certificates saying that the legalization procedure had begun, and I submitted these, hoping that would be sufficient, there being no more that I could do at that time.

However, to my unpleasant surprise, I was excluded from participating in the selection procedure on the grounds that I did not possess titles that are valid in Spain. This being strictly true, I still felt this to be unfair (other opinions about this varied widely). In support of the Spanish Institution and the spirit of European research, I can say that the position was not filled and now that my titles have been legalized the contest is being re-opened. I understand that today it is still necessary to legalize academic titles in European Member States as there is no agreed-upon common standard content for university courses throughout Europe. But I would like to suggest that it is probably not fair to exclude applicants for jobs on this basis, as this would imply a *de facto* discrimination and a limitation on the freedom of mobility

within the European Union, because one cannot expect a person to have his qualifications legalized in all EU Member states just in case a job offer arises in one particular country, as this would be difficult and very costly.

Perhaps this story may be an inspiration to you to help streamline the recognition of academic titles within Europe. This should be particularly straightforward for physics titles as the physics curriculum is already very similar in all countries. Perhaps the European Universities could create a common body that establishes a minimum common course content? That would open the door to automatic, or at least rapid, recognition of these titles.❞

Another European Physicist, **Klaus-Dieter Ehrhardt**, works in what he calls a non-traditional area for a physicist. But this is also, he says, a post where possessing a peer-reviewed pan-European qualification could be of considerable import.

❝I would like to express some thoughts relating to Eur.Phys. I joined the European Physical Society at a time when I was working in a research centre and considered Europe an important vision for the future. For nearly a decade now, I have been working in the field of Air Navigation Services. A field which is clearly not one of the classic areas where physicists generally work. During this time, I have asked myself several times why I should continue to be a member of the European Physical Society. The European Physicist is the an answer to that question.

Not long ago Civil Aviation, especially the provision of Air Navigation Services, was considered a national matter. But recently, this business branch has been strongly affected by political developments in Europe. These developments include the completion of the internal market for air transport in the European Union on 1 April 1997; the decision of the Ministers of Transport of the member states of the European Civil Aviation Conference in February of this year to re-build Eurocontrol with much stronger central competency; the activities of the Commission of the European Union to strengthen its role in civil air transport, for example, Research and Development activities within the 4th and 5th Framework Programmes, Trans-European Networks for Transport, the question of representation of the European Union Member States in the Eurocontrol Assembly and the idea of providing Air Navigation Services through competition like any other services in the European Union (free internal market for services and products) which is derived from the Single European Act.

Considering this and well known pan-European developments in other business areas and taking into account the expected boost for the European economy from a common European currency, I think that mobility and therefore the realization of a common labour market is very important. In the spirit of 'citizens first' this means, among others things, commonly accepted professional qualifications – 'common' should be understood in the sense, that a given professional qualification is accepted throughout Europe in the academic, public and private sector without any further formalities. Therefore the European Physicist is an important contribution to the realization of a common labour market for physicists in Europe.

If I am able to contribute to future activities or discussions related to Eur.Phys, I am of course interested in doing so. If there are others topics of discussion where my professional experiences and contacts outside of the classic physics areas may be useful, I am willing to support the European Physical Society as well.❞

New Publications Committee

The European Physical Society is reforming a committee on publications. The first meeting will take place during the CRISP 97 Conference (Cooperative Research Information Systems in Physics), Oldenburg, Germany; 31 August to 4 September 1997 (see *www.physics.mcgill.ca/~karttune/crisp97)*. The first order of business is likely to be deciding on a name for the committee – it will probably be along the lines of 'EPS Action Committee for Publications and Scientific Communication', *EPS Secretariat*.

The Executive Committee of EPS had decided that the pre-existing Committee for Publications should be reformed. It was thought that in its previous form, with a large representation of private publishers, it was not sufficiently focused on the interests of physicists, who are after all the *raison d'être* of the EPS. And in these times of rapid change the general impression was that the structure should be better adapted to new technologies. A provisional text of the Mandate of the Committee follows.

Provisional Mandate of the Committee

The Committee should examine and discuss all issues relating to scientific communication between professional physicists, including physics journals and publications, electronic exchange of information at a private or general level, but excluding physics books and the organization of conferences which are more in the range of other structures such as divisions of specialists. In particular, the Committee will attempt to harmonize various individual or national efforts for improving communication between physicists and simplifying the use of the various scientific media. This may include stimulating the development of new software, standardization of data, merging journals under an EPS umbrella, stimulating new useful Web services, creating European networks of preprint servers, electronic journals, *etc.*

Also, more traditional tasks of the Publications Committee such as the EPS Recognition Scheme of physics journals, relationships with IUPAP and ICSU, East-West co-ordination in publications in co-operation with the East-West Task force, special needs in less developed countries etc should remain in the scope of the new Committee. It should also maintain a close contact with similar activities in other non-European learned/scientific societies such as the American Physical Society, the American Institute of Physics, the Asian Physical Society, *etc.*

The Action Committee will, of course, follow with particular interest all publication and communication activities of the EPS, especially *Europhysics Letters* and the EPS Web server. In general, the role of the committee is advisory, but it may also carry out special tasks in agreement with the Executive Committee.

Among the tasks of the Committee is the examination every five years of the list of journals which have been awarded, or are seeking the award of the Europhysics label. This project, started in 1988, identifies a new group of physics journals: journals published in Europe which conform to certain criteria:

Publisher
The journal is published in one of the countries whose national physical society is a full member (*ie* national member society) of the European Physical Society.
Contributions
Contributions to the journal comprise

original papers or letters or review papers which are of direct interest to physicists.

Editorial Board

The journal has an active Editorial Board in which several European countries are represented. Normally at least one-third or not less than three members, whichever is the greater, are located in European countries other than the principal one.

Editorial Board Members

Editorial Board Members play an active role by defining editorial policy or selecting papers for publication.

Refereeing

Contributions are formally refereed for scientific content by qualified referees and, on the average at least one-quarter of the referees acting in this capacity are located in countries other than the principal one.

Discrimination

No discrimination is exercised against any contributor.

Languages

The journal is prepared to publish submissions made in English.

Announcement

The publishers agree to announce recognition within their journal in accordance with EPS norms and to send at least once each year to the Secretary of the EPS Action Committee on Publications at the EPS Secretariat one copy of the journal free of charge. EPS will announce updated details of Recognized Journals each year in the EPS Directory published in *Europhysics News*, including information about the editor, publisher, price, submission procedures, and languages acceptable for submission of papers.

Renewal

Recognition is reviewed every five years by the EPS Action Committee on Publications.

see *epswww.epfl.ch/pub/spon/spon_crit.html*
or contact EPS, *e-mail* g.thomas@univ-mulhouse.fr, or Secretary, EPS Action Committee on Publications, European Physical Society, 34 rue Marc Seguin, F-68060 Mulhouse, France
tel +33 3 89 32 94 40
fax + 33 3 89 32 94 49

This year's winners of the Hewlett-Packard prize, Albert Fert, Peter Grünberg and Stuart Parkin, discovered and contributed to the understanding of the giant magnetoresistance effect. They have also contributed to an article about their work which appears in the July/August issue of Europhysics News.

1998 Hewlett-Packard Europhysics Prize, Call For Nominations

The selection committee for the Hewlett-Packard Europhysics Prize has invited nominations for the 1998 award. The Prize is given for an outstanding contribution to condensed matter physics within the last five years, with the potential for leading advances in electronic, electrical or materials engineering, *the Selection Committee.*

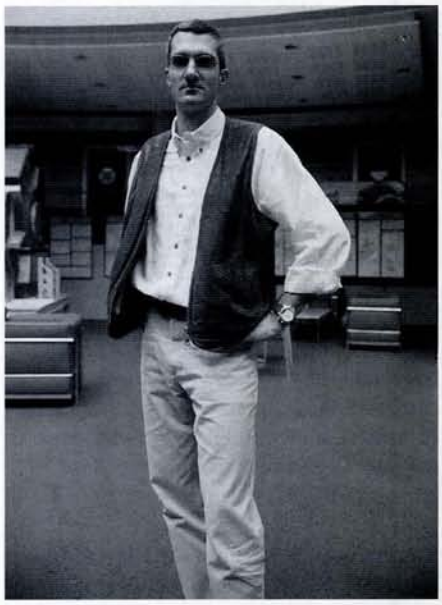
Nominations may be submitted by EPS members (individual ordinary members and national society members) as individuals or as a representative of a division, section or group. To maintain the extremely high standard, it is necessary that the committee receives proposals which represent the breadth and strength of European condensed matter physics.

Proposals should include the motivation for the award and include a brief *curriculum vitae* of each of the nominees and a short list of major publications. Letters of support from authorities in the field which outline the importance of the work are also very helpful. Proposals will be treated in confidence and although they are acknowledged, there will be no correspondence.

Nominations should be sent before 15 December 1997 to Selection Committee, Hewlett-Packard Europhysics Prize, European Physical Society (address first page).

Previous Winners of the Hewlett-Packard Prize and Nobel Winners

Some winners of the Hewlett-Packard Europhysics Prize have gone on to win the Nobel Prize for the same work. Klaus von Klitzing won the Nobel prize for physics in 1985 for his demonstration of quantized Hall resistance after winning the Hewlett-Packard prize three years earlier; Gerd Binning and Heinrich Rohrer, who built the first scanning tunnelling microscope, won the Hewlett-Packard in 1984 and Nobel prizes two years later; and Harold Kroto and Richard Smalley, who discovered fullerenes, received the Hewlett-Packard in 1994 and Nobel prizes in chemistry last year. Georg Bednorz and Alex Müller managed it, but only just (the award is not given to existing Nobel laureates). They became Hewlett-Packard Prize winners in 1987, a few months before winning Nobel prizes in physics for discovering high temperature superconductivity.



Stefan Kubsky is a man with a mission. At just 29 years he is half the age of many of the ageing members of the European Physical Society. He is now a lead torch among a small group of young physicists trying to bring fresh light to the Society before the light that exists extinguishes itself forever, *writes Toby Chapman*.

As with many learned societies, most of the members of EPS are male and at a distinguished age. And many of them are distinguished in other ways. But there is a dearth of young members, only a trickle of new members from university, and many young physicists allow membership to national physical societies to lapse once they progress to postgraduate level or leave university to enter industry, and their EPS membership lapses with it.

The old generation of physicists is not being replaced by a new one. And the EPS will face extinction if nothing is done. Kubsky – a 'thin oxide layer on clean silicon surfaces' physicist and active member of the German Physical Society – wants to do something.

He was first assigned his mission by the Physics in Society committee, and held his first workgroup at an EPS general meeting in Seville, last year, inviting young physicists from across Europe. He proposed the appointment of a EPS student liaison officer, Salia Cherifi, 23 years, another solid state physicist, at Strasbourg, France.

Kubsky now hopes that his working group, which met last in July, will blossom into a committee and earn approval from EPS and other organisations. What is the biggest problem he faces? 'On this committee members are too mobile, they can't say where they are going to be next year.'