1. **Advertisement**

UNIVERSITY OF SUSSEX
Department of Physics & Astronomy

Readership and Lectureship in Experimental Particle Physics and Particle Detector Development **Ref:**

Start date: 01 October 2008 or as soon as possible thereafter
Readership Salary: £42,791 to £49,606 p.a. depending on qualifications and experience
Lectureship Salary: £30,013 to £41,545 p.a. depending on qualifications and experience

Two faculty posts, one of which may be appointed at Senior Lecturer/Reader level, are available within the Experimental Particle Physics (EPP) group at the University of Sussex.

One post, which will have an emphasis on particle/radiation detectors, is integral to the recently formed South-East Physics Network (SEPNet), a regional alliance of physics departments in the southeast of England. The successful applicant will be expected actively to seek out and to collaborate with other institutions, both within and beyond academia, and thereby to take a leading role in the development of modern particle-physics detectors and/or their applications.

The other appointee, who is expected to work closely with the first, will have a stronger emphasis on pure particle physics in order to provide a firm link to the activities of the rest of the EPP group. The EPP group is one of four research groups within the Department of Physics & Astronomy; it is renowned for its high-precision experimental tests of physics beyond the Standard Model, currently focusing on neutrons and neutrinos. The group's web site may be found at www.sussex.ac.uk/epp.

The successful applicants will also carry out undergraduate teaching, and will develop and deliver graduate-level courses in their specialist areas.

Informal enquiries about either position may be directed to Prof. Philip Harris (EPP group leader; p.g.harris@sussex.ac.uk, +44 (0)1273 877214).

Closing date: 31 July 2008

Application details are available from and should be returned to the Human Resources Division, Sussex House, University of Sussex, Falmer, Brighton, BN1 9RH, UK. Tel +44 (0) 1273 678706, Fax +44 (0) 1273 877401, email: recruitment@sussex.ac.uk. Details of all posts can be found via the University website: *www.sussex.ac.uk/jobs*

2. **The University**

About the University of Sussex

The University of Sussex was the first of the new wave of universities founded in the 1960s, receiving its Royal Charter in August 1961. Over the following 45 years, the University has grown to become a leading teaching and research institution. We currently have over 11,000 students, 2,500 staff and turnover is £120m a year.

International reputation

Sussex has academic links with every continent, over 2,300 international students from 100 countries, and teaching staff from 40 nations, which gives the University a strongly international feel. In the 2007 *Times Higher University World Ranking*s, Sussex was ranked in the top 25 in the UK, the top 50 in Europe and the top 150 in the world.

Research excellence

We are a leading research university, as reflected in the 2001 Research Assessment Exercise. All subjects at Sussex were rated either grade 4 or 5, recognising research of national and international standard respectively. Over 90% of staff are researching at this high level, the majority in areas of international excellence.

Teaching and learning

Applications to UG study Sussex have grown by over 50% over the last 5 years. Since 2003, Sussex teaching staff have won national teaching fellowship awards for four consecutive years. The International Student Barometer, adopted by the UK Government as the official international measure of student opinion, voted Sussex the “Place to Be” in 2006- 07.

Business engagement

We have important academic collaborations with, amongst others, American Express and Rolls Royce. The Sussex Innovation Centre, wholly owned by the University, is based on the campus and has recently doubled in size. The Regional Development Office has a significant role in bringing business partners to campus and in helping to provide University services to mostly SME’s in the region.

Specialist resources

Its consistently high reputation in experimental subjects ensures that Sussex has an excellent infrastructure of laboratories and academic support services. The Library is noted for its specialist holdings including the Virginia Woolf, Rudyard Kipling and New Statesman papers and the Mass-Observation Archive.

Campus life

Sussex is the only university in England which is entirely located in a designated Area of Outstanding Natural Beauty. The University campus is set on the edge of the Sussex Downs, and just a few minutes away is the lively, friendly seaside City of Brighton & Hove with its great leisure facilities and its rich, eclectic cultural life.

Designed by Sir Basil Spence, the buildings that make up the heart of the campus were given listed building status in 1993. Falmer House is one of only two educational buildings in the UK to be given grade 1 status in recognition of its 'exceptional interest'.

Building for the future

Over the last four years we have opened teaching and research buildings for the new Brighton and Sussex Medical School, expanded the Innovation Centre, developed a new centre for genome research, and created the Freeman Centre, the largest international centre for science, innovation and technology policy research.

The University currently has a £50m capital programme, to create new student residences, refurbish and redevelop teaching space and labs, and produce a greener campus heating system.

3. **Senior leadership and management**

The Vice-Chancellor (Professor Michael Farthing) is the senior academic officer and, as Chief Executive, is responsible to the University Council for management of the University. He is supported by an executive group which includes the Deputy Vice-Chancellor, the two Pro-Vice-Chancellors, the Registrar and Secretary, the Director of Finance and the Director of Human Resources. The Deans of the Schools of Studies at Sussex report to the Pro-Vice-Chancellors.

The Registrar and Secretary heads the Professional Services of the University. In addition, under the University Statutes, the Registrar and Secretary is Secretary to the University Council. The Director of Finance reports to the Vice-Chancellor. The Director of ITS and the Librarian report to the Deputy Vice-Chancellor.

4. **The School**

The School of Science and Technology provides a lively and stimulating academic community and brings together a broad and exciting range of academic interests many of which cut across traditional academic disciplines. They stretch, for example, from the study of children using innovative computing interfaces to nanotechnology, and from coding theory to engineering and product design.

The four departments in the School are Engineering & Design, Informatics, Mathematics and Physics & Astronomy. As well as delivering core courses and programmes in their subject areas, they provide many jointly taught undergraduate and postgraduate degrees. The School supports and enhances these co-operative activities, for example by developing new programmes that span common interests within and across the other new Schools, such as scientific computing and bioinformatics. Each department has a number of thriving research groups and there are also many groups that cross departmental and School boundaries. For example, the Centre for Cognitive Neuroscience and Robotics involves researchers in the Schools of Life Sciences and Science and Technology. The School has many working links with outside agencies, American Express and Rolls Royce to name but two.

The new Centre for Research in Cognitive Science maintains the University's excellent reputation in research areas previously pursued in the School of Cognitive and Computing Sciences (COGS) and, although based in the School of Science and Technology, is a multi-School research group.

The School of Science and Technology is host to a Centre of Excellence in Teaching and Learning (CETL), in the area of creativity.

5. **The Department**

The Physics & Astronomy Department currently has 19 faculty divided into four research groups: Astronomy; Theoretical Particle Physics; Experimental Particle Physics; and Atomic, Molecular & Optical Physics.

We are part of the newly-formed South East Physics Network (SEPNet) - a consortium of six physics departments of the University of Sussex, University of Kent, Queen Mary University of London, Royal Holloway University of London, Southampton University and University of Surrey. This has been

awarded £12.5million in government funding (from HEFCE) to support vital UK science research, teaching and development. Part of that money is being used to fund 5 new academic posts at Sussex, of which this is one.

In the highly acclaimed Thomson Scientific 2006 ranking of the research impact of all departments in UK universities, the University of Sussex came top in Physics and in Space Science/Astronomy. See http://scientific.thomson.com/press/2006/8319732/ for more details. It achieved a grade 5 in the last RAE.

The Department has some 120 undergraduate students, 40 postgraduates and 15 postdoctoral fellows.

Research groups

1. The Astronomy Centre

Current research interests are: physics of the early Universe; constraining cosmological models; numerical simulations of structure formation; extragalactic survey science; and galaxy formation and evolution. The first of these has strong overlaps with the Theoretical Particle Physics group.

The group consists of six permanent faculty members: Martin Kunz, Andrew Liddle, Jon Loveday, Seb Oliver, Kathy Romer and Peter Thomas. Duncan Farrah has recently joined as an STFC Advanced Fellow. There are currently eight other fixed-term research staff, 17 DPhil students and 9 MSc students.

In addition to LoFAR, we have major roles in extra-galactic surveys: Seb Oliver coordinates the Herschel Multi-tiered Extra-galactic Survey (HerMES); Kathy Romer leads the XMM Cluster Survey (XCS); Jon Loveday leads the Galaxy Mass Assembly (GAMA) spectra working group and Duncan Farrah plays a major role in the Spitzer survey of the UKIDSS Ultra Deep Survey. We are also involved in many galaxy surveys (UKIDSS, VISTA, Akari, Spitzer, SDSS, SCUBA-2). We are partners in various supercomputing collaborations including COSMOS and VIRGO. We have key roles in Cosmology and Dark Energy studies including Planck, WFMOS, DUNE, the Dark Energy Survey.

The group has access to substantial computing resources, most of which are shared with the Theoretical Particle Physics group.

Further details of the Astronomy Centre can be found on the web site http://astronomy.sussex.ac.uk/.

2. The Atomic, Molecular & Optical (AMO) Physics Group

Research in the AMO group at Sussex is focused on coherent quantum phenomena in the interaction of atoms and photons and their application. The experimental faculty in the group are Prof Wolfgang Lange, Dr Winfried Hensinger and Dr Matthias Keller. Prof Lange's group is world-leading in the investigation of single ions strongly coupled to single photons, exploring the quantum foundations of light-matter interaction. These experiments provide a basis for efficient quantum information processing in large scale quantum networks. Dr Keller, who is working together with Prof Wolfgang Lange on trapped ion cavity-QED, is also investigating the physics of trapped molecular ions. Dr Hensinger is developing new quantum technologies, looking at novel ways to trap and manipulate ions for large scale quantum computing.

The theorists in the AMO group are faculty members Dr Claudia Eberlein and Dr Barry Garraway and Emeritus Prof Gabriel Barton, who explore a range of topics at the cutting edge of atomic physics, quantum optics and quantum electrodynamics.

There are currently three research fellows and nine DPhil students in the AMO group with funding for two additional research fellows and one postgraduate student. Sources of funding are the European Commission, EPSRC and European and national research networks on quantum information processing.

Further details of the AMO group can be found on the web page:
http://www.sussex.ac.uk/physics/AMO/.

3. The Experimental Particle Physics (EPP) Group

The Sussex EPP group is world-renowned for its high-precision measurement of the neutron electric dipole moment (EDM), carried out at the ILL jointly with RAL and, more recently, with the Universities of Oxford and of Kure. The EDM is uniquely sensitive to physics beyond the Standard Model, and the next-generation CryoEDM experiment is expected to extend the sensitivity by a further two orders of magnitude.

In addition, the EPP group has a long-standing involvement with the Fermilab-based MINOS long-baseline neutrino-oscillation experiment. We participate in various MINOS analyses, and we retain a primary responsibility for the overall calibration of the experiment. We are involved in the Double Chooz experiment, which aims to measure the neutrino mixing angle θ_{13}, and we retain a residual involvement in SNO, the Sudbury Neutrino Observatory.

The group is led by Philip Harris, who works on both the EDM and MINOS experiments. Mike Hardiman works on the EDM experiment. Lisa Falk Harris works on MINOS and on Double Chooz. Simon Peeters works on Double Chooz and EDM. There are also some active retired Professors, in particular Mike Pendlebury.

The EPP group currently has three postdocs and seven graduate students. We currently have 1.5 engineer/technician posts dedicated to our group, plus another associated with these posts to be appointed. We have a number of well equipped laboratories, and we enjoy good access to the University's technical facilities, including shared technicians.

Group web site: http://www.sussex.ac.uk/epp/.

4. The Theoretical Particle Physics (TPP) Group

The current research activities in the group are: particle cosmology, including cosmological phase transitions, baryogenesis, topological defects, inflation, dark matter, and dark energy; quantum field theory, including the physics of the QCD phase diagram and the renormalisation group; physics beyond the Standard Model, including supersymmetry and extra dimensions; and string theory and quantum gravity.
The group consists of Mark Hindmarsh (group leader), Stephan Huber, Daniel Litim, Emeritus Professors David Bailin and Norman Dombey, two Postdoctoral Research Fellows, six DPhil students, and five MSc students The group's research funding comes mainly from the UK Science and Technology Facilities Council (STFC), and is also supported by the European Science Foundation and the Higher Education Funding Council for England. The group holds an STFC grant in Theoretical Particle Physics.

The group has close links with both the Experimental Particle Physics and Astronomy research groups, and benefits from excellent computing resources including a Linux-based system of workstations and servers and a 70-core 144GB cluster with Quadrics interconnect.

The Theoretical Particle Physics group web page is http://www.sussex.ac.uk/tpp/.

Degree courses

The department takes in 35-40 undergraduate students per year. It runs BSc and MPhys degree programmes in Physics, Theoretical Physics, and Astrophysics. A recent innovation is the introduction of Research Placement degrees in which highly-qualified candidates undertake summer placements within departmental research groups.

We also operate a Foundation Year programme which takes in 15-20 students per year of which about three-quarters progress into the first year of our main degrees.

At graduate level we have named MSc programmes in Astronomy, Cosmology, and Theoretical Particle Physics, as well as a general MSc in Physics.

6. **Job description**

UNIVERSITY OF SUSSEX

Job Description for the post of:

Lectureship [and Readership] in Experimental Particle Physics and Particle Detector Development

Department	Department of Physics & Astronomy
School	School Of Science & Technology
Location	University of Sussex
Grade	Lecturer, Grade 7/8 Senior Lecturer/Reader, Grade 9
Responsible to	Head of Department of Physics & Astronomy

Specific Duties

1 Research

1.1 Undertake [and lead] internationally competitive research in their specialist field.

1.2 Raise the profile of the University by presenting their research at international conferences, [and by participation in national and international research committees].

1.3 Engage with other regional partners within the south-east physics consortium, SEPNet.

1.4 Actively seek research funding, including through the group's STFC rolling grant but also via specific project grants and by industrial liaison.

1.5 Supervise DPhil students and postdoctoral research assistants.

2 Teaching

2.1 Develop and deliver undergraduate courses within physics.

2.2 Develop and deliver courses at M- and graduate level within their broad area of expertise.

2.3 Engage with innovative teaching and assessment methods.

2.4 Specify and supervise individual student projects both at undergraduate and MSc level.

3 Administration

3.1 Contribute to administration at, in the first instance, Departmental level. As they become more experienced [and for Reader], to contribute also at School and University level.

3.2 Actively participate in departmental outreach activities.

This Job Description sets out current duties of the post that may vary from time to time without changing the general character of the post or the level of responsibility entailed.

7. **Person specification**

UNIVERSITY OF SUSSEX

Person Specification for the post of: Lectureship/Readership in Experimental Particle Physics

Criteria are only described as essential if the outcome required is absolutely dependant upon them. Reasonable adjustments are made where necessary to ensure that there is no discrimination on the grounds of race, age, religion or belief, gender, sexual orientation or disability.

Letters A, B, S in the Essential/Desirable columns indicate that these criteria apply to Lecturer A (grade 7), Lecturer B (grade 8), and Senior Lecturer/Reader (grade 9) respectively.

SKILLS / ABILITIES	Essential	Desirable
Ability to teach courses and supervise projects in physics at undergraduate and at taught masters level.	A,B,S	
Good experimental physics skills.	A,B,S	
Good organisational, administrative and record-keeping skills.	A,B,S	
Good interpersonal and communication skills.	A,B,S	
Ability to use initiative and work without supervision.	A,B,S	
Academic research skills.	A,B,S	
Proven ability to secure research funding and to initiate collaborative research.	S	A,B
KNOWLEDGE	Essential	Desirable
Broad knowledge of the field of experimental particle physics or related area.	A,B,S	
Broad knowledge in the field of physics.	A,B,S	
[Particle detector post only] Detailed knowledge in the field of particle detectors.	A,B,S	
[Particle-physics post only] Detailed knowledge in a sub-field of experimental particle physics.	A,B,S	
EXPERIENCE	Essential	Desirable
Strong peer-reviewed publication record, such as would be suitable for inclusion in a Research Assessment Exercise.	A,B,S	
Experience of university teaching and lecturing.	B,S	A
Teaching qualifications, and/or extensive experience of university teaching and lecturing	S	A,B
Experience of supervision at doctoral level	B,S	A
Administrative experience in university or research environment.	S	A,B
Demonstrated leadership in research at postdoctoral level	A,B,S	
Demonstrated leadership in research, teaching and administration at lectureship level, satisfying the University's normal criteria for promotion to senior lecturer/reader	S	A,B
QUALIFICATIONS	Essential	Desirable
PhD or equivalent in a relevant field	A,B,S	
Higher education teaching qualifications.		A,B,S
PERSONAL ATTRIBUTES AND CIRCUMSTANCES	Essential	Desirable
Active commitment to teamwork and collective purpose.	A,B,S	

Willingness to engage with innovative teaching methods and curriculum development.	A,B,S	
Willingness to participate in support activities beyond normal classroom duties (e.g. admissions days, pastoral care).	A,B,S	
Commitment to equal opportunities in principle and practice.	A,B,S	
Willingness to take up the post within a few months of being offered it.	A,B,S	

8. Terms and Conditions of the Post

Application forms or any further information about the application process are available from and should be returned to the Human Resources Division, Sussex House, University of Sussex, Falmer, Brighton BN1 9RH, tel 01273 872676, fax 01273 877401, e-mail: recruitment@sussex.ac.uk.

Details of all posts can be found via the University website: http://www.sussex.ac.uk/jobs

Applicants must complete an application form and attach a list of publications and details of research interests and experience. Short-listed candidates will also be expected to give a research seminar to faculty within the department.

Closing date: see front page of advertisement
Interviews are expected to take place about four weeks after the closing date

Further information about conditions of service and the organisation of the University more generally may found on the Human Resources page of the University Website:
www.sussex.ac.uk/Units/staffing.

Facilities at the University

The following wide range of facilities are located on the campus and are available to all staff:

♦ A number of shops, as well as a regular market. ♦ two banks ♦ Post Office ♦ restaurants and bars ♦ dentist and chemist ♦ launderette ♦ borrowing facilities at the University Library ♦ an extensive range of sports facilities (see http://www.sussex.ac.uk/sport/) ♦ frequent regular bus service ♦ railway station ♦ serviced by cycle lanes from Brighton and Lewes.

The following paragraphs are a summary of the Conditions of Service for Research and Analogous Faculty. The full conditions are available at:
http://www.sussex.ac.uk/Units/staffing/personnl/termcond/faculty/

1. General
The terms of appointment of a member are subject to the provisions of the Charter and Statutes of the University. They are also subject to such Ordinances and Regulations as may from time to time be made by the Senate and/or the Council. Members of the research staff are expected to carry out such duties as required by the investigator, and may be invited to teach for up to 60 hours a year without pay.

2. Equalities
The University of Sussex is committed to promoting equality and diversity, providing an inclusive and supportive environment for all. The University's policy on Equality and Diversity can be found on the Human Resources website.

3. Remuneration.
Salary scales are available at:
http://www.sussex.ac.uk/Units/staffing/personnl/salary/post_2007_sal.shtml

The incremental date is 1st October, unless otherwise stated, staff appointed between 1 April and 30 September inclusive receive their first increment on 1 October of the following calendar year.

Income Tax and National Insurance contributions are deducted monthly from salaries paid on the last day of each month in arrears by bank credit transfer.

4. Probation.
A member of the research and analogous faculty whose appointment is for a fixed term of one year or more is initially appointed on probation for eight months, unless this condition is waived in the letter of appointment.

5. Tenure

The appointment of a Professorial Fellow, Senior (Research) Fellow, (Research) Fellow or Research Officer is for a specified period stated in the letter of appointment.

6. Retirement

The normal retirement date for all members of staff of the University is 30 September following the date on which they attain the age of 65 years. However, members of staff have the right to request working beyond 65.

7. Superannuation

Members may (except in exceptional circumstances) join the national Universities Superannuation Scheme (U.S.S), and contribute 6.35% of their salary. Benefits are calculated by reference to final salary and years of service. The U.S.S. is contracted out of the state earnings - related pension scheme.

8. Holidays

The holiday entitlement is 30 working days a year including days when the University is officially closed (at present 4 at Christmas, 2 at Easter), plus public/bank holidays, a total of 38 days a year.

9. Hours of work

A full-time member is expected to work for such reasonable periods as are necessary to carry out his or her duties. Hours of work are not specified, normal office hours are 9.00 am to 5.30 pm, Monday to Friday. Overtime payments are not made.

10. Leave

The University operates leave schemes for maternity, paternity, adoption, parental and dependants, on compassionate grounds, sickness and without salary. Further details are available on the Human Resources website.

11. Removal Expenses

A grant towards the certain expenses of removal of household effects may be made to members on moving to this area to take up an appointment lasting more than twelve months. The maximum amount payable will normally be £2,500. Further details are available on the Human Resources website.

12. Childcare

Members of staff may apply to use the facilities of the Crèche and Nursery School, although these facilities are in heavy demand and places cannot be guaranteed. The Crèche takes children up to the age of three and the Nursery School takes children between the ages of three and five. Places in either can be booked for half a day per week or more. http://www.sussex.ac.uk/childcare/

Alternatively, the University operates a childcare voucher scheme. Details are on the Human Resources website.

13. Other matters

Documents published by the University from time to time and referred to in the Conditions of Service of Faculty can be found at:
http://www.sussex.ac.uk/Units/staffing/personnl/termcond/faculty/document-index.shtml Members of staff are normally expected to reside within 20 miles of the University.

All documents referred to can be requested from Human Resources on 01273 877769 or at Room 338 Sussex House, Falmer, Brighton BN1 9RH.