

FURTHER PARTICULARS FOR THE

**Wykeham Professorship of Physics
in association with New College**



Outline of the post

The University intends to appoint to the Wykeham Professorship of Physics with effect from 1 October 2012 or as soon as possible thereafter.

The Wykeham Professor of Physics is expected to provide intellectual leadership and excellent teaching at the Rudolf Peierls Centre for Theoretical Physics. The person appointed should be a leading figure within any area of theoretical physics. He or she will be part of a lively and intellectually stimulating research community which performs to the highest international levels in research and publications and will have access to the excellent research facilities which Oxford offers.

Further information about the post may be obtained from the Head of the Rudolf Peierls Centre, Professor James Binney (j.binney1@physics.ox.ac.uk), and all enquiries will be treated in strict confidence; they will not form part of the selection decision.

The Department of Physics and the Rudolf Peierls Centre

The Department of Physics is one of the largest in the UK, with more than 300 graduate students and 600 undergraduates and a permanent academic staff of around 100. The Department lies within the University's Mathematical, Physical and Life Sciences Division.

The Wykeham professorship is the premier appointment and the only endowed chair within the Rudolf Peierls Centre for Theoretical Physics, one of the six sub-departments which constitute the Department of Physics. The Centre consists of approximately 20 academic staff, 15 postdoctoral researchers and 50 DPhil students. Members of the Centre play a significant role in the teaching of undergraduates in the Physics Department. Three current post-holders and three emeritus members are Fellows of the Royal Society. The current Head of the Rudolf Peierls Centre is Professor James Binney FRS.

Research in the Rudolf Peierls Centre

The Centre's research activity covers an exceptionally wide range of problems, from string theory to particle phenomenology, from strongly correlated electrons to biological physics, and from Galactic dynamics to magnetically confined fusion plasmas. Despite its broad research cover, the Centre has a remarkably strong common culture. This culture arises in part through the use across the spectrum of topics of concepts such as renormalisation, scaling, geometry and topology, and is maintained by the course that is provided for the first-year graduate students. There are strong links between members of the Centre and other research groups in the Department of Physics, especially in Astrophysics, Experimental Particle Physics and Condensed-Matter Physics. The string-theory group works closely with the group of Professor Philip Candelas in the Department of Mathematics, and there is a long-standing collaboration with Professor David Logan of the Department of Chemistry. All these Departments are located in central Oxford within a stone's throw of the Peierls Centre. The University is currently seeking planning permission to erect a new building next to the Department's existing Clarendon Laboratory to house the Centre above ground level and state-of-the-art experimental facilities in two underground floors.

The Centre's main research activities are summarized below, but further information can be found on the departmental web pages (<http://www-thphys.physics.ox.ac.uk>).

Within the *Theoretical Astrophysics and Plasma Physics Group* Professor James Binney and Dr John Magorrian work on the formation and dynamics of galaxies with a strong emphasis on using dynamical models to interpret data from surveys of the Milky Way Galaxy. Dr Alexander Schekochihin works towards an effective theory for the large-scale dynamics of a magnetised plasma, using a combination of analytic models and numerical simulations. The results are used both to interpret X-ray and radio observations of clusters of galaxies and data taken at Tokamak devices, and there are strong connections with both the Culham fusion Energy Centre (the site of the Joint European Torus) and the groups within the Atomic and Laser Physics sub-Department that work on laser-driven plasmas.

The *Condensed Matter Theory Group* currently consists of seven academic staff, three active emeritus staff, five postdoctoral research assistants and fourteen graduate students. The academic staff are: Professor John Cardy FRS, Professor John Chalker, Professor Fabian Essler, Professor Ramin Golestanian, Dr Ard Louis, Professor Steve Simon and Professor Julia Yeomans. The research interests of the group are broad and include quantum condensed matter, soft condensed matter, and statistical physics. A focus of John Cardy's work on field theory and its applications to condensed matter physics has recently been quantum entanglement and quantum quenches in many-body systems, while the research interests of John Chalker, Fabian Essler and Steve Simon in quantum condensed matter physics include low-dimensional and geometrically frustrated magnets, quasi-one dimensional metals and Mott insulators, quantum Hall systems and topological order. They have close links with experimentalists in the Condensed Matter Physics and the Atomic and Laser Physics sub-departments, and with other theorists in the Chemistry Department.

Ramin Golestanian, Ard Louis and Julia Yeomans are working on a range of problems in soft matter and biological physics. These include motility at low Reynolds number, the rheology of complex fluids, coarse grained modelling of DNA, active systems, wetting and evolution. These academic staff members, together with soft matter theoreticians and experimentalists in physical chemistry, form the Oxford Centre for Soft and Biological Matter, and there are links with the biophysics activity in the Clarendon, engineering, applied maths and biochemistry.

The *Particle Physics Group* consists of ten academic staff, one active emeritus member, four post-doctoral research assistants and twenty six graduate students. The academic staff are: Dr Francesco Hautmann, Dr Joe Conlon, Professor Andre Lukas, Professor John March Russell, Professor Graham Ross FRS, Professor Subir Sarkar, Dr Andrei Starinets, Dr Mike Teper, Dr John Wheeler and Dr Giulia Zanderighi. The research interests of the group span string theory and quantum gravity, astro-particle physics, physics beyond the standard model and particle phenomenology. Andre Lukas's work focuses on string phenomenology, specifically on string compactifications which can lead to realistic particle physics models and he has close contacts with the Candelas group in Mathematics. Andrei Starinets works on the gauge-gravity correspondence and its implications for understanding a wide variety of strongly coupled field theories, while John Wheeler works on discretized and low dimension formulations of quantum gravity and matrix models. Joe Conlon's research focuses on the implications of an underlying string theory on low energy effective field theories and their phenomenology. John March Russell and Graham Ross have wide interests centred on physics beyond the standard model, the phenomenological implications of strings and supersymmetry and especially the likely signals for new physics at the LHC and other colliders. Subir Sarkar works on particle astrophysics and cosmology, especially on dark matter, inflation and high energy cosmic radiation; he also belongs to the Auger, CTA and IceCube collaborations. Mike Teper's interests are in analytical and numerical approaches to lattice gauge theory and large N physics. Giulia Zanderighi and Francesco Hautmann work on the higher order QCD corrections to processes occurring in colliders with a special emphasis on those important for the discovery of new physics at the LHC.

The Oxford Collegiate system

The University has a strong collegiate nature consisting of academic departments and 38 self-governing and independent colleges which cut across academic disciplines, giving both academic staff and students the benefits of belonging to a small, interdisciplinary community as well as to a large, internationally-renowned institution.

In Physics, teaching is shared between the department and the colleges: the department is responsible for lectures, classes, laboratories, examinations and post-graduate research supervision, while most tutorial teaching (in small groups), the undergraduate selection process and pastoral care are college-based.

The Wykeham Professorship is associated with New College. The professor will be a member of both the University and the college community. He or she will have a role to play in the running of New College as a member and trustee of its Governing Body.

New College

Founded in 1379, New College is one of the oldest and largest of the colleges of Oxford University. Like all the colleges, it is an independent, self-governing establishment which functions both as an academic institution and as a social and residential centre for students. The College currently has approximately 420 undergraduate and 180 graduate students, studying most of the subjects offered by the University of Oxford.

Undergraduate teaching at New College is organised and provided by around 38 Tutorial Fellows (nearly all of whom also hold University posts), assisted by about 12 Stipendiary Lecturers (college tutors employed on a fixed-term basis). There are also 11 Professorial Fellows and, at any one time, about 10 to 12 Junior Research Fellows. All these categories are members of the Senior Common Room, which provides dining and social benefits. Governing Body, which has overall responsibility for all aspects of the running of the College, comprises the Warden (the Head of the College) together with the Official Fellows.

New College has a distinguished tradition in Physics within the University. The Tutorial Fellows are Professor John March-Russell and Dr Adrienne Slyz. Two Professorial Chairs are associated with the College, the Wykeham Chair of Physics and the Savilian Chair of Astronomy; the recent holders of these include Professor David Sherrington and Professor Joe Silk. Holders of these Chairs are also Professorial Fellows of the College. The College admits an average of six undergraduates and three graduates per year, and attracts applicants of the highest standard.

The responsibilities of a professorial fellow include participation in the governance of the college, serving on appropriate sub-committees of the Governing Body, according to the individual's experience, expertise and interests. The benefits include membership of the Senior Common Room with full rights of commons and the use of college facilities for hospitality and entertainment. Professors receive a research allowance of £1400 p.a. (double in the first year of appointment), the fellowship allowance of £2860 p.a. and a graduate student entertainment allowance (if he or she is supervising graduate students) of £100 p.a. There is access to a medical insurance scheme.

More information about the college may be found at: <http://www.new.ox.ac.uk>

Duties of the post

The new professor will be expected to lead an independent research programme and contribute to the teaching and administration of the Rudolf Peierls Centre and the Physics Department. The duties are listed below. The post-holder may be expected at some stage to

serve as Head of the Rudolf Peierls Centre and is one of the members of the Physics Department from amongst whom the Chairman of Physics may be chosen.

The professor's duties will include

- Providing leadership in research and teaching.
- Making a contribution to the strategy and development of the Rudolf Peierls Centre.
- Teaching physics to students taking undergraduate degrees in Physics, teaching and supervising DPhil students in theoretical physics, and acting as College advisor to a small number of DPhil students at New College.
- Lecturing; this typically involves delivery of one course of lectures each year, as required by the Chairman of the Department of Physics.
- Examining both undergraduate and DPhil students as required by the Chairman of the Department of Physics.
- Administration as required by the Chairman of the Department of Physics.
- Participation as a member of the Governing Body of New College (which meets nine times per year), serving occasionally on College Standing Committees, and advising the College on selection of Graduate Scholars and Junior Research Fellows in subjects related to Physics.

Selection criteria

Applications will be judged only against the criteria which are set out below. Applicants should make sure that their application shows very clearly how they believe that their skills and experience meet these criteria.

Oxford is committed to fairness, consistency and transparency in selection decisions, and unsuccessful applicants may request feedback against the published selection criteria for the specific post. (We are, however, unable to provide general advice about the suitability of applicants' cvs for future vacancies in Oxford or elsewhere.) Chairs of selection committees (known as electoral boards) will be aware of the principles of equality of opportunity and fair selection and there will be a member of each gender wherever possible.

The selection criteria for this post are as follows:

REQUIREMENTS	ESSENTIAL or DESIRABLE	ASSESSED BY:
The postholder must be able to demonstrate:		
<i>Substantial international reputation in scholarship and research in theoretical physics and excellent publication record in international journals.</i>	<i>Essential</i>	<i>Application, interview</i>
<i>Research leadership and the ability to train, guide and motivate research students and junior colleagues, and to develop successful proposals for funding</i>	<i>Essential</i>	<i>Application, interview</i>

REQUIREMENTS	ESSENTIAL or DESIRABLE	ASSESSED BY:
The postholder must be able to demonstrate:		
<i>Experience of university governance and management, and of academic administration</i>	<i>Desirable</i>	<i>Application, interview</i>
<i>The ability to contribute effectively to ensuring the long-term development of the subject, and to maintaining interest in the subject in Oxford and wide recognition of Oxford's contributions to the subject in the outside world</i>	<i>Essential</i>	<i>Presentation, interview</i>
<i>Commitment to providing effective teaching at undergraduate and postgraduate level</i>	<i>Essential</i>	<i>Presentation, interview</i>
<i>Ability to communicate effectively (in writing and orally)</i>	<i>Essential</i>	<i>Application, presentation, interview</i>

Sabbatical leave and outside commitments

All professors may apply for sabbatical leave to allow them to focus on their research. In general, one term of leave is available for each six terms worked. This leave may either be taken as one term of leave after 6 terms of service, or accumulated and taken as one year of leave after 6 years of service.

Professors may also spend up to 30 working days in each year on projects outside their employment duties, such as consultancy, spin-out activity and membership of research councils and other bodies, and there is no limit to the amount of money which staff may earn from these activities. Full details are available on the University website at <http://www.admin.ox.ac.uk/ps/staff/codes/outsidecov.shtml>. Guidance on ownership of intellectual property (<http://www.admin.ox.ac.uk/statutes/regulations/182-052.shtml>) and managing conflicts of interest (<http://www.admin.ox.ac.uk/researchsupport/integrity/conflict/>) is also available on the university website.

Pay and conditions

Salary, benefits and pension

The salary of the appointee will be determined by the Vice-Chancellor, after appropriate consultation. In addition the professor will be eligible for consideration, in regular reviews, for one of a number of additional salary awards which may be made in recognition of outstanding academic distinction and/or contribution to the academic work of the University (e.g. in leadership in, or in the development of, some field of study).

The salaries of professors at Oxford are generally above the average of those in other leading UK universities.

An additional pensionable allowance will be payable in respect of any period during which the professor is Head of Department. Any allowance payable for a period of less than three years will not, however, be pensionable.

Eligible staff may join the Universities Superannuation Scheme. Details are available on the website at <http://www.admin.ox.ac.uk/finance/pensions/uss/>.

Relocation expenses

The University has a generous relocation expenses scheme for eligible staff, which covers removal and travelling expenses connected with relocation, as well as up to £6,500 to cover professional fees in appropriate cases. Further details are available on the website at <http://www.admin.ox.ac.uk/finance/expenses/relocationscheme/>.

Assistance with house purchase

Where difficulty arises in regard to housing for a professor moving to the Oxford area to take up appointment (e.g. as may be the case where the move is from an area in which housing costs are substantially lower than in Oxford), the University will facilitate arrangements to assist house purchase.

Residence

Professors are required to reside within the University (i.e. within twenty-five miles of Carfax, the central point of Oxford) during at least six months in each academic year, between 1 October and 1 August, and in particular during not less than six weeks of each term.

Length of appointment

The professorship is tenable until retirement. The normal retirement age is 65, but those who are able to demonstrate an interest in a later retirement date under the University's procedures (details are available on request) may retire at a later date.

Family support

The University has generous maternity and adoption leave arrangements, and also offers support leave to fathers and partners. Details are available on the website at <http://www.admin.ox.ac.uk/ps/staff/family/>.

All staff are eligible to apply to use the University nurseries (although there is a long waiting list for nursery places), and the full range of tax and National Insurance savings scheme is in operation. Details are available on the University's childcare website at <http://www.admin.ox.ac.uk/eop/child/>.

The University will try to accommodate flexible working patterns as far as possible and there is considerable flexibility in the organisation of duties. More information on family support and flexible working policies is available on the website at <http://www.admin.ox.ac.uk/ps/staff/family/>.

Facilities and services

The University has a range of facilities and benefits for its staff; more details are available on the website at <http://www.admin.ox.ac.uk/ps/staff/benefits/>.

The University Disability Office provides support to staff and students with a disability and may be contacted through its website at <http://www.admin.ox.ac.uk/eop/disab/>.

Equality of opportunity

The policy and practice of the University of Oxford require that all staff are offered equal opportunities within employment. Entry into employment with the University and progression within employment will be determined only by personal merit and the application of criteria which are related to the duties of each particular post and the relevant salary structure. In all cases, ability to perform the job will be the primary consideration. Subject to statutory provisions, no applicant or member of staff will be treated less favourably than another

because of age, disability, gender reassignment, marriage or civil partnership, pregnancy or maternity, race, religion or belief, sex, or sexual orientation.

The University of Oxford

The University of Oxford aims to sustain excellence in every area of its teaching and research, and to maintain and develop its position as a leader amongst world-class universities. Placing an equally high value on research and on teaching, the colleges, departments and faculties of Oxford aspire both to lead the international research agenda and to offer a unique and exceptional education to our undergraduate and graduate students.

Oxford's self-governing community of scholars includes university professors, readers, and lecturers, college tutors, senior and junior research fellows and over 2,500 other university research staff. The University aims to provide facilities and support for colleagues to pursue innovative research and outstanding teaching, by responding to developments in the intellectual environment and society at large, and by forging close links with the wider academic world, the professions, industry and commerce. The Strategic Plan, detailing strategy for the period 2008/09-2012/13, can be found at <http://www.admin.ox.ac.uk/prs/planningcycle/stratplan.shtml>.

Research at Oxford combines disciplinary depth with an increasing focus on inter-disciplinary and multi-disciplinary activities addressing a rich and diverse range of issues, from deciphering ancient texts and inscriptions using modern scientific and computational methods developed in Oxford, through to global health, climate change, ageing, energy and the effects on our world of rapid technological change.

Oxford seeks to admit undergraduate students with the intellectual potential to benefit fully from the college tutorial system and small group learning to which Oxford is deeply committed. Meeting in small groups with their tutor, undergraduates are exposed to rigorous scholarly challenge and learn to develop their critical thinking, their ability to articulate their views with clarity, and their personal and intellectual confidence. They receive a high level of personal attention from leading academics.

Oxford has a strong postgraduate student body which now numbers about 7,000, well over a third of the full-time students. Postgraduates are attracted to Oxford by the international standing of the faculty, by the rigorous intellectual training on offer, by the excellent research and laboratory facilities available, and by the resources of the museums and libraries, including one of the world's greatest libraries, the Bodleian.

Medical questionnaire and the right to work in the UK

The appointment will be subject to the satisfactory completion of a medical questionnaire and the provision of proof of the right to work in the UK.

Applicants who would need a work visa if appointed to the post are asked to note that they will need to enter the UK under the Tier 1 (Exceptional talent) category of the UK's points-based system. Further information is available at:

<http://www.ind.homeoffice.gov.uk/workingintheuk/tier1/exceptional-talent/>

How to apply

There is no application form. Applications must include:

- your full contact details including email and full postal addresses, and a telephone number
- a covering letter or statement explaining how you meet the criteria set out above

- a full CV and publications list
- an indication of where you first heard about this post
- the names and contact details (postal and e-mail addresses, telephone and fax numbers) of precisely **three** referees.

You should contact all three of your referees before applying, to ensure they are aware of your application and of the requirements for the post, and to ensure that they would be content to write a reference for you for this post, if they were asked to do so.

The University will assume that it is free to approach your referees at any stage unless your application specifies otherwise. Therefore if you would prefer a referee or referees to be approached only with your specific permission or if you would prefer them to be approached only if you are being called for interview on the final short list, then you must state this in your application, alongside the details of the relevant referee(s). You should provide the names and full contact details of three referees even if you do not wish them to be contacted yet.

If you are shortlisted but only Oxford references are available for you, you will be asked at a later stage to provide the name of an additional referee outside Oxford.

Applications should be sent by email to Dr Gwen Booth, Personnel Officer, Senior Appointments at professorships@admin.ox.ac.uk.

The deadline for applications is **Monday 6 June 2011**.

Should you have any queries about how to apply, please contact Mrs Elaine Eastgate at professorships@admin.ox.ac.uk or telephone: +44 (0) 1865 280189.

Oxford welcomes applications from candidates who have a disability. These further particulars will be made available in large print, audio or other formats on request. Applicants invited for interview will be asked whether they require any particular arrangements to make the interview more convenient and effective for them.

All data supplied by candidates will be used only for the purposes of determining their suitability for the post and will be held in accordance with the principles of the Data Protection Act 1998 and the University's Data Protection Policy (available on the website at <http://www.admin.ox.ac.uk/councilsec/dp/policy.shtml>).

Consideration of applications

All applications will be acknowledged as soon as possible after receipt and will be considered by the board of electors as soon as possible after the closing date. The membership of the board of electors will be published in the University Gazette (<http://www.ox.ac.uk/gazette/>) as soon as it is finalised.