Job Description and Selection Criteria

<table>
<thead>
<tr>
<th>Job title</th>
<th>Postdoctoral Research Assistant in Computational Stochastics</th>
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<tbody>
<tr>
<td>Division</td>
<td>Mathematical, Physical and Life Sciences</td>
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<tr>
<td>Department</td>
<td>Mathematical Institute</td>
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<tr>
<td>Location</td>
<td>Andrew Wiles Building, Radcliffe Observatory Quarter, Woodstock Road, Oxford, OX2 6GG</td>
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<tr>
<td>Grade and salary</td>
<td>Grade 7: salary £31,604 - £38,833 p.a. (with an option of under-filling at grade 6 £28,098 - £33,518 p.a. with change of duties)</td>
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<tr>
<td>Hours</td>
<td>Full time or part time, by agreement</td>
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<tr>
<td>Contract type</td>
<td>Fixed-term 6 months (full time), or equivalent (part time)</td>
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<tr>
<td>Reporting to</td>
<td>Professor Mike Giles</td>
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<tr>
<td>Vacancy reference</td>
<td>136506</td>
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</tbody>
</table>

**Additional information**

This position cannot be held concurrently with any other substantive post without the explicit permission of the Head of Department.

This position is subject to a 6 month probationary period.

This position is funded by EPSRC and is available from 1st Oct 2018 (or as soon as possible thereafter)

(PLEASE NOTE: Applicants are responsible for contacting their referees and making sure that their letters are received by the closing date)

**The Role**

The position is funded through the EPSRC Programme Grant - Inference, Computation and Numerics for Insights into Cities (ICONIC) EP/P020720/1. ICONIC is a new 5-year Programme Grant led by Professor Mark Girolami at Imperial College in collaboration with Professor Mike
ICONIC brings together a research team with a unique combination of skills in modeling, numerical analysis, statistics and high performance computing. To give a concrete target for impact, the ICONIC project will focus initially on Uncertainty Quantification for mathematical models relating to crime, security and resilience in urban environments. Then, acknowledging that urban analytics is a very fast-moving field where new technologies and data sources emerge rapidly, and exploiting the flexibility built into an EPSRC programme grant, we will apply the new tools to related city topics concerning human mobility, transport and infrastructure. In this way, the project will enhance the UK's research capabilities in the fast-moving and globally significant Future Cities field. Further information is available on the project website: http://iconicmath.org.

The initial focus of the research in Oxford will involve the development and analysis of multilevel Monte Carlo (MLMC) methods applied to the numerical approximation of SDEs, stochastic PDEs, and other stochastic models developed at Imperial and Strathclyde.

We invite applications for a Postdoctoral Research Assistant position, funded by EPSRC, to work with Professor Mike Giles at the Mathematical Institute, University of Oxford. This is a 6 months fixed term position and is available from 1st Oct 2018 (or as soon as possible thereafter). There is also the possibility of part-time working over a period of up to 1 year.

**Responsibilities/Duties**

The successful candidate will perform mathematical and computational research as a member of the ICONIC project, specifically on the simulation of relevant stochastic differential equations with drift terms which are not globally Lipschitz. They will write this up for publication and presentation at conferences, and will participate in the activities of the wider ICONIC project group.

**Note:** the exact duties will be determined by the successful candidate’s level of experience and expertise. If no suitable applicants are identified on Grade 7 an appointment at Grade 6 with an appropriate adjustment in duties may be considered.

The successful candidate will be expected to:

- To undertake and manage own academic research on topics within the project under the leadership of Professor Mike Giles. This involves small scale project management, to coordinate multiple aspects of work to meet deadlines.
- Adapt existing and develop new research methodologies and materials
- To participate fully in meetings of the ICONIC project group
- Collaborate in the preparation of research publications, and book chapters
- Collaborate with researchers at Imperial, Manchester and Strathclyde, travelling to these locations as required
- To participate in relevant activities within the Oxford research community, including assisting with the organisation of internal seminars
• To disseminate the research results through publications, the project website, and presentations at conferences or public meetings
• Act as a source of information and advice to other members of the group on methodologies or procedures

Selection criteria

Essential

Applicants will be expected to:
• have, or be close to completing, a PhD in mathematics or a related discipline;
• have expert knowledge in:
  i) multilevel Monte Carlo methods for stochastic models
  ii) numerical methods for stochastic differential equations
• have good communication skills, both written and oral
• have proven ability to work independently, and also as a member of a research team
• have ability to manage own academic research and associated activities
• have previous experience of contributing to publications/presentations

Desirable selection criteria

• Knowledge of stochastic numerical analysis
• Experience in software development in MATLAB and/or C/C++
• Knowledge of GPU computing and/or vectorisation on CPUs

About the University of Oxford

Welcome to the University of Oxford. We aim to lead the world in research and education for the benefit of society both in the UK and globally. Oxford’s researchers engage with academic, commercial and cultural partners across the world to stimulate high-quality research and enable innovation through a broad range of social, policy and economic impacts.

We believe our strengths lie both in empowering individuals and teams to address fundamental questions of global significance, while providing all our staff with a welcoming and inclusive workplace that enables everyone to develop and do their best work. Recognising that diversity is our strength, vital for innovation and creativity, we aspire to build a truly diverse community which values and respects every individual’s unique contribution.

While we have long traditions of scholarship, we are also forward-looking, creative and cutting-edge. Oxford is one of Europe’s most entrepreneurial universities. Income from external research contracts in 2016/17 exceeded £564m and we rank first in the UK for university spinouts, with more than 130 companies created to date. We are also recognised as leaders in support for social enterprise.

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Join us and you will find a unique, democratic and international community, a great range of staff benefits and access to a vibrant array of cultural activities in the beautiful city of Oxford.

For more information please visit www.ox.ac.uk/about/organisation

The Mathematical Institute

The Mathematical Institute, as Oxford’s Department of Mathematics is known, is one of the leading mathematics departments in the world. Our mathematical research, impact and environment were all ranked first in the UK in the 2014 Research Excellence Framework exercise, a government review of research in all UK universities. The Mathematical Institute is the focus of research into both fundamental mathematics and its applications, and our inclusive nature and overall size are key factors in the provision of an outstanding research environment for our members. The large number of faculty, postdocs and students in the Mathematical Institute, all supported by excellent facilities, allows us to maintain a critical mass in research groups encompassing a wide spectrum of mathematics, while our integrated nature fosters collaboration between fields. We also host a large number of academic visitors. Our web pages (www.maths.ox.ac.uk) provide comprehensive information about all of our activities.

The research activities of the Institute as a whole can be gauged from the web pages of the research groups and centres within the Institute (www.maths.ox.ac.uk/research). The range of our research interests is well reflected by the profile of our faculty as listed at www.maths.ox.ac.uk/people. Many members of the Institute have received prestigious prizes and other special recognition for their work; some recent examples can be found at www.maths.ox.ac.uk/news/awards-and-prizes.

The Mathematical Institute moved into the purpose-built Andrew Wiles Building in the University’s Radcliffe Observatory Quarter in September 2013. As well as providing offices for all staff and graduate students, it houses a range of other facilities available to members of the department, including the Whitehead Library, a large range of meeting rooms, teaching spaces, lecture rooms, and social spaces, and a small facility for carrying out table-top experiments. For more information, see www.maths.ox.ac.uk/about-us.

Teaching is central to the life of the Mathematical Institute and we have an annual intake of approximately 300 undergraduates, some on courses jointly with other departments. We admit 100 students each year across five taught master’s degree courses and have over 230 doctoral students in residence at any one time. Our doctoral programme always attracts the best research students from across the world, and we have a broad mentoring and training programme. Our provision expanded in 2014 following the award of two EPSRC-funded Centres for Doctoral Training.

The Mathematical Institute strives to ensure that all staff and students are given the opportunities and support they need to achieve their potential. We are committed to equality of opportunities and to advancing women’s careers. We support staff returning from long-term absence and provide flexible arrangements for staff with parental responsibilities. Further information about family support can be found in the Standard Terms and Conditions. Our
Good Practice Committee contributes to many aspects of our work, see www.maths.ox.ac.uk/members/good-practice.

As part of the department’s commitment to openness, inclusivity and transparency, we strongly encourage applications from all who consider they meet the requirements of the post, and particularly from women and ethnic minorities.

**MPLS Division**

The university’s Division of Mathematical Physical and Life Sciences contains departments that span the full spectrum of the mathematical, computational, physical, engineering and life sciences. Between them, they undertake a huge range of fundamental research and develop application that respond to the great societal and technological challenges of our time. Research across the Division is increasingly interdisciplinary in nature.

MPLS’s scientists collaborate closely with colleagues in other Divisions across Oxford, with other universities, research organisations and industrial partners across the globe.

Our senior researchers have been awarded some of the most significant scientific honours (including Nobel prizes and prestigious titles such as FRS and FREng). The Division is equally proud of its tradition of attracting and nurturing the very best early career researchers, many of whom regularly secure prestigious fellowships.

The Division holds six Athena Swan Awards (four silver and two bronze) illustrating its commitment to encouraging women in science research and careers.

For more information visit http://www.mpls.ox.ac.uk/about/about-mpls-division

**How to Apply**

Before submitting an application, you may find it helpful to read the ‘Tips on applying for a job at the University of Oxford’ document, at https://www.ox.ac.uk/about/jobs/research/

If you would like to apply, click on the Apply Now button on the ‘Job Details’ page and follow the on-screen instructions to register as a new user or log-in if you have applied previously. You will also be required to upload a curriculum vitae, list of publications, a statement of research interests and supporting statement. The supporting statement should describe how you meet the selection criteria outlined in the job description.

Please also provide details of two referees, one should include the applicant’s current or most recent employer, whenever possible and indicate whether we can contact them now.

Please upload all documents as PDF files with your name and the document type in the filename.

 Applicants should ask their referees to send their letters of reference DIRECTLY to

The Recruitment Administrator (Vacancies)

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1 The Mathematical Institute was a founding supporter of the London Mathematical Society’s Good Practice Scheme (www.lms.ac.uk/women/good-practice-scheme) and have recently been awarded an Athena SWAN silver award.
by the closing date (a letter by email is sufficient) quoting the vacancy reference 136506. Referees should preferably not, all be from the same institution and whenever possible one should be the applicant’s current, or most recent, supervisor. NOTE: reference letters must be received from your referees by the closing date for your application to be complete.

All applications must be received by 12:00 noon UK time on Wednesday 29th August 2018

Information for priority candidates

A priority candidate is a University employee who is seeking redeployment because they have been advised that they are at risk of redundancy, or on grounds of ill-health/disability. Priority candidates are issued with a redeployment letter by their employing departments.

If you are a priority candidate, please ensure that you attach your redeployment letter to your application (or email it to the contact address on the advert if the application form used for the vacancy does not allow attachments).

Should you experience any difficulties using the online application system, please email recruitment.support@admin.ox.ac.uk. Further help and support is available from www.ox.ac.uk/about_the_university/jobs/support/. To return to the online application at any stage, please go to: www.recruit.ox.ac.uk.

Please note that you will be notified of the progress of your application by automatic emails from our e-recruitment system. Please check your spam/junk mail regularly to ensure that you receive all emails.

Important information for candidates

Pre-employment screening

Please note that the appointment of the successful candidate will be subject to standard pre-employment screening, as applicable to the post. This will include right-to-work, proof of identity and references. We advise all applicants to read the candidate notes on the University’s pre-employment screening procedures, found at: www.ox.ac.uk/about/jobs/preemploymentscreening/.

Data Privacy

Please note that any personal data submitted to the University as part of the job application process will be processed in accordance with the GDPR and related UK data protection legislation. For further information, please see the University’s Privacy Notice for Job Applicants at: www.admin.ox.ac.uk/councilsec/compliance/gdpr/privacynotices/job/. The University’s Policy on Data Protection is available at: www.admin.ox.ac.uk/councilsec/compliance/gdpr/universitypolicyondataprotection/.

The University’s policy on retirement
The University operates an Employer Justified Retirement Age (EJRA) for all academic posts and some academic-related posts. From 1 October 2017, the University has adopted an EJRA of 30 September before the 69th birthday for all academic and academic-related staff in posts at grade 8 and above. The justification for this is explained at: www.admin.ox.ac.uk/personnel/end/retirement/acrelretire8+/

For existing employees, any employment beyond the retirement age is subject to approval through the procedures: www.admin.ox.ac.uk/personnel/end/retirement/acrelretire8+/

From 1 October 2017, there is no normal or fixed age at which staff in posts at grades 1–7 have to retire. Staff at these grades may elect to retire in accordance with the rules of the applicable pension scheme, as may be amended from time to time.

Equality of Opportunity

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. No applicant or member of staff shall be discriminated against because of age, disability, gender reassignment, marriage or civil partnership, pregnancy or maternity, race, religion or belief, sex, or sexual orientation.
Benefits of working at the University

University Club and sports facilities
The University Club provides social, sporting and hospitality facilities. It incorporates a bar, café and sporting facilities, including a gym. Staff can also use the University Sports Centre on Iffley Road at discounted rates, including a fitness centre, powerlifting room, and swimming pool. See: www.club.ox.ac.uk and www.sport.ox.ac.uk/oxford-university-sports-facilities.

Information for international staff (or those relocating from another part of the UK)
If you are relocating to Oxfordshire from overseas, or elsewhere in the UK, the University's International Staff website includes practical information related to moving to and settling in Oxford such as advice on immigration, relocation, accommodation, or registering with a doctor. See: www.internationalstaffwelcome.admin.ox.ac.uk/

The University of Oxford Newcomers' Club
The University of Oxford Newcomers' Club is an organisation run by volunteers that aims to assist the partners of new staff to settle into Oxford and to provide them with an opportunity to meet people in the area. See www.newcomers.ox.ac.uk/

Childcare
The University has excellent childcare services with five University nurseries, as well as University-supported places at many other private nurseries. For full details including how to apply and the costs, see www.admin.ox.ac.uk/childcare.

Family-friendly benefits
The University subscribes to My Family Care (www.admin.ox.ac.uk/personnel/staffinfo/benefits/family/mfc/) and staff are eligible to register for emergency back-up childcare and adultcare services, a 'speak to an expert' phone line and a wide range of guides and webinars through a website called the Work + Family space.

Disabled staff
We are committed to supporting members of staff with disabilities or long-term health conditions. Please visit www.admin.ox.ac.uk/eop/disab/staff for further details including information about how to make contact, in confidence, with the University’s Staff Disability Advisor.

Staff networks
The University has a number of staff networks including the Oxford Research Staff Society, BME staff network, LGBT+ staff network and a disabled staff network. You can find more information at www.admin.ox.ac.uk/eop/inpractice/networks/

Other benefits
Staff can enjoy a range of other benefits such as free visitor access to the University's colleges and the Botanic Gardens as well as a range of discounts. See www.admin.ox.ac.uk/personnel/staffinfo/benefits

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