



MATHEMATICAL INSTITUTE
ANDREW WILES BUILDING

Job Description and Selection Criteria

Job title	Postdoctoral Research Associate in Geometry
Division	Mathematical, Physical and Life Sciences
Department	Mathematical Institute
Location	Andrew Wiles Building, Radcliffe Observatory Quarter, Woodstock Road, Oxford, OX2 6GG
Grade and salary	Grade 7: £32,817 - £40,322 p.a.
Hours	Full time
Contract type	Fixed-term (2 years)
Reporting to	Professor Dominic Joyce
Vacancy reference	147924
Additional information	<p>This is a full-time position that cannot be held concurrently with any other substantive post without the explicit permission of the Head of Department.</p> <p>The position is subject to a 9 month probationary period.</p> <p>The position is funded by the Simons Foundation.</p> <p>(PLEASE NOTE: Applicants are responsible for contacting their referees and making sure that their letters are received by the closing date)</p>



The role

We invite applications for a Postdoctoral Research Associate to work with Professor Dominic Joyce FRS at the Mathematical Institute, University of Oxford. This is a 2 year fixed term position, funded by the Simons Foundation. The successful candidate will be part of the Simons Collaboration on Special Holonomy in Geometry, Analysis and Physics, as well as a member of the Oxford Geometry Group.

The Simons Collaboration on Special Holonomy (see <https://sites.duke.edu/scshgap/>) seeks to advance the theory and applications of spaces with special holonomy and related geometric structures. The Collaboration is an international network of leading experts in the field with 14 principal investigators including Professor Joyce, as well as many postdoctoral fellows and PhD students. Two other principal investigators are also at Oxford: Professor Jason Lotay (in the Geometry Group) and Professor Sakura Schäfer-Nameki (in the Mathematical Physics Group). The Collaboration meets regularly to discuss latest breakthroughs and forge new research directions, and the postdoc will be expected to take part in these regular meetings and contribute to the work of the Collaboration.

Professor Joyce has interests in a broad range of topics in both Algebraic and Differential Geometry related to the collaboration, which include: Donaldson-Thomas type invariants of Calabi-Yau 3- and 4-folds; other enumerative invariants in algebraic geometry, and their wall-crossing formulae; geometric constructions of vertex algebras, and links to Geometric Representation Theory and String Theory; compact manifolds with the exceptional holonomy groups G_2 and $\text{Spin}(7)$; calibrated submanifolds of Calabi-Yau manifolds, G_2 - and $\text{Spin}(7)$ -manifolds; and Lagrangian Mean Curvature Flow in Calabi-Yau manifolds.

The PDRA will be expected to have experience in one of these or related topics, with a preference for the Algebraic Geometry side; a good knowledge of Artin stacks and their use in moduli problems such as coherent sheaves, or Derived Algebraic Geometry (especially à la Pantev-Toën-Vaquié-Vezzosi), or Donaldson-Thomas theory, would be especially valuable.

The PDRA will work with Professor Joyce on projects in the broad areas of the Collaboration, and within Professor Joyce's research interests, and will write the results up for publication. These projects are not fixed in advance, but may be chosen to suit the research interests of the PDRA, and there is scope for the PDRA to spend a proportion of his or her research time on his or her own projects as well.

Responsibilities

The successful candidate will be expected to:

- Perform and manage own mathematical research and administrative activities for projects in Algebraic and Differential Geometry and related activities, under the supervision of Professor Dominic Joyce, reviewing and refining existing theories or developing new methods as appropriate;
- Write the results up for publication, singly or with co-authors, and present them in seminars, conferences, and, in particular, meetings of the Simons Collaboration on Special Holonomy;
- Participate in the activities of the Geometry research group and the Simons Collaboration on Special Holonomy, and act as a source of information and advice to its members;

- Develop ideas for generating research income.

It is the policy of the Mathematical Institute to give all PDRAs the opportunity to teach, where the conditions of the grant allow this, and to require teaching if there is a departmental need. Such teaching, if undertaken, will not exceed 3 hours per week for 24 weeks of the year and additional remuneration will be paid. It will normally be delivered as classes, but it might also involve giving lectures or college tutorials.

Pre-employment screening

All offers of employment are made subject to standard pre-employment screening, as applicable to the post.

If you are offered the post, you will be asked to provide proof of your right-to-work and your identity. You will also be asked to complete a health declaration (so that you can tell us about any health conditions or disabilities so that we can discuss appropriate adjustments with you), and a declaration of any unspent criminal convictions.

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/.

Selection criteria

Essential selection criteria

Applicants will be expected to:

- have, or be close to completing, a PhD in mathematics or a related discipline;
- Display a high level of mathematical ability;
- Possess experience in one or more of the broad range of topics in Algebraic or Differential Geometry related to the Collaboration and Professor Joyce's research interests;
- Have a good publication record, judged by the stage in his/her career.

Desirable selection criteria

- A PhD and research background in one of the broad areas of the Collaboration and Professor Joyce's research interests, in particular, Algebraic or Differential Geometry, or Analysis;
- Experience in Algebraic Geometry, with a good knowledge of Artin stacks and their use in moduli problems such as coherent sheaves, or Derived Algebraic Geometry (especially à la Pantev-Toën-Vaquié-Vezzosi), or Donaldson-Thomas theory.
- Ability to work as part of an interdisciplinary team.
- Good communication skills, including the ability to write for publication, present research proposals and results, and represent the research group at meetings.

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 spin-outs, with more than 130 companies created to date. We are also recognised as leaders in support for social enterprise.

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 around 900 undergraduates on course, some on joint courses with other departments. We teach around 250 students each year across five taught master's degree courses, and have over 250 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.

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 Committee¹ 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 ten Athena Swan Awards (three silver and seven 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 upload all documents as **PDF files** with your name and the document type in the filename.

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). We have held an Athena SWAN Bronze Award since 2013, upgraded to Silver in 2017.

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.

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

The Recruitment Co-ordinator (Vacancies)

Mathematical Institute, Andrew Wiles Building, Radcliffe Observatory Quarter, Woodstock Road, Oxford, OX2 6GG. Tel: 01865 273518: Email: vacancies@maths.ox.ac.uk

by the closing date (a letter by email is sufficient) **quoting the vacancy reference 147924.**

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 Friday 20 November 2020.**

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 department(s).

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).

DATA PROTECTION: All data supplied by applicants 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 department's data protection policy.

<https://www.maths.ox.ac.uk/members/policies/data-protection/statement>

Due to the large volume of recruitment that the department administers we are unable to provide feedback to non-shortlisted applicants.

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 receive an automated email from our e-recruitment system to confirm receipt of your application. **Please check your spam/junk mail** if you do not receive this email.

Important information for candidates

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. 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+/.

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

Employee benefits

University employees enjoy 38 days' paid holiday, generous pension schemes, travel discounts, and a variety of professional development opportunities. Our range of other employee benefits and discounts also includes free entry to the Botanic Gardens and University colleges, and discounts at University museums. See www.admin.ox.ac.uk/personnel/staffinfo/benefits.

University Club and sports facilities

Membership of the University Club is free for all University staff. The University Club offers social, sporting, and hospitality facilities. 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 staff new to Oxford

If you are relocating to Oxfordshire from overseas or elsewhere in the UK, the University's Welcome Service website includes practical information about settling in the area, including advice on relocation, accommodation, and local schools. See www.welcome.ox.ac.uk. There is also a visa loan scheme to cover the costs of UK visa applications for staff and their dependents. See www.admin.ox.ac.uk/personnel/permits/reimburse&loanscheme/.

Family-friendly benefits

With one of the most generous family leave schemes in the Higher Education sector, and a range of flexible working options, Oxford aims to be a family-friendly employer. We also subscribe to My Family Care, a service that provides practical advice and support for employees who have caring responsibilities. The service offers a free telephone advice line, and the ability to book emergency back-up care for children, adult dependents and elderly relatives. See www.admin.ox.ac.uk/personnel/staffinfo/benefits/family/mfc/.

Childcare

The University has excellent childcare services, including 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/.

Disabled staff

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

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/.

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 settle into Oxford, and provides them with an opportunity to meet people and make connections in the local area. See www.newcomers.ox.ac.uk.