

Job Description and Selection Criteria

Job title	Bernoulli Postdoctoral Research Assistant in Exoplanet Science
Division	Mathematical Physical and Life Sciences
Department	Physics
Location	Robert Hooke Building
Grade and salary	Grade 8: 39,324-£51,260 per annum
Hours	Full time
Contract type	Fixed-term for 2 years
Reporting to	Raymond T. Pierrehumbert, Halley Professor of Physics
Vacancy reference	129872
Additional information	Closing date – midday (UK time) on 1st December 2017 This post is intended as part of the Bernoulli fellowship program in collaboration with the Center for Space and Habitability, University of Bern. Switzerland.

Research topic	Exoplanet atmospheres: formation, dynamics, and evolution
Principal Investigator / supervisor	Raymond T. Pierrehumbert, Halley Professor of Physics
Project team	
Project web site	https://users.physics.ox.ac.uk/~pierrehumbert/ http://www.csh.unibe.ch
Funding partner	Department of Physics, University of Oxford
Recent publications	See project web sites



Overview of the role

The Bernoulli Postdoctoral Research Assistant will carry out research related to the climate and climate evolution of exoplanets, in collaboration with the Principal Investigator, and with investigators at the program's partner institution, the Center for Space and Habitability, University of Bern, with a particular emphasis on Earth to Super-Earth mass/size classes of planets. The post is intended for an individual of exceptional ability and creativity, who will have considerable freedom to formulate a research program under the guidance of Professor Pierrehumbert and other project members. Topics of interest include, but are not limited to: exoplanet atmospheres; their dynamics thermodynamics and chemistry; their formation and their evolution through interaction with the planetary surface and interior and escape to space; their detection and characterization. Uninhabitable climates, such as those of lava planets are as much (or more) within the scope of interest as more Earthlike habitable planets with surface liquid water.

The post is intended as part of the Bernoulli fellowship program in collaboration with the University of Bern. As part of a close collaboration with the group of Prof Kevin Heng at the University of Bern, the partner in this program, the post will most likely entail occasional travel to Bern (Switzerland). If the successful candidate has applied also for a Bernoulli Fellowship at Bern (see particulars at http://www.csh.unibe.ch/research/projects/csh_fellowship/index_eng.html) the timing of potential appointment(s) can be negotiated, subject to any arrangements necessary to establish the right to work in the UK.

Responsibilities

- Develop research questions related to exoplanet atmospheres and their interactions with planetary interiors and interplanetary space; conduct individual research to address them (including numerical simulations where needed), analysing detailed and complex qualitative and/or quantitative data from a variety of sources including simulation output, and generate original ideas by building on existing concepts. The postholder will also be responsible for collaborating in developing the theoretical framework needed to understand the phenomena.
- Develop and implement new research methodologies and materials.
- Regularly write research articles at an international level for peer-reviewed journals. Present papers at national and international conferences to disseminate research findings.
- Agree clear task objectives; identify and coordinate work for students and other junior members of the team; and coach other members of the group on specialist methodologies or procedures.
- Manage own area of a larger research budget and assist the Principal Investigator in management of funding for the Bernoulli program. Where aligned with the scope of the program, help raise research funds for complementary activities through grant applications.
- Share responsibility for shaping the research group's long-term plans and contribute to the development of new research projects and associated funding applications.

- Represent the research group at external meetings and seminars, either with other members of the group or alone.
- Carry out collaborative projects with colleagues at the University of Bern and at other partner institutions.

Selection criteria

Essential

- The candidate must hold, or be very close to obtaining, a PhD/DPhil or equivalent in physics or an allied physical science area pertinent to planetary atmospheres, planetary interiors and/or planet formation
- Familiarity with one or more areas of physics relating to behaviour and evolution of exoplanet atmospheres (radiative transfer, thermodynamics and/or fluid mechanics, mineral physics, geochemistry)
- Experience with relevant computational methods, including programming in high-level languages (preferably Python and Fortran-90)
- Effectiveness in communicating and relating to others, orally and in writing scientific journal articles.
- Demonstrated ability in carrying out independent research on atmospheres of Earth and other planets, ideally including exoplanets
- Possession of sufficient specialist knowledge in the discipline to develop research projects and methodologies
- Ability to independently plan and manage a research project, including a research budget.
- Awareness of research funding routes and factors for grant applications.

Desirable

- Knowledge of chemistry and/or geochemistry relating to behaviour and evolution of exoplanet atmospheres
- Experience with radiative transfer and thermodynamics in planetary atmospheres, preferably including retrieval methods for interpretation of observations.
- Experience in computational fluid dynamics applicable to planetary atmospheres, interiors, and/or planet formation
- Experience of supervising staff and/or the work of research students
- Experience of managing a research budget
- Experience of making grant applications

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 2014/15 exceeded £522.9m 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

Department of Physics

Oxford Physics is one of the largest and most eminent departments in Europe – pursuing forefront research alongside training the next generation of leaders in Physics.

With an academic staff of almost one hundred our activities range from fundamental particles to the furthest reaches of the universe to manipulating matter on an atomic scale. Oxford physicists are probing new ways to harness solar energy, modelling the Earth's atmosphere to predict the future climate, exploring computation on the quantum scale and executing calculations that reveal the fundamental structure of space and time.

For more information please visit: <http://www2.physics.ox.ac.uk/>

Sub-department

The post-holder will be based in the Atmospheric, Oceanic and Planetary Physics (AOPP) sub-department, which is one of the six sub-departments that together make up the Department of Physics; these are Astrophysics, Atomic and Laser Physics, Atmospheric, Oceanic and Planetary Physics, Condensed Matter Physics, Particle Physics and Theoretical Physics, with a seventh function (Central Physics) providing administrative and technical support to these sub-departments.

The University of Oxford is home to a dynamic and growing community of researchers in all aspects of exoplanets, primarily within the AOPP and Astrophysics subdepartments and the Department of Earth Sciences. Exoplanet research at Oxford is coordinated through the Oxford Network on Planets in the Universe.

For more information please visit:

<http://www2.physics.ox.ac.uk/research/atmospheric-oceanic-and-planetary-physics>

Athena Swan Charter

The Department of Physics holds a silver Athena Swan award to recognise advancement of gender equality: representation, progression and success for all.

Mathematical, Physical & Life Sciences Division

The Mathematical, Physical and Life Sciences (MPLS) Division is one of the four academic divisions of the University of Oxford.

The MPLS Division's 10 departments and 3 interdisciplinary units span the full spectrum of the mathematical, computational, physical, engineering and life sciences, and undertake both fundamental research and cutting-edge applied work. Our research addresses major societal and technological challenges and is increasingly focused on key interdisciplinary issues. We collaborate closely with colleagues in Oxford across the medical sciences, social sciences and humanities, and with other universities, research organisations and industrial partners across the globe in pursuit of innovative research geared to address critical and fundamental scientific questions.

For more information please visit: <http://www.mpls.ox.ac.uk/>

How to apply

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. Please provide details of two referees and indicate whether we can contact them now.

You will also be asked to upload a CV and statement of research interests. The statement must explain how you meet each of the selection criteria for the post using examples of your skills and experience. This may include experience gained in employment, education, or during career breaks (such as time out to care for dependants).

Your application will be judged solely on the basis of how you demonstrate that you meet the selection criteria stated in the job description. Please upload all documents **as PDF files** with your name and the document type in the filename.

All applications must be received by **midday** on the closing date stated in the online advertisement.

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/](http://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/.

The University's policy on retirement

The University operates an employer justified retirement age for all academic and academic-related posts (grade 6 and above), for which the retirement date is the 30 September immediately preceding the 68th birthday. The justification for this is explained at:

www.admin.ox.ac.uk/personnel/end/retirement/revisedejra/revaim/.

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

There is no normal or fixed age at which **support staff** in posts at **grades 1–5** have to retire. Support staff may retire once they reach the minimum pension age stipulated in the Rules of the pension scheme to which they belong.

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

Training and Development

A range of training and development opportunities are available at the University. Further details can be found at www.ox.ac.uk/staff/working_at_oxford/training_development/index.html.

For research staff only: Support for Research Staff

There is a particularly wide range of support for career development for research staff. Please visit: www.ox.ac.uk/research/support-researchers to find out more.

Pensions

The University offers generous occupational pension schemes for eligible staff members. Further details can be found at www.admin.ox.ac.uk/finance/epp/pensions/pensionspolicy/.

Information for international staff *(or those relocating from another part of the UK)*

A wealth of information is available on the University's International Staff website for staff who are relocating to Oxford from abroad, at www.admin.ox.ac.uk/personnel/staffinfo/international/.

The University of Oxford Newcomers' Club

The Newcomers' Club is aimed at helping partners of newly-arrived visiting scholars, graduate students and academic members of the University to settle in and to meet people in Oxford.

Transport schemes

The University offers a range of travel schemes and public transport travel discounts to staff. Full details are available at www.admin.ox.ac.uk/estates/ourservices/travel/.

University Club and University Sports Facilities

The University Club provides social, sporting and hospitality facilities. It incorporates a Club bar, a cafe and sporting facilities, including a gym. See www.club.ox.ac.uk for all further details.

University staff can use the University Sports Centre at discounted rates, and have the chance to join sports clubs. Please visit www.sport.ox.ac.uk/oxford-university-sports-facilities.

Childcare and Childcare Vouchers

The University offers quality childcare provision services at affordable prices to its employees. For full details about the services offered, please visit www.admin.ox.ac.uk/childcare/. **NB: Due to the high demand for the University's nursery places there is a long waiting list.**

The University also offers nursery fee payment schemes to eligible staff as an opportunity to save tax and national insurance on childcare costs. Please visit www.admin.ox.ac.uk/childcare.

Disabled staff

The University is committed to supporting members of staff with a disability or long-term health condition and has a dedicated Staff Disability Advisor. Please visit www.admin.ox.ac.uk/eop/disab/staff for further details.

BUPA - Eduhealth

Bupa Eduhealth Essentials private medical insurance offers special rates for University of Oxford staff and their families www.eduhealth.co.uk/mini-site/.

All other benefits

For other benefits, such as free entry to colleges, the Botanic Gardens and staff discounts offered by third party companies, please see www.admin.ox.ac.uk/personnel/staffinfo/benefits/.