

## Data Science Heilbronn Research Fellowship

### 1. JOB DESCRIPTION

**Faculty / School or Division:** Faculty of Science, School of Mathematics

**Faculty/School or Division Address:** Fry Building, Woodland Road, Bristol, BS8 1UG

<b>Job Family:</b>	Research and Teaching		
<b>Grade/Pathway:</b>	J/Pathway 2c	<b>Salary range:</b>	£38,017-42,792 per annum
<b>Hours of work:</b>	100% time	<b>Contract type:</b>	Fixed-term for 3 years
<b>Work pattern:</b>	Mon-Fri	<b>Vacancy Reference Number:</b>	

#### 1.1 Main Job Purpose

##### The Heilbronn Institute for Mathematical Research (HIMR)

The Institute was established in 2005 by UK Government Communications Headquarters in association with the University of Bristol to conduct research in areas including, but not restricted to, Algebra, Algebraic Geometry, Combinatorics, Computational Statistics, Data Science, Number Theory, Probability, and Quantum Information. These areas are interpreted broadly: Research Fellows have previously been appointed with backgrounds in most of Pure Mathematics and Statistics, and several areas of Mathematical/Theoretical Physics.

The Heilbronn Institute has grown into a national research institute, with some of the leading mathematicians in the UK working in a highly stimulating research environment. It partners with the Alan Turing Institute, the Clay Mathematics Institute, the Isaac Newton Institute, and the International Centre for Mathematical Sciences. For more information about the Heilbronn Institute, including a programme of workshops and conferences, papers written by its members, and current fellows, please see our website at <https://heilbronn.ac.uk/>

The Institute's research programme is divided equally into 'internal' research on behalf of GCHQ, and 'external' research in areas of the Fellows' choice. The external research may be in any area of mathematics and can be published in the usual way. Internal research may be externally publishable depending on its nature, but can only be published with GCHQ's agreement.

HIMR and the [Alan Turing Institute](#) have a partnership arrangement which enables Heilbronn Research Fellow to carry out some of their external research as part of the Turing Institute's research programme, if they wish. The University of Bristol is a partner of the Alan Turing Institute in its university network.

The Chair of HIMR, who is responsible for the external research and associated activities is Professor Geoffrey Grimmett FRS. Dr Michael Groves, the Head of HIMR, is responsible for the internal research programme. The Associate Chair of HIMR is Dr Tim Burness, who is responsible for the Heilbronn Institute's activities and Fellows at the University of Bristol.

## Research Environment

You will join a cohort of over 35 Heilbronn Research Fellows that includes some of the leading early-career mathematicians in the UK. The School of Mathematics provides an excellent mentoring programme and a series of regular career-development events designed specifically for Heilbronn Research Fellows, to support them through their transition to an established and independent research career. Indeed, many former fellows have gone on to permanent academic appointments in leading universities, and embark on successful careers in industry and government.

The School of Mathematics also runs several active seminar series across all areas of Pure Mathematics as well as Probability, Statistics, Mathematical Physics and Quantum Information. In partnership with the [Jean Golding Institute](#), HIMR runs the Bristol Data Science Seminar, which features leading speakers from academia and industry. The School also hosts a Heilbronn Data Science Visitor Programme, which attracts some of the world's leading data scientists to Bristol for extended research visits. HIMR also supports a large number of conferences, workshops and other research events across the UK, including an Annual Conference. For more information, please see our events page: <https://heilbronn.ac.uk/events/>

In the [Research Excellence Framework \(REF\) 2014](#), the School was ranked 4<sup>th</sup> overall in the UK and 2<sup>nd</sup> for impact when "intensity" is taken into account. The School's [Institute of Statistical Science](#) recently hired two Heilbronn Chairs in Data Science, [Professor Anthony Lee](#), and [Professor Nick Whiteley](#).

The School is host to [COMPASS](#), a new EPSRC Centre for Doctoral Training in Computational Statistics, which will train 11+ PhD students per year across a broad range of statistical science. The School launched a new [MSc in Cybersecurity](#) in 2018, and will introduce a new BSc in Data Science in 2021. Teaching and project supervision opportunities at all levels are possible, with faculty support.

The internal research programme is determined by the Head of HIMR in conjunction with GCHQ. Fellows are presented with a range of challenging problems and are given the facilities and support to contribute to one or more problems, frequently in a collaborative effort as a member of a team.

## Facilities and Research Support

Excellent facilities are provided for both the external and the internal research. Fellows will have access to the University's Advanced Computing Research Centre which operates a number of different [High Performance Computing](#) systems. In addition to work space at the Institute, Fellows also have desks in the School of Mathematics, which they can access 24/7. The University of Bristol invested £33m to transform the Grade II listed Fry Building, which has been the new home for the School of Mathematics since 2019.

Fellows work flexible hours, and are able to split their time between internal and external research in whatever way suits them best.

The Chair holds a generous budget for research expenses such as travel, equipment, and organising workshops and visits to the University of Bristol by collaborators from other institutions. Fellows

may expect research expenses of up to £2.5k pa, and are able to bid for further sums from the Chair's fund for special projects. They may also bid for external funding.

### **Terms and Conditions**

Terms and conditions of employment for Research Fellows will be based on those applicable to fixed-term externally-funded researchers in the University of Bristol.

The salary range is £38,017-42,792, depending on experience, plus a salary supplement of £3.5k pa, in recognition of the distinctive nature of these Fellowships. Payment of this supplement is conditional on a PhD thesis having been accepted in final form.

### **Intellectual Property Rights**

The Institute acquires all IPR in the internal research. Rights in the external research are subject to the normal arrangements between the University of Bristol and its employees, subject to GCHQ acquiring a royalty-free license on any exploitable invention.

### **Security**

Some of the Institute's work is highly confidential and subject to formal security procedures. All the internal research must be carried out within the Institute and not discussed, even in general terms, elsewhere, without explicit GCHQ permission. Fellows need to acquire, and continue to qualify for, a security clearance ('Developed Vetting') from GCHQ; they are subject to provisions of the Official Secrets Acts and restrictions on travel to certain countries. UK resident UK nationals will normally be able to meet this condition. Non-UK citizens and UK citizens who are not UK residents should contact the Heilbronn Manager (see below) about eligibility before applying.

The University and the Heilbronn Institute reserve the right to terminate the fellowship in the event of loss of security clearance.

### **Informal Enquiries**

Candidates interested in learning more about these Fellowships can contact the Director of the Institute of Statistical Science, Professor Oliver Johnson, at [O.Johnson@bristol.ac.uk](mailto:O.Johnson@bristol.ac.uk)

## **1.2 Main Statement of Responsibilities**

### **Research Responsibilities**

- Please refer to main job purpose above.

### **Administration Responsibilities**

- Please refer to main job purpose above.

### **Teaching Responsibilities**

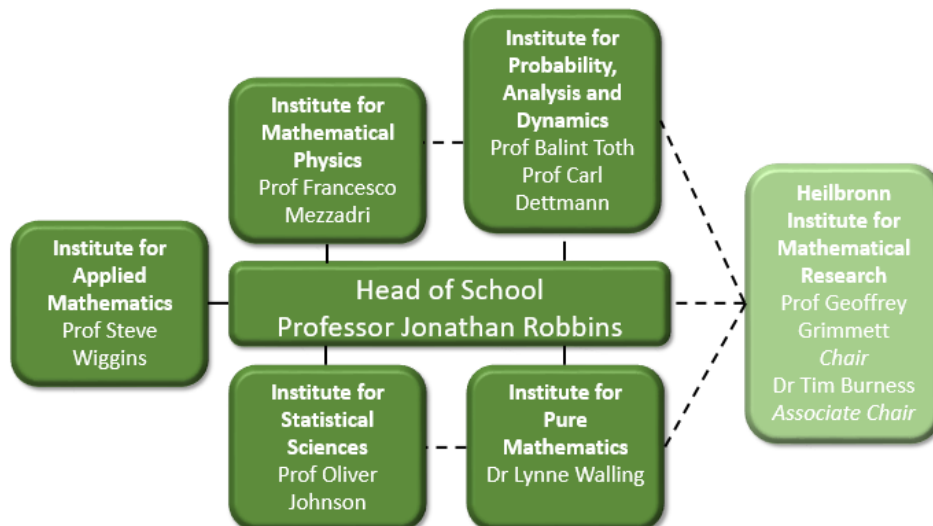
As this role is a Pathway 2 (Research) role, there are no formally specified teaching duties required of the role-holder. However, other commitments permitting, the role-holder may be given development opportunities to undertake activities such as teaching on undergraduate programmes and/or supervising final year projects, as appropriate.

### 1.3 Relationships

Line manager: Dr Tim Burness

Line manager to (where appropriate): n/a

### Organisation Charts



### 1.4 Job Hazards/Safety Critical Duties (Pre-employment health screening)

NOT APPLICABLE

---

## 2 PERSON SPECIFICATION

### 2.1 Relevant Experience, Skills and Knowledge

#### *Essential*

- Experience of independent research in any methodology supporting the exploitation of large-scale, dynamic and/or complex data, or an outstanding track record of research in a statistical or mathematical discipline (including Mathematical Physics and Theoretical Computer Science), with clearly laid out plans to transition into Data Science.
- A publication plan commensurate with career stage.
- Self-motivation, initiative, and organisational skills in planning and carrying out research.

### 2.2 Relevant Qualifications

#### *Essential*

PhD or equivalent doctoral qualification in a relevant subject by the time you start this fellowship, or very close to completion.

### 2.3 Communication and Interpersonal Skills

#### *Essential*

- Excellent written and oral communication skills in English.

### 2.4 Additional Criteria

#### *Essential*

- Fellows need to acquire, and continue to qualify for, a security clearance ('Developed Vetting') from GCHQ, typically only UK nationals can achieve this, please contact [himr-recruitment@bristol.ac.uk](mailto:himr-recruitment@bristol.ac.uk) if you are unsure.