1 Advertisement

Post Title: Post Doctoral Research Fellow in Mathematics (Analysis and PDEs)

School/Department: School of Mathematical and Physical Sciences (MPS), Department of Mathematics

Hours: Full time or part time hours considered up to a maximum of 1.0 FTE. Requests for flexible working options will be considered (subject to business need).

Contract: Fixed term for 36 months

Reference: 6411

Salary: starting at £34,304 to £40,927 per annum, pro rata if part time

Placed on: 31 August 2021

Closing date: 28 September 2021. Applications must be received by midnight of the closing date.

Expected start date: 01 January 2022

The Department of Mathematics at the University of Sussex offers a fixed term three years (36 months) post doctoral position in Analysis of Partial Differential Equations (PDEs).

The post has become available through the award of an EPSRC grant to Dr Ali Taheri for the project “Topology of Sobolev spaces and quasiconvexity: multiplicity and singularity analysis for extremals and local minimizers”.

The aim of the project is to extend and deepen our understanding of quasiconvexity and to discover and exploit further its close links to PDEs, geometry and topology as well as some of its intimate and key applications in mechanics, nonlinear elasticity, and material sciences.

On a more mathematically rigorous front the prime objective of this research is to develop new tools and cutting-edge techniques for establishing sharp and optimal regularity results, to devise fine singularity analysis for various classes of extremals and local minimizers of quasiconvex variational integrals and to obtain a clearer picture of the energy landscape on the relevant function spaces.

We welcome applications from all candidates in related areas broadly interpreted but candidates with major interest in Mathematical Analysis, Calculus of Variations, PDEs, Geometric Analysis and Geometric Function Theory are particularly welcome.

The post-holder will work closely with the principal investigator Dr Ali Taheri in the Analysis and PDEs research group. The post comes with a generous travel bursary that will enable the successful candidate to participate in international conferences and summer schools.

Prospective candidates should hold a PhD in Mathematics, Theoretical Physics or a closely related subject and have experience in publishing papers and conducting research of highest quality.
Candidates should include in their application the following:

- Academic CV
- Official academic transcripts
- Contact details for three suitable referees
- A personal statement (55 words maximum) outlining their suitability for the position and research experience to date relevant to the project
- Application form

All enquiries should be directed to Dr Ali Taheri a.taheri@sussex.ac.uk

The University is committed to equality and valuing diversity, and applications are particularly welcomed from women and black and minority ethnic candidates, who are under-represented in academic posts in Science, Technology, Engineering, Medicine and Mathematics (STEMM) at Sussex.

“Please note that this position may be subject to ATAS clearance if you require visa sponsorship.”

For full details and how to apply see our vacancies page

2. The School / Division

The School of Mathematical and Physical Sciences (MPS) was created in 2009 as part of a University wide restructuring. It brings together two outstanding Departments – Mathematics, and Physics & Astronomy. The School aims to capitalise on the synergy between these two subjects to deliver new and challenging opportunities for faculty and students.

The School of Mathematical and Physical Sciences combines pioneering research and stimulating teaching in an interdisciplinary academic setting. The faculty work at the frontiers of their fields, as is reflected in the recent growth of both subjects. Each department has a number of thriving research groups and links with outside agencies.

The Department of Mathematics

The Department of Mathematics currently has 24 faculty divided into six research areas: Analysis and PDEs, Geometry and Topology, Mathematics Applied to Biology, Mathematical Physics, Numerical Analysis and Scientific Computing, and Probability and Statistics.

In the 2014 research excellence framework (REF), 81 per cent of the research outputs in Mathematics at Sussex were rated as world-leading (4*) or internationally excellent (3*). Mathematics at Sussex was ranked 21st in the UK in a recent league tables [Guardian 2017]. It also repeatedly scores well in the UK National Student Survey.

Research Areas in Mathematics

Research in Mathematics Sciences at Sussex is supported by a wide range of national and international funding agencies and research councils. The Department coordinates an Innovative Training Network (ITN), is partner to another couple of ITNs and benefits from funding from the Leverhulme Trust. Several PhD positions and a number of first and standard mode grants have been funded by EPSRC. The Icelandic Research Fund and the Italian CNR has also supported a few researchers in the department. Faculty at Sussex
frequently organise international workshops and conferences hosting distinguished speakers and researchers from all over the world with support from the London Mathematical Society (LMS), EPSRC and EU H2020.

Degree courses

The Department offers a 3-year BSc course and a 4-year MMath course in Mathematics and in Mathematics with a minor in Economics, Finance or Physics. The final year of the MMath course offers an extended range of options that prepare students for postgraduate study. The Department runs MSc courses in Financial Mathematics, Corporate and Financial Risk Management, Computational Mathematics and Mathematics, which occupy a calendar year and are made up of taught courses.

3. Job Description
Job Title: Research Fellow in Mathematics
Grade: Research Fellow I, Grade 7
School: School of Mathematical and Physical Sciences
Department: Mathematics
Location: Pevensey III
Responsible to: Dr Ali Taheri

Role description: The Research Fellowship is an early career-grade research position. The post-holder will be expected to contribute highly to the success of the proposed research and to develop their research skills by working closely as a team with the PI. An emerging track record of high-quality publications in reputable journals and other appropriate media of similar standing is a natural target.

PRINCIPAL ACCOUNTABILITIES

- To engage in individual and/or collaborative research activities as outlined in the research proposal
- To publish results and findings in high-quality mathematics journals
- To present achievements and results in relevant national and international workshops and conferences
- To co-organize with the PI meetings and conferences as outlined in the research proposal
- To contribute to School teaching activities whenever required.
KEY RESPONSIBILITIES

1. Research, Scholarship & Enterprise

1.1 Develop research objectives and proposals for own or joint research, at acceptable levels, with assistance if required.

1.2 Conduct research projects individually and in collaboration with others.

1.3 Analyse and interpret research findings and draw conclusions on the outcomes.

1.4 Produce high-quality research outputs for publication in monographs or recognised high-quality journals, or performance/exhibition, as appropriate, and contribute to the School’s REF submission at acceptable levels of volume and academic excellence.

1.5 Contribute to the preparation of proposals and applications to external bodies, for example for funding purposes.

1.6 Individually or with colleagues, explore opportunities for enterprise activity, knowledge exchange income and/or consultancy, where permissible.

1.7 Build internal contacts and participate in internal networks and relevant external networks in order to form relationships and collaborations.

1.8 Continually update knowledge and understanding in field or specialism, and engage in continuous professional development.

2. Teaching & Student Support

2.1 Undertake teaching duties, if required.

2.2 Assist in the assessment of student knowledge and supervision of student projects if required.

2.3 Assist in the development of student research skills, for example as part of a postgraduate supervision team.

3. Contribution to School & University

3.1 Attend and contribute to relevant School and project meetings.

3.2 Undertake additional duties, as required by the Principal Investigator and/or Head of School.
4. PERSON SPECIFICATION

We are looking for candidates who will drive the project forward, are positive, eager to think creatively, and keen to work devotedly with the PI and independently.

The successful candidate will have a PhD in Mathematics, Theoretical Physics or a closely related area, and will have a strong and solid background in Analysis and PDEs. In addition, the candidate is expected to have good experience in publishing research articles in high quality mathematics journals and delivering effective talks. Knowledge in Topology as well as Geometric and Harmonic Analysis will be important.

ESSENTIAL CRITERIA

1. Normally educated to doctoral level, or other equivalent qualification, or appropriate level of experience, as appropriate to the discipline.

2. Evidence of engagement in high-quality research activity.

3. Excellent presentation skills, with the ability to communicate effectively, both orally and in writing, with students, colleagues and external audiences.

4. Ability to work individually on own initiative and without close supervision, and as part of a team.

5. Ability to exercise a high degree of innovation and creative problem-solving.

6. Excellent organisational and administrative skills.

7. Ability to prioritise and meet deadlines.

8. Excellent IT skills.