Job Description

Job title	Postdoctoral Research Associate
Department/School	Mathematical Sciences
Job family	Education and Research
Grade	7
Reporting to	Principal Investigator (PI), Mathew Penrose
Responsible for	There may be a requirement for supervision of others, e.g. co-supervision of doctoral or undergraduate project students
Location	University of Bath premises

Background and context

Applications are invited for a 26-month postdoctoral Research Officer position at the Probability Laboratory (Prob-L@B) in the Department of Mathematical Sciences at the University of Bath. The post-holder will work with Professor Mathew Penrose, starting on 1st December 2021 or as soon as possible thereafter. Prob-L@B, one of the UK's leading and most vibrant centres of probability, comprises of 12 permanent faculty members and some 30 postdocs and PhD students.

The position is funded by the EPSRC grant "Coverage and Connectivity in Stochastic Geometry". The project is concerned with understanding aspects of the Boolean model, obtained as a collection of small (possibly overlapping) `droplets' centred on a large `cloud' of points placed at random in a bounded region of Euclidean space. We shall investigate whether the droplets fully cover this region, the component structure of the ensemble of droplets, and that of the complementary region. A key aim is to systematically understand the effect of the boundary of the region in question on the answers to these questions; earlier work dealt with regions without boundary such as a torus. As well as probabilistic techniques from areas such as percolation theory, extreme value theory and Poisson approximation, the project is likely to use ideas from differential geometry to understand these boundary effects, especially in higher dimensions.

Applications of this research include areas such as communications engineering, machine learning, robotics, set estimation, and topological data analysis. In particular, BT (formerly British Telecom) is involved as a project partner.

For informal enquiries about this post, please contact Mathew Penrose (masmdp@bath.ac.uk) or Cecile Mailler (cdm37@bath.ac.uk).

Job purpose

To provide research expertise and undertake and disseminate specific research with the Principal Investigator (PI), Prof. Mathew Penrose, for the specified grant/project "Coverage and Connectivity in Stochastic Geometry'', as well as further your own, independent research career.

Main duties and responsibilities

Responsible to the PI for:

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1	Conducting individual and/or collaborative research necessary to achieve the planned objectives of the EPSRC funded project `Coverage and Connectivity in Stochastic Geometry'. Contributing to the design and execution of the project e.g. timetabling and meeting project milestones; participating in regular discussions with collaborative partners.
2	Writing up results of research and contributing to the publication of results in high-quality peer-reviewed academic literature.
3	Disseminating results of research project as appropriate to the discipline through activities such as • overseas research visits • conference presentations
4	Participating in departmental/group meetings and preparing and delivering presentations/seminars to project team, internal and external stakeholders or funders.
5	Participating in wider activities of the ProbL@B, such as assisting with the supervision of postgraduate students and undergraduate project students and the assessment of student knowledge, as directed by the PI or Head of Department.
6	Continually updating knowledge and understanding in field or specialism to inform research activity.
7	Identifying sources of funding and provide assistance with preparing bids to funding bodies. Developing ability to secure own funding e.g. travel grants.
8	Contributing to the development of research objectives and proposals for own or joint research projects, with assistance of a mentor, if required.
9	Disseminating knowledge of research advances.
You will from time to time be required to undertake other duties of a similar nature as reasonably required by your line manager. You are required to follow all University policies and procedures at all times and take account of University guidance.	

Person Specification

Criteria	Essential	Desirable
Qualifications		
A PhD degree in subject area of direct relevance for the project, or equivalent significant relevant experience and professional qualification	√	
Experience/Knowledge		
Postdoctoral experience		√
Demonstrated significant depth and breadth of specialist knowledge in probability theory or related field.	√	
Demonstrated awareness of developments related to this research project, e.g. stochastic geometry, percolation theory, topological data analysis.		√
Demonstrated potential to publish in high quality, peer reviewed journals	√	
Skills		
Ability to prepare research proposals, to conduct individual research work and to disseminate results		√
Ability to organise and prioritise own workload to meet required deadlines	√	
Ability to write research reports and to effectively disseminate outcomes	√	
Excellent oral, interpersonal and written communication skills	√	
Proficiency in appropriate techniques (as appropriate to discipline)	√	
Proficiency in IT skills (as appropriate to discipline)	√	
Attributes		
Commitment to working within professional and ethical codes of conduct	√	
Innovation and developing creative solutions	√	
Commitment to excellence in research	√	
Enthusiasm and self-motivation	√	
Tenacity – working to achieve own and team objectives and to overcome obstacles	√	
Ability to be an effective team worker	√	
Commitment to safe working practices	√	