



## POSITION DESCRIPTION

School of Mathematics and Statistics  
Faculty of Science

### Postdoctoral Research Fellow in Statistical Mechanics

<b>POSITION NO</b>	0040640
<b>CLASSIFICATION</b>	Research Fellow Level A
<b>SALARY</b>	\$66,809* - \$90,657 p.a. (* Level A PhD entry level \$84,458 p.a.)
<b>SUPERANNUATION</b>	Employer contribution of 9.5%
<b>EMPLOYMENT TYPE</b>	Full time (fixed term) position available for 2.5 years Fixed term contract type: External Funding
<b>OTHER BENEFITS</b>	<a href="http://about.unimelb.edu.au/careers/working/benefits">http://about.unimelb.edu.au/careers/working/benefits</a>
<b>CURRENT OCCUPANT</b>	Vacant
<b>HOW TO APPLY</b>	Online applications are preferred. Go to <a href="http://about.unimelb.edu.au/careers">http://about.unimelb.edu.au/careers</a> , select the relevant option (‘Current Staff’ or ‘Prospective Staff’), then find the position by title or number.
<b>CONTACT FOR ENQUIRIES ONLY</b>	Professor Aleks Owczarek Tel +61 3 8344 7887 Email <a href="mailto:owczarek@unimelb.edu.au">owczarek@unimelb.edu.au</a>  <i>Please do not send your application to this contact</i>

For information about working for the University of Melbourne, visit our websites:  
[about.unimelb.edu.au/careers](http://about.unimelb.edu.au/careers)  
[joining.unimelb.edu.au](http://joining.unimelb.edu.au)

## ***Position Summary***

### *Postdoctoral Research Fellow in Statistical Mechanics*

The Australian Research Council has funded a research project (Discovery Project, no DP160103562) on how topological constraints and changes disturb polymer critical behaviour using lattice models in statistical mechanics. The project will involve extensive Monte Carlo simulation of statistical mechanical lattice models of polymers.

Applicants would be expected to have: either a PhD in mathematics, or in physics, or a closely related discipline that demonstrates mathematical skills; a strong publication record; and the ability to work in a team.

The person will work closely with Professor Aleks Owczarek who is the Chief Investigator on the Discovery Project.

The position is available for up to two and half years.

## ***1. Selection Criteria***

### **1.1 ESSENTIAL**

- 1.1.1 The applicant must hold or have submitted a PhD in a relevant discipline by the date of appointment.
- 1.1.2 Demonstrated ability to undertake high quality research in mathematical/theoretical physics, with a sound publication record.
- 1.1.3 Demonstrated ability to manage competing priorities and excellent time management skills.
- 1.1.4 Strong communication skills in English, both oral and written.
- 1.1.5 Highly developed interpersonal skills.

### **1.2 DESIRABLE**

- 1.2.1 Experience in lattice models of statistical mechanics and critical phenomena
- 1.2.2 Experience in Monte Carlo simulation.
- 1.2.3 Evidence of potential for graduate student supervision.

## ***2. Special Requirements***

### **Note to applicants regarding Selection Criteria:**

Research incorporates a range of activities relating to the conduct of research, and/or publications arising from scholarship and research. In assessing the applicant's contribution to research, the following will be taken into account:

- ▶ The number and quality of research projects completed or currently engaged in, and the extent of the applicant's personal contribution to such research.
- ▶ The standing of publishers and journals in which publications appear in relation to the relevant discipline or branch of the discipline.

- ▶ Breadth of scholarship, through contributions to more than one restricted area of specialty.
- ▶ Role in research teams.
- ▶ Qualifications based on research degrees.
- ▶ Research supervision.
- ▶ Provision of advice on research to students and colleagues.

### ***3. Key Responsibilities***

Specific duties include:

- 3.1 Undertake high-quality, internationally competitive research as a member of a team
- 3.2 Contribute ideas in development and application of analytic and simulation techniques for the project.
- 3.3 Contribute to the production of reports, conference and seminar papers and publications based on research findings.
- 3.4 Involvement in professional activities including, subject to availability of funds, attendance at conferences and seminars in the field of expertise.
- 3.5 Administrative functions primarily connected with his/her area of research.
- 3.6 Occupational Health and Safety (OH&S) and Environmental Health and Safety (EH&S) responsibilities as outlined in section 5.

### ***4. Other Information***

#### **4.1 ORGANISATION UNIT**

The University of Melbourne's School of Mathematics and Statistics is one of Australia's leading mathematics and statistics schools. It has achieved this status through the high quality of its research and teaching programs. The School offers a wide range of subjects to undergraduate and postgraduate students and is involved in aspects of community life that impact on the interests of the School and the discipline.

The School of Mathematics and Statistics has a total of 42 continuing teaching and/or research staff; 26 research only staff and consultants; 6 Mathematics and Statistics Learning Centre teaching specialists; and 20 support staff. The School has over 100 casual and honorary staff. In 2016, there are 88 Research Higher Degree and 78 Coursework Master of Science students. Four members of the School staff and one Emeritus Professor are members of the Academy of Science.

Infrastructure support for research and basic information technology facilities are provided to all members of the school. Special facilities such as high end workstations and salaries for research fellows are supported through individual competitive external research grants. Members of the School have had considerable success at attracting support from the Australian Research Council. The school hosts two ARC Centres of Excellence, has one ARC Laureate Fellow, two ARC Future Fellows and two DECRA Fellows.

It is one of the objectives of the University to develop and maintain a strong international profile. In this context, members of the School have strong collaborative links with colleagues in the United States of States of America, most countries in Europe and the Asia-Pacific region.

The www address of the School of Mathematics and Statistics is <http://www.ms.unimelb.edu.au>

## 4.2 BUDGET DIVISION

<http://www.science.unimelb.edu.au>

Science at the University of Melbourne is the most highly ranked Faculty of Science in Australia.\* Science is defined by its research excellence in the physical and life sciences and is at the forefront of research addressing major societal issues from climate change to disease. Our discoveries help build an understanding of the world around us.

We have over 150 years of experience in pioneering scientific thinking and analysis, leading to outstanding teaching and learning and offer a curriculum based on highly relevant research, which empowers our STEM students and graduates to understand and address complexities that impact real world issues and the challenges of tomorrow.

We aspire to engage the broader community with the impact that Science has on our everyday lives. Through the strength of our internships and research project offerings, our students are provided opportunities to engage with industry partners to solve real-world issues.

The Faculty of Science has over 40,000 alumni and is one of the largest faculties in the University comprising seven schools: BioSciences, Chemistry, Earth Sciences, Ecosystem and Forest Sciences, Geography, Mathematics and Statistics, and Physics.

The Faculty is custodian of the Bio21 Molecular Science and Biotechnology Institute, Office for Environmental Programs and home to numerous Centres.

Science manages more than \$280 million of income per annum, with a staff base in the order of 220 professional staff, and more than 540 academic staff.

We offer a range of undergraduate, honours, graduate and research degrees; enrolling over 7,500 undergraduate and graduate students. The Faculty of Science is the custodial Faculty for the BSc (Bachelor of Science) with enrolments of approximately 6,200 students.

The Faculty of Science is a leader in research, contributing approximately \$50 million in HERDC income per annum. The Faculty of Science is highly research focused, performing strongly in the ARC competitive grants schemes, often out-performing the national average. The Faculty of Science is currently growing its competitiveness and standing in the NHMRC space.

The Faculty of Science provides community services and industry partnerships based on a solid foundation of research in the pure and applied sciences. The Faculty has an endowment of approximately \$50 million. The annual income from the endowment supports more than 120 prizes, scholarships and research awards.

\*Figures from the latest available data for 2015, including published international rankings data.

### 4.3 THE UNIVERSITY OF MELBOURNE

The University of Melbourne is a leading international university with a tradition of excellence in teaching and research. With outstanding performance in international rankings, Melbourne is at the forefront of higher education in the Asia-Pacific region and the world. The University of Melbourne is consistently ranked among the world's top universities. Further information about our reputation and global ranking is available at <http://futurestudents.unimelb.edu.au/explore/why-choose-melbourne/reputation-rankings>.

Established in 1853, shortly after the founding of Melbourne, the University is located just a few minutes from the centre of this global city. The main Parkville campus is recognised as the hub of Australia's premier knowledge precinct comprising eight hospitals, many leading research institutes and a wide range of knowledge-based industries.

The University employs people of outstanding calibre and offers a unique environment where staff are valued and rewarded. Further information about working at The University of Melbourne is available at <http://about.unimelb.edu.au/careers>.

### 4.4 GROWING ESTEEM, THE MELBOURNE CURRICULUM AND RESEARCH AT MELBOURNE: ENSURING EXCELLENCE AND IMPACT TO 2025

- ▶ Growing Esteem describes Melbourne's strategy to achieve its aspiration to be a public-spirited and internationally-engaged institution, highly regarded for making distinctive contributions to society in research and research training, learning and teaching, and engagement. <http://about.unimelb.edu.au/strategy-and-leadership>
- ▶ The University is at the forefront of Australia's changing higher education system and offers a distinctive model of education known collectively as the Melbourne Curriculum. The new educational model, designed for an outstanding experience for all students, is based on six broad undergraduate programs followed by a graduate professional degree, research higher degree or entry directly into employment. The emphasis on academic breadth as well as disciplinary depth in the new degrees ensures that graduates will have the capacity to succeed in a world where knowledge boundaries are shifting and reforming to create new frontiers and challenges. In moving to the new model, the University is also aligning itself with the best of emerging European and Asian practice and well-established North American traditions.
- ▶ The University's global aspirations seek to make significant contributions to major social, economic and environmental challenges. Accordingly, the University's research strategy *Research at Melbourne: Ensuring Excellence and Impact to 2025* aspires to a significant advancement in the excellence and impact of its research outputs. <http://research.unimelb.edu.au/index.html#home>

The strategy recognises that as a public-spirited, research-intensive institution of the future, the University must strive to make a tangible impact in Australia and the world, working across disciplinary and sectoral boundaries and building deeper and more substantive engagement with industry, collaborators and partners. While cultivating the fundamental enabling disciplines through investigator-driven research, the University has adopted three grand challenges aspiring to solve some of the most difficult problems facing our world in the next century. These Grand Challenges include:

Understanding our place and purpose – The place and purpose grand challenge centres on understanding all aspects of our national identity, with a focus on Australia's 'place' in the Asia-Pacific region and the world, and on our 'purpose' or mission to improve all dimensions of the human condition through our research.

Fostering health and wellbeing – The health and wellbeing grand challenge focuses on building the scale and breadth of our capabilities in population and global health; on harnessing our contribution to the ‘convergence revolution’ of biomedical and health research, bringing together the life sciences, engineering and the physical sciences; and on addressing the physical, mental and social aspects of wellbeing by looking beyond the traditional boundaries of biomedicine.

Supporting sustainability and resilience – The sustainability and resilience grand challenge addresses the critical issues of climate change, water and food security, sustainable energy and designing resilient cities and regions. In addition to the technical aspects, this grand challenge considers the physical and social functioning of cities, connecting physical phenomena with lessons from our past, and the implications of the technical solutions for economies, living patterns and behaviours.

Essential to tackling these challenges, an outstanding faculty, high performing students, wide collaboration including internationally and deep partnerships with external parties form central components of Research at Melbourne: Ensuring Excellence and Impact to 2025.

#### 4.5 EQUITY AND DIVERSITY

Another key priority for the University is access and equity. The University of Melbourne is strongly committed to an admissions policy that takes the best students, regardless of financial and other disadvantage. An Access, Equity and Diversity Policy Statement, included in the University Plan, reflects this priority.

The University is committed to equal opportunity in education, employment and welfare for staff and students. Students are selected on merit and staff are selected and promoted on merit.

#### 4.6 GOVERNANCE

The Vice Chancellor is the Chief Executive Officer of the University and responsible to Council for the good management of the University.

Comprehensive information about the University of Melbourne and its governance structure is available at <http://www.unimelb.edu.au/unisec/governance.html>.

### ***5. Occupational Health and Safety (OHS)***

All staff are required to take reasonable care for their own health and safety and that of other personnel who may be affected by their conduct.

OHS responsibilities applicable to positions are published at:

<http://safety.unimelb.edu.au/topics/responsibilities/>

These include general staff responsibilities and those additional responsibilities that apply for Managers and Supervisors and other Personnel.