JOB DESCRIPTION

Job Information	
Position Title	Postdoctoral Fellow in Monte Carlo Methods in Statistical Mechanics
Category	Postdoctoral Visitor
Supervisor(s)	EJ Janse van Rensburg
Unit	Department of Mathematics & Statistics
Location	Keele Campus

Background

The general polymer entropy problem poses interesting questions in numerical methods in Statistical Mechanics and Polymer Physics. A well known model of polymer entropy is the (lattice) self-avoiding walk. Various Monte Carlo algorithms have been invented to these since the 1950s, including the Rosenbluth, pivot, PERM and GARM algorithms. A topic of current interest is the entanglement of self-avoiding walks in 3 dimensions, as a model of knotting and linking in ring polymers. The research activities in this position will be focused on algorithms for self-avoiding walks, and the entanglement (knotting and linking) in self-avoiding walk models of linear and branched polymers.

Overall Purpose of Postdoctoral Position

Within the general area of Monte Carlo Methods in Statistical Mechanics, guided by the supervisor, and within the bounds of the assigned research project(s) and mandate, a Postdoctoral Visitor will develop and implement Monte Carlo algorithms to simulate self-avoiding walk and related lattice models, generate and analyze data, and be involved in the writing of research papers on the results in collaboration and under supervision of Professor EJ Janse van Rensburg.

Key Responsibilities

- Become familiar with aspects the polymer entropy problem, including algorithms.
- Develop and implement C code for sampling lattice polymer models.
- Analyze results, and write up the results.

Skills and Qualifications	
Educational Qualifications	Applicants must have completed all requirements for a PhD.
Training/Experience Required	Experience in C programming and a PhD in Mathematics or Physics is required. Experience in Theoretical Statistical Mechanics or Solid State Physics will be an asset.

Terms and Conditions

This postdoctoral position based in the Department of Mathematics and Statistics will be for a maximum period of 1 year in length, and is subject to available funds.

Salary: $31,500 + benefits (subject to budgetary approval)

Note: There may be teaching opportunities up to a maximum of 1.0 FCE per year, with payment for any assigned teaching responsibilities equivalent to the prevailing rate for instruction in the CUPE 3903 Unit 2 collective agreement as adjusted annually.

How to Apply

- A cover letter
- A detailed and up to date CV
- Recent examples of publications and writings

Please submit all documents by email to Professor EJ Janse van Rensburg at [rensburg@yorku.ca] by September 30, 2023. Qualified applicants may be invited for an interview by telephone or Skype. Only those applicants selected for consideration will be contacted.