



UNSW
AUSTRALIA

Canberra

Postdoctoral Fellowship

Maximum Entropy Analysis of Turbulent Fluid Flows and/or Flow Networks

(funded by Australian Research Council Discovery Grant)

Never Stand Still

A postdoctoral research fellowship is available immediately at UNSW Canberra, on the maximum entropy (MaxEnt) analysis of turbulent fluid flows. The project is supervised by Dr Robert Niven of UNSW Canberra, Australia, in collaboration with Prof. Bernd Noack of Institut Pprime, Poitiers, France, and is funded by an Australian Research Council Discovery Grant. The fellowship concerns the application of Jaynes' MaxEnt method to the analysis of fluid flow systems, and could develop under one or more themes: (1) maximum-entropy closures of reduced-order Galerkin models of complex and turbulent flows; (2) construction and synthesis of maximum-entropy models of dissipative flow systems, including the effect of scale; (3) maximum-entropy and Bayesian model inference from turbulent flow experimental data; and/or (4) maximum-entropy modelling of flow networks, with specific attention to transport networks, chemical reaction networks and/or the turbulence cascade. It is anticipated that this project will lead to major advances in the theoretical and numerical analysis of turbulent flows and networked flow systems.

Candidates should have a background in one or more branches of the physical sciences, engineering or mathematics relevant to the project, as well as PhD-level expertise in the theoretical and numerical methods employed under at least one theme. Knowledge of the maximum entropy method of Jaynes is not essential but is highly desirable. A candidate with a strong track record in highly original research, with a demonstrated ability to cross disciplinary boundaries, is sought for the position.

The successful applicant, subject to satisfying Australian immigration and University recruitment requirements, will be employed under The University of New South Wales (Academic Staff) Enterprise Agreement 2011 and its successors. We currently seek a full-time postdoctoral researcher, for which the current taxable salary is AUD 81,844 (Level A, Step 6) plus substantial superannuation. The position is available for up to three years, subject to satisfactory progress reviews. However, we remain open to an appointment under different arrangements, e.g. for a shorter period, if necessary to attract an outstanding candidate. Applications will be accepted until a suitable candidate is found.

While employed in Australia, an essential requirement of this position is the need to undertake international research collaborations, especially in France and/or Germany. The successful applicant should therefore be willing and able to undertake lengthy (funded) international research visits to Europe as part of this position.

The Canberra campus of the University of New South Wales is located at the Australian Defence Force Academy (ADFA). This is located in an Australian bushland setting less than five kilometres from the city centre and the Canberra airport. The UNSW Canberra campus has a large and comprehensive library, state-of-the-art computing facilities and well-equipped, modern laboratories.

For further information and submission of applications, please contact:

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All email correspondence should be sent under the subject heading "Application for Postdoctoral Fellowship: MaxEnt Analysis", and cc'd to Prof. Bernd Noack at bernd.noack@univ-poitiers.fr