

Research Assistant - 12180

FURTHER PARTICULARS

JOB DESCRIPTION

Department/ Address:	Engineering Mathematics, Queen's Building		
Academic Faculty/ Support Services Division:	Engineering		
Staff Category/ Grade:	RA 1A	Salary Range:	GBP 20044 – GBP 24352
Hours of Work:	Full-time	Work Pattern:	
Contract Type:	2-year fixed		

Main Job Purpose:

Conduct independent research involving the development and analysis of mathematical models of human EEG rhythms and developing parameter fitting tools for fitting parameters of the model from clinical data

Responsibilities and Tasks:

Publication of results in international journals, presentation at conferences, interactions with colleagues, advising a Ph.D. student and regular meetings with clinical collaborators

Relationships and Contacts:

Line Manager: Dr. John R. Terry
Line Manager to, where appropriate:

Internal Contacts:

Staff in Department of Engineering Mathematics, Faculty of Engineering, School of Mathematics.

External Contacts:

UK and international academics; particularly the Dept. of Clinical Neuroscience, King's College London

Organisation Chart:

PERSON SPECIFICATION

The skills, abilities, experience and knowledge outlined below provide a summary of what is required to carry out this job effectively. They also form the selection criteria on which the decision on who to appoint will be made. Please ensure that you show how you meet the criteria outlined below in your application.

Relevant Experience, Skills and Knowledge

Essential	Desirable
Experience of mathematical modeling of neural systems and bifurcation theory; numerical methods; programming in C and Matlab.	Use of genetic algorithms and/or other techniques for parameter estimation from data. Familiarity with clinical data sets. Knowledge of physiological basis of Epilepsy

Relevant Qualifications

Essential	Desirable
PhD in Mathematics or a related discipline	

Communication and Interpersonal Skills

Essential	Desirable
Ability to work in multidisciplinary environment – particularly communication with clinical collaborators	

Additional Criteria

Essential	Desirable
N/A	

BACKGROUND INFORMATION

The overall aims of this RA project are to play a lead role in the development of a new approach to epilepsy seizure prediction based upon a mean-field modeling approach to human EEG rhythms. To this end, new PDE models will be developed based upon a neuroscientific understanding of basal ganglia-thalamocortical interactions. Mathematical techniques to analyse the models and understand transitions between healthy and seizure states will be performed. Close collaboration with clinical neuroscientists and a Ph.D. student will form a crucial part of the project. More specifically, the objectives for this project are:

- Develop a population-based model that can replicate the dynamics observed in clinically recorded EEG from patients with complex partial seizures.
- Develop algorithms that can use clinically recorded EEG data to determine specific parameters of mathematical models of human EEG.
- Analyse the models to determine criteria for propagation of abnormal dynamics from a focal region and isolate subsets of parameters, which can lead to changes between healthy and seizure type dynamics.

APPLICATION PROCESS

If you have received an application pack, please complete and return the enclosed application form in the envelope provided. Alternatively, you can complete the form on line or download a copy from our web site at www.bristol.ac.uk/vacancies To access the on line and downloadable versions of the form simply enter the vacancy reference number in the search facility.

Please note the following:

- We will only be able to consider you for this vacancy if you complete the application form. Whilst you are welcome to include a CV with your application form, a CV alone will not be considered.
- It is important that you quote the **reference number** on the application form.
- **The closing date for applications is 9.00am, 1st June 2006**

Non-EU Nationals please also note:

The University has a legal responsibility to ensure that all employees are eligible to live and work in the UK. For **academic and research vacancies or those that require highly specialist skills and qualifications** we will often be able to obtain a work permit for a suitably qualified applicant who is not currently eligible to work in the UK, if there are no suitable 'resident' (i.e. European Economic Area - EEA) candidates. **However, for vacancies that are not academic, research or highly specialist it is extremely unlikely that a work permit would be granted.** In such cases we will therefore be unable to consider an application from someone who is not currently eligible to work in the UK. If you have any queries regarding your eligibility to apply for one of our vacancies please e-mail recruitment@bristol.ac.uk

Additional Information

New pay and grading structure

The University is developing a new pay, grading and terms and conditions structure that will be applied across all staff groups. All our jobs are currently being evaluated and we plan to implement a new structure by no later than August 2006. You can find further information at www.bris.ac.uk/personnel/reward/

SELECTION PROCESS

It is expected that interviews will be held in the week commencing 3rd July 2006.