High Performance Computing for Multi-Scale Analysis

4 Year EPSRC Scholarship: MSc plus PhD

Project Description

This is an EPSRC High Performance Computing studentship. Funding is for four years from autumn 2008 (subject to satisfactory progress). This includes a unique combination of a 1 year MSc programme in High Performance Computing at EPCC Edinburgh (www.epcc.ed.ac.uk) and a 3 year PhD programme at the Civil Engineering Department of The University of Glasgow (www.civil.gla.ac.uk). Through the unique HPC training, the student will acquire cutting edge skills in high performance computing. The proposed project will then allow him/her to build upon and hone these skills beyond the MSc training.

The large scale simulation of structures comprising heterogeneous materials represents a considerable engineering and computational challenge. The complex macroscopic behaviour of many engineered and natural materials is rooted in the mechanics of the underlying heterogeneous microstructure. *Multi-scale analysis* techniques aim to capture this macroscopic behaviour via the detailed modelling of the microstructure and represent an exciting and rapidly developing research field with wide application.

The University of Glasgow has developed a Finite Element based computational modelling environment for multi-scale analysis of heterogeneous materials. It is proposed that the research student will develop this environment for high performance computing and, in particular, focus on the development of an appropriate iterative solver.

This project represents part of a wider initiative in high performance computing in Engineering at The University of Glasgow.

Financial Arrangements

The studentship includes the standard EPSRC stipend (£12,940 per annum in 2008/09) and UK/EU fees. Please note that the fees and stipend are available to UK residents. Fees only are available to EU students. Full details on eligibility can be found at:
http://www.epsrc.ac.uk/PostgraduateTraining/StudentEligibility.htm

Required Qualifications/Experience/Skills

Candidates must have a good first degree (or equivalent) in Engineering, Mathematics, Physical Sciences or Computer Science. Candidates must be a competent programmer in Java, C++, C or Fortran. Good communication skills in English, both oral and written, are also essential. Knowledge of Engineering Mechanics is desirable. The successful applicant is expected to conduct independent research leading to original contributions to the PhD project, culminating in a PhD thesis.

Contact Details and How to Apply

All enquiries to Dr. Chris Pearce (Email: pearce@civil.gla.ac.uk, Tel: 0141 330 5207).

To apply, please send

1. A covering letter, setting out your motivation for undertaking this project;
2. Curriculum Vitae;
3. Contact details of two referees.