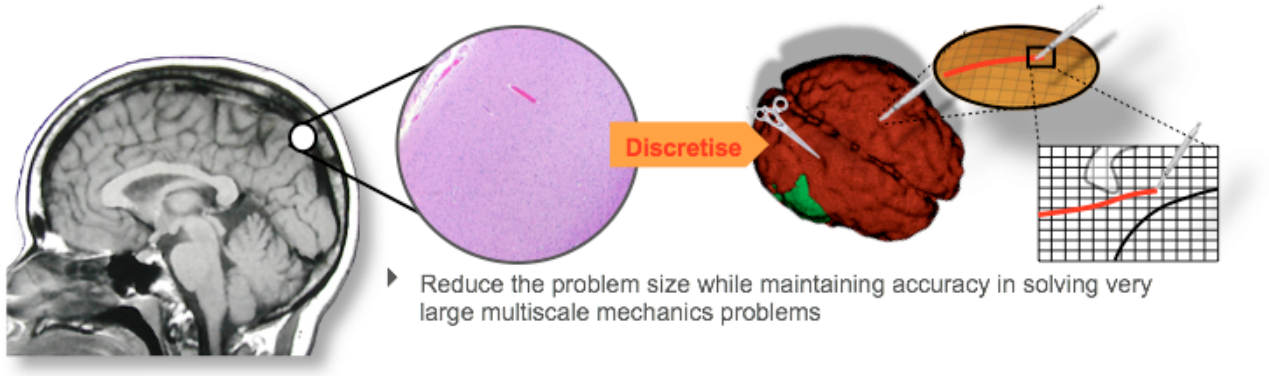
ERC Starting Independent Research Post-Doctoral Researchers

3 Post-Doctoral Fellows over 5 years

Towards real time multiscale simulation of cutting in non-linear materials with applications to surgical simulation and computer guided surgery (RealTCut)

Three post-doctoral positions are available over 5 years at Cardiff University in the framework of an ERC Starting Independent Research Grant with Prof. Stéphane P.A. Bordas and Dr. Pierre Kerfriden, in collaboration with Prof. Karol Miller (University of Western Australia).

APPLY NOW:
http://www.cardiff.ac.uk/jobs/engin/research-assistants--research-associates-3-posts-4631.html
http://www.jobs.ac.uk/job/ADO953/erc-starting-independent-research-assistant-research-associate/



"ERC Starting Grants aim to support up-and-coming research leaders who are about to establish or consolidate a proper research team and to start conducting independent research in Europe. The scheme targets promising researchers who have the proven potential of becoming independent research leaders. It will support the creation of excellent new research teams and will strengthen others that have been recently created."
http://erc.europa.eu/starting-grants

Objectives The main objective of this ERC Project is to enable faithful simulations of surgical operations in (quasi-) real-time. This objective will be achieved by developing a modern solver based on advanced numerical methods: multiscale methods in space and time reduced order modelling and advanced discretisation techniques.

Candidates with experience in at least one of the following areas of computational mechanics will be considered:

- model order reduction (e.g. proper orthogonal decomposition – POD)
- advanced discretisation techniques (extended finite element methods/meshless methods)
- nonlinear solid mechanics simulations (large-deformations and fracture)
- multiscale methods (especially in relation to fracture/cutting)
- high performance computing (domain decomposition, preconditioning, multigrid algorithms,solvers, etc.)
- error estimation and adaptivity (if possible in the context of multiscale or non-linear problems more generally)
- non-rigid image registration.

Environment The three successful candidates will join the vibrant ERC Research Group (RealTCut), led by Prof. Stéphane Bordas and Dr. Pierre Kerfriden within the institute of Mechanics and Advanced Materials (iMAM), at Cardiff School of engineering.

http://www.engin.cf.ac.uk/research/resInstitute.asp?InstNo=13 This group will be composed in 2012 of at least 7 PhD students and two post-doctoral fellows. Frequent visits to RealTCut's international collaborators will be organised and the work will be performed with close links to the School of Mathematics.

Related projects The project will be cross-fertilised by the Initial Training Network (ITN) "Integrating Numerical Simulation and Geometric Design Technology (INSIST)" (13 Early Stage Researchers and 2 Experienced Researchers), two ongoing EPSRC Projects on error estimation for cracks using XFEM: http://gow.epsrc.ac.uk/ViewPerson.aspx?PersonId=-160701 and an IRSES (FP7) grant on multiscale fracture.

Eligibility The applicant is required to have completed (or be close to completion) a Ph.D. thesis. A significant track record in computational mechanics must be demonstrated. We are interested in candidates displaying excellent academic skills, an ability to work as part of a team (close collaboration with other post-docs, supervision of Ph.D. and Masters students), and who have good communication skills.

Application process Candidates should

1) send a declaration of interest by email to Prof. Stéphane P. A. Bordas and copy Dr. Pierre Kerfriden (information below), with a CV and a list of publications attached, and provide the name of three potential referees supporting the application.
2) Request an application pack from +44 (0)29 2087 4017 or Vacancies@cardiff.ac.uk

Start date

Posts can start between January 2012 and June 2012 depending on the availability of the applicants.

Salary and benefits

£24370 - £28251 per annum (Grade 5), £29972 - £35788 per annum (Grade 6).

Contact

stephane . bordas @ alum . northwestern . edu
pierre . kerfriden @ gmail . com (CC for all applications)

Links

Professor Bordas' research portfolio: http://www.researcherid.com/rid/A-1858-2009
iMAM webpage: http://www.engin.cf.ac.uk/research/resInstitute.asp?InstNo=13
Professor Bordas' blog on iMechanica for details on the projects and additional research openings: http://imechanica.org/blog/700