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Post-Doc fellow in sensitivity analysis in an electrocardiology model

Would you like to participate in an innovative cardiac research project?

Join the Heart Rhythm Disease Institute (Liryc), University of Bordeaux! Liryc is organized into clinical research teams that work closely with fundamental science teams. Its aim is to offer a unique medical research platform and a training centre for students and researchers from all over the world.

In collaboration with the Carmen team, part of the Modelling Team, we design and analyze new numerical models to simulate the electrical and mechanical activity of the heart.

In close collaboration with the French National Institute for Research in Computer Science and Control (INRIA), and as part of the European SimCardioTest project, we are recruiting a **Post-Doc fellow in sensitivity analysis in an electrocardiology model**.

Main activities:

Your mission will be to perform sensitivity and uncertainty propagation analysis in a pacemaker model of cardiac excitation. The model consists of partial differential equations of reaction – diffusion (bidomain model) coupled by boundary conditions to differential equations.
Approximate solutions are calculated by finite elements using a C++ calculation code (CEPS – Cardiac Electrophysiology Solver).
This numerical model is used to calculate stimulation threshold curves called Lapicque curves.

The research project consists in studying the sensitivity of the Lapicque curves to the different parameters of the model and studied the effect of the uncertainties of the most influential parameters.
The model was established in the first part of the project. We now need to conduct model validation activities based on the exploitation of experimental data and this sensitivity analysis. These activities are guided by ASME (American Society Of Mechanical Engineering) V&V 40. They have been described in detail in a project deliverable.

Applied mathematics and HPC

- You organize virtual experiments on a computer and analyze the data produced
- Conduct high performance computing (HPC) simulations and write data processing tools to analyze results

Scientific dissemination

- Contribute to writing scientific papers
- You participate in scientific events

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Your skills:

Holder of a PhD in PhD in Applied Mathematics or Scientific Computing, you have a solid knowledge of partial differential equation models and analysis is sensitivity of this type of model.

- You are autonomous in your work organization
- Proficient in programming in Python, C++ (preferred) and use scientific calculation codes
- You are analytical
- You enjoy working as a project team and sharing your results
- You are fluent in English (level C1 / B2) written and spoken in a multicultural work environment

Do you recognize yourself? Apply!

More information:

By joining the Carmen team on this project, you will be involved in a multidisciplinary and passionate collective whose fields of expertise are at the service of the advancement of cardiac medicine.

Based in Talence (Gironde, FRANCE) – access by tramway line B (stop « France Alouette ») buses, bike.
The laboratory is near the city-centre of Bordeaux and about 60 Km of the Atlantic coast.

22months fixed-term contract (until the 30/04/2026)

Salary gross: from 2700€ to 3000€ according the salary grid

NB: the position is based in a laboratory in the Restrictive Zone, which requires an investigation prior to hiring, which can take up to 8 weeks.

Job Benefits:
50 days of vacation from the first year of collaboration
Remote working possible according to needs and organization of the service
Refill of 75% of the subscription to the public transport
Participation in the private healthcare up to 15€ / month
Leisure, sport and culture for all staff
Disabled-friendly establishment
Possibility of staff parking
Sustainable mobility package for commuting – work

Recruitment process: Applications are reviewed as they arrive.

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Candidates selected for an interview will be contacted by the Recruitment Officer for a first pre-qualification phone conversation. An interview with the supervisor will then be organised by videoconference.
Interested applicants should send a CV, brief statement of qualifications and basis for interest in the position, copies of up **to 3 relevant publications, and the email addresses of 2 appropriate references**.

Link to job offer: https://www.u-bordeaux.fr/universite/travailler-a-l-universite/offres-demploi/post-doc-fellow-sensitivity-analysis-electrocardiology-model

Please note that to be admissible, you must apply to the job offer or send e-mail with your documents at: job-ref-znwtw8ubnb@emploi.beetween.com