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Research engineer in scientific computing

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

Join the Institute of Heart Rhythm Diseases (IHU 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.

Within the Carmen team that is part of the Modelling Division, we design and analyze new numerical models to simulate the electrical and mechanical activity of the heart.

In close collaboration with Inria, and as part of the European [SimCardioTest](#) project, we are recruiting a **Research Engineer in Scientific Computing**.

Main activities:

Your mission will be to analyze and improve the efficiency of the Cardiac Electrophysiology Solver ([CEPS](#)). It is a tool for numerical simulation of models in cardiac electrophysiology. It is central to the Carmen project team that uses it to develop numerical methods and physical models. CEPS is a parallel computing code (MPI) that solves partial derivative equations by finite element method and time schemes specific to the field of cardiac electrophysiology.

Not all CEPS defects have been identified. We have already listed:

- PETSc library dependency as a critical point for CEPS API performance and flexibility
- the partitioning of the meshes, carried out with SCOTCH must be audited
- inputs and outputs

#Inventory and improvement of the tool

- You perform a performance review of CEPS on an example of physical use
- You participate in thinking about improvement solutions

#Programming

- You analyze and profile the CEPS code
- Optimize code in C++
- You ensure the maintainability of the code (tests, documentation, etc.)
- Identify and integrate an alternative solver to PETSc

Your skills:

Holder of an Engineer or Master's degree in Scientific Computing or HPC, you have ideally done at least one internship on this topic.

- You are comfortable with teamwork
- Good analytical skills and ability to formulate technical solutions
- Proficiency in C++ and MPI programming



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- Good programming practices (Git, integration, testing)

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 2400€ to 2500 € 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.

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.

Link to job offer: <https://euraxess.ec.europa.eu/jobs/214603>

Please note that to be admissible, you must apply to the job offer or send e-mail with your documents at: job-ref-uod255zinz@emploi.beetween.com