

1 PhD position / Early Stage Researcher

PhD fellowship funded through the Marie Skłodowska-Curie action

The Biomedical Signal Interpretation and Computational Simulation (BSiCoS) group of the Aragon Institute of Engineering Research (I3A) at the University of Zaragoza, Spain, is one of the institutions in the new EU-funded project "Personalised In-silico Cardiology" (PIC). The PIC project is an Innovative Training Network funded through the Marie Skłodowska-Curie action of the EU. It will support 15 young researchers working in 10 different European research institutions and companies. We are seeking excellent candidates for a PhD fellowship on patient-specific computational modeling of cardiac electrophysiology. The project will be performed in collaboration with IHU Liryc, the Cardiac Rhythmology and Modeling Institute in Bordeaux, France. The PhD fellow will be based at the I3A in Zaragoza, and will make regular working visits to Bordeaux.

The I3A Institute at University of Zaragoza

The Aragon Institute of Engineering Research (I3A), within the University of Zaragoza, comprises more than 500 researchers and a vibrant environment for multidisciplinary research. I3A has gained notable national and international recognition. Every year I3A participates in more than 300 research projects funded with over 10 M€ and more than 200 contracts with industry with 5 M€ turnover. Around 50 PhD theses supervised by I3A members are defended and nearly 300 papers are published in JCR journals every year. The Biomedical Signal Interpretation and Computational Simulation group at I3A, University of Zaragoza is a leading expert in the development of signal processing tools to aid in the diagnosis, prognosis and treatment of cardiovascular diseases and conditions. The expertise in processing of invasive and non-invasive signals is combined with modeling and simulation of cardiac electrophysiology to provide insight into the mechanisms underlying phenomena observed from the processed signals.

IHU Liryc and Inria Bordeaux

IHU Liryc is an interdisciplinary institute dedicated to research on cardiac arrhythmia, within the Université de Bordeaux, France. Directed by Professor Michel Haïssaguerre, it comprises over 130 researchers from over 20 different countries. In collaboration with Inria, the French national institute for numerical science and informatics, IHU Liryc has a cardiac modeling team with a large experience in cardiac modeling from the cellular level to the electrocardiogram. In addition, cardiologists at IHU Liryc treat patients with arrhythmia every day, providing a wealth of data and clinically relevant research questions. Furthermore, IHU has experimental facilities where measurements on the tissue, cellular, and sub-cellular level can be made.

The position

The position within PIC relates to personalization of cardiac cell and tissue electrical models based on available clinical data, including signals measured on the body surface (ECG). Inter- and intra-individual variability will be represented through identification of cell parameter values across the myocardium. The developed methods will rely on the access to a wide range of clinical / experimental data and our expertise on the formulation of stochastic models. The developed methods will have diagnostic and prognostic value, and will be used in simulations to predict individualized risks to drugs (in collaboration with University of Oxford) and the optimal treatment of cardiac diseases (in collaboration with King's College London and IHU Liryc). The PhD fellow will be directed by Dr Esther Pueyo (I3A) and co-directed by Dr Mark Potse (IHU Liryc). A double PhD degree (Zaragoza and Bordeaux) is possible if the candidate wishes.

Qualifications

- Must have a University degree in Engineering, Mathematics or Physics plus Master of Science degree in related disciplines.
- Experience in signal processing, statistical data analysis and numerical simulations is advantageous.
- Experience with at least one compiled language and one scripting language is required; experience with Linux or another unix-like operating system is advantageous.
- The candidate must have a working proficiency in English.
- Strong academic record both for University degree and Master of Science degree.
- Interest in clinical and experimental studies is desirable.
- Emphasis on teamwork, innovation, being dynamic and enthusiastic as well as collaborating well with other members of a team.
- **Special rules imposed by the Marie-Curie program:**

The candidate shall, at the time of recruitment by the host organization, be in the first four years (*full-time equivalent research experience*) of their research careers and have not been awarded a doctoral degree.

At the time of recruitment the candidate must not have resided or carried out his or her main activity (work, studies, etc.) in Spain for more than 12 months in the 3 years immediately before the reference date. Compulsory national service and/or short stays such as holidays are not taken into account.

Application

Relevant certificates, including all grades, credits and marks and recommendation letters must be submitted along with the application. Certified copies of study credits with grades will be needed from those called to an interview.

For further information about the position please contact Associate Professor Esther Pueyo (epueyo@unizar.es)

Application deadline: 3rd November 2017.