



RECRUITMENT OF FULL PROFESSORS 2020 SESSION

Grenoble INP, Engineering Institute of the Univ. Grenoble Alpes, labeled Initiative of Excellence, is a public institution offering engineering courses with solid basic scientific content, a high technological specialization in connection with strong societal challenges related to digital, industrial, environmental and energy transitions. and a major internationalization of its courses. Grenoble INP employs more than 1,200 people (associate and full professors, lecturers, administrative and technical staff) and has 5,500 students in its 6 engineering schools (Ense3, Ensimag, Esisar, GI, Pagora, Phelma) and the Prépa des INP. From 2020, Polytech Grenoble and Grenoble IAE join Grenoble INP and considerably expand its training offer. Grenoble INP is recognized in national rankings as one of the leaders in engineering with international visibility. It is member of international engineering networks as well as the European university UNITE!.

Grenoble INP is a mother institution of more than 30 research laboratories, some of them international, and platforms where state-of-the-art research is carried out to develop knowledge, promote it to our industrial partners and transfer it to students. Grenoble INP is thus at the heart of the technological challenges of the future: Energy and materials; Digital sciences; Micro nanotechnology; Future industry and eco-efficient production in which international rankings recognize it as a leading player.

POSITION DESCRIPTION

Short profile : (150 caractères max) - **CONVERGENCE ENERGY-DATA SCIENCES**

Research: Convergence energy - data sciences for the modelling and control of power grids

Teaching: To contribute to strengthen the digital aspects of teaching activities on electrical engineering at the ENSE3 engineering school, possible responsibilities to be envisaged in the management of the school, in the development of course offering, of technical/experimental platforms, in the development of the international influence of ENSE3.

Category : PR (Full Professor)

Job number : 63 PR 0368

Field of expertise :

Section 1 : 63 (Electrical Engineering)

Recruitment date: 01/09/2020

Location : Grenoble

Restricted regime area (ZRR) : YES NO
(French governmental protection of scientific and technological research program)

Key words : electrical device models, optimization methods, uncertainties, computer architectures, optimization methods

TEACHING

School: Grenoble-INP - ENSE3

School website : <http://ense3.grenoble-inp.fr/>

Contact person: delphine.riu@grenoble-inp.fr

Teaching activities will take place at Ense3 school, focusing on the 3 years of the engineering degree.

The person recruited will be in charge of various electrical energy courses over the three years mainly at M1 and M2 levels in the following specialities, "Electrical Power Engineering", "Energy Systems and Associated Markets", in the International Master "Smart Grids and Buildings", in the advanced Master "Energy Management and Marketing" at ENSE3 and Grenoble Ecole de Management as well as in the future master "Energy and Environmental Transitions of the Territories" at ENSE3 and Ecole Nationale Supérieure d'Architecture de Grenoble (ENSAG). Finally the person recruited will be involved in the apprenticeship training as well as in training for professionals issued from the industrial partnerships of ENSE3.

The person will take part in cross-curricular courses of the school, notably the supervision of student projects (engineering, industrial or research projects in 2nd and 3rd years), but also in the innovative educational activities (creativity, innovation, problem-based learning, Fablab, ...).

The recruited person will have to contribute to reinforce the numerical aspects of electrical engineering where systems collaborate and communicate all together. The recruited person will reinforce the latter aspect by developing new practical teaching sessions in connection with the various experimental platforms of the school. The recruited person will also participate in the evolution of the school about energy transition.

The person recruited will take responsibility for steering the school and developing its training offer. A significant contribution to the international recognition of ENSE3 school and to the development of the technical platforms are also expected.

The recruited person will integrate multiple aspects of interculturality with good abilities in English for teaching at international scale.

RESEARCH

Research laboratory: G2ELAB (UMR 5269 Grenoble-INP, UGA et CNRS)

Web site : <http://www.g2elab.grenoble-inp.fr/>

Contact: Nouredine.Hadjsaid@g2elab.grenoble-inp.fr

Context and motivations:

Data science introduces deep transformations in different technological sectors with significant impacts on all value chains.

In the field of electrical energy, smartgrids have been illustrating this growing interpenetration of digital technologies and electrical systems, including uses, over the past two decades. Moreover, it also concerns all the uses related to this system, whether at the level of smart energy management in buildings or districts or of electric vehicles,

Thus, the global system view is a key aspect of the research to be carried out in this position.

Indeed, to build methods and tools for smart power grids, it will be necessary to build research at the interfaces, applying new digital technologies (big data, cloud computing, machine learning, design, simulation and optimization) to a detailed knowledge of current methods of energy distribution, transformation and use, in order to optimize components and systems in their design, planning, management and operation...

Description of the research axes associated with the position:

Scientific developments will concern:

- The development of models of electrical devices that can be used in the design phases (simulation and optimization) and in the "In situ" management phases.
- The development of optimization methods (linear, non-linear, stochastic,...) that can be used in the design and management phases In-situ
- The development of methods to take uncertainties into account in order to carry out reliable simulations and optimizations
- The development of IT architectures that will allow the models to be used both in the design phases and for implementation in order to ensure optimal "In-Situ" management. These "In-situ" solutions will have to be implemented on connected objects, the cornerstone of a future energy internet within a building or district. This district is itself part of a smart grid where the issue of large amounts of data from many sensors and smart meters also implies the deployment of massively connected components at the interface of users who, in turn, will

structure themselves into a community of actors and users.

These developments will be based on the PREDIS platform in the new GreEn-ER buildings and on the CDP Eco-Sesa "Safe, efficient, sustainable and accessible energy district" in which these issues are addressed in an interdisciplinary manner, in the context of engineering and human, social, territorial and economic sciences.

In a few years, the G2Elab has acquired a very visible position on this topic in the inter-disciplinary construction sector, with international developments (junction with Berkeley, participation in Annex 60 of the International Energy Agency). This position will serve to consolidate this leadership in the field of energy self-sufficiency, taking advantage of the local context and strengths (dynamics around GreEn-ER, collaboration with the INES Chambery...).

The excellence of the applicants' research activities must be certified by recent publications in high quality international journals or conferences in their field.

PARTICULARITIES AND CONSTRAINTS

Please consider teaching and research profiles.

HOW TO APPLY

Online application must be done on the website Galaxie from february the 25th 2020, 10 am (GMT+1) to april the 09th 2020, 16 pm (GMT+1). Postal applications won't be accepted.

The interview will include simulation/situational exercises. The interview will be held in French; a part of it could be held in English. Further information will be provided with the letter of convocation.