



FULL PROFESSOR RECRUITMENT 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 : Information theory and signal processing for digital communications

Category : Full Professor

Job number : 61 PR 0543

Field of expertise :

Section 1 : Computer Engineering, Automatic and Signal Processing

Recruitment date : 1st September 2020

Location : Grenoble

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

Key words : Information theory and signal processing for digital communications, RF communications, wireless optical communications

TEACHING

School: Grenoble INP - Phelma

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

Contact : patrice.petitclair@grenoble-inp.fr

Grenoble INP Phelma is one of the six engineering schools of the Grenoble Institute of Engineering. It offers to its students a wide range of training courses at the cutting edge of micro & nanotechnologies, instrumentation, energy, innovative materials, information technologies, biomedical engineering, process engineering and environment. Phelma receives more than 1400 students in 12 engineering fields, one of which is through apprenticeship, and about ten master's diplomas. The teaching team consists of 110 full-time teachers. The administrative and technical team has 54 staff. The school is present on two geographical sites, site of Minattec Grenoble and site of Saint-Martin d'Hères.

Teaching profile :

Signal and information processing is an integral part of training in analogue and digital electronics and instrumentation. This discipline represents nearly 15% of the teachings within Phelma. The candidate recruited will have to take part in the signal processing courses in general, both in the first year and in the Signal Images Communication and Multimedia (SICOM, courses in common with Ense3), Biomed (Biomedical Engineering) and Embedded Systems and Connected Objects (SEOC, courses in common with Ensimag) trainings. He/she will also be able to provide lessons in networks, wireless sensors, intelligent autonomous distributed systems within the school: his/her lessons will therefore be integrated in the chain from the sensor to the decision. The recruited candidate will thus have to play a leading and major role in the overall organization of the teaching in signal processing at Phelma.

The ability to teach in English will be an undeniable asset.

RESEARCH

Research laboratory: Gipsa-Lab (UMR 5216 Grenoble-INP, UGA et CNRS)

Website : <http://www.gipsa-lab.fr/>

Contact : jerome.mars@grenoble-inp.fr

Gipsa-lab is a CNRS research unit joint with Grenoble-INP (Grenoble Institute of Technology), University Grenoble-Alpes. It has agreements with INRIA, Observatoire des Sciences de l'Univers de Grenoble. With 350 people, including about 150 doctoral students, Gipsa-lab is a multidisciplinary research unit developing both basic and applied researches on **complex signals and systems**. Gipsa-lab is internationally recognized for the research achieved in **Automatic Control, Signal and Images processing, Speech and Cognition**. The research unit develops projects in the strategic areas of energy, environment, communication, intelligent systems, Life and Health and language engineering. Thanks to the research activities, Gipsa-lab maintains a constant link with the economic environment through a strong partnership with companies.

In recent years, GIPSA_Lab has been developing research in digital communications: Equalization, synchronization, compression, channel coding, channel modeling, antenna processing. In recent years, these activities - which need to be sustained - have been developed in new directions, in interaction with industrial or institutional partners (Orange, CEA, startups, other universities and research centers in France or abroad). GIPSA lab, and its future pole GAIA (Geometry, Information Algorithms), wishes to significantly strengthen interactions between digital communications and the most recent methods of signal processing and AI (artificial intelligence, learning statistical).

Research profile :

In the specific context of modern digital communications, the areas of research to be carried out in the GIPSA-Lab will mainly concern the interactions between digital communications and information processing, signal

processing, artificial intelligence. This research must cover both theoretical and practical problems. These practical aspects should be conducted with industrial and institutional partners.

Since 15 years, important fields have been initiated by GIPSA-Lab and they will have to be reinforced in emerging directions such as:

- RF communications on highly fluctuated transmission channels.
- Dynamic estimation of channel (amplitudes, phase and doppler, delays, clocks, RF imperfections).
- Algorithms inspired by Phase Locked Loop (PLL) and Kalman filters.
- Theoretical study of the performances.
- Modulations at low energy cost adapted to the IoT. Compressive sensing
- Dynamic spectrum management: spectrum sensing, cognitive radio.
- New AI paradigms in the telecom (channel learning, waveform, codes, Generative Adversarial Networks - GAN).
- Multisensor transmitter and receiver design (channel formation, MIMO)

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

As a full professor, the recruited candidate will immediately have to be involved in the pedagogical responsibilities of the school, either as a responsible of an engineer field, or with transversal responsibility, international relationships or corporate relationships for example.

The courses may be given on the school's 2 sites : Grenoble and St Martin-d'Hères.

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.