

Associate professor or full professor position in digital communications - ref. #896



1 Context

ISAE-SUPAERO is a world leader in aerospace engineering higher education; it hosts notably masters of science, advanced masters and PhD programs.

At the Department of Electronics, Optronics and Signal processing (DEOS), the Communication and Information Theory (ComIT) group educates students and conducts research on theoretical and applied aspects of digital communications for satellite and aeronautical applications. The group includes around ten faculty members and temporary researchers (PhD students, post-doctoral fellows, interns), as well as experimental facilities based on software-defined radio transceivers (<http://isae.fr/deos/commit>).

The group has an expertise in military and civilian applications, particularly with satellite transmission systems. Many research projects are thus supported by DGA and/or by defense industries (Airbus DS, Thales, MBDA, etc.). Three major research areas are articulated with a good balance of theory and applications: (i) design of efficient, robust and secured waveforms, (ii) advanced reception techniques, (iii) efficient resource allocation in a multiuser environment. The ComIT group also strongly participates in the Institute's training programs, particularly in courses related to Newspace topics (*e.g.*, constellations, nanosatellites, interoperability with terrestrial communications).

The ComIT group is currently looking for an associate professor or a full professor with advanced skills in digital communications and interested in space applications.

2 Missions

2.1 Teaching duties

You will teach in the different Institute's training programs: *ingénieur*, masters of science, advanced masters, continuing education. You will take on responsibilities commensurate with your skills, experience and qualifications. You will help continuously improve our curriculum.

You will be involved in teaching units related to Newspace challenges such as constellations dimensioning, inter-user interference mitigation, dynamic resource allocation, interoperability between terrestrial and satellite waveforms, beamforming *via* swarms of satellites, multifunction waveform design (*e.g.*, communications and radar).

For example, you will

- design, develop and teach in telecommunications in all of the Institute's training programs, particularly using information and communication technology (ICT) resources;
- reinforce courses on satellite constellations (*e.g.*: sizing, waveforms, resource allocation) if possible while using available experimental platforms (*e.g.*: software-defined radio);
- take responsibility for teaching units (common core or majors);
- maintain a network of teaching assistants from academia and industry;

- supervise student projects (2nd and 3rd year projects, end-of-study internships, master's research projects, etc.);
- develop state-of-the art courses with other teaching members in communications and related topics (*e.g.*, constellation of satellites within the framework of Newspace);
- promote ISAE-SUPAERO training programs at the national and international levels;
- take on responsibilities in the Institute's training programs.

2.2 Research duties

You will join the ComIT group and conduct research in digital communications with an emphasis on space, aeronautics and/or defense applications. You will contribute to the scientific production of ISAE-SUPAERO. You will build and strengthen a network of partners (academia, government and industry).

For example, you will

- conduct research in the field of signal processing applied to telecommunications in coherence with the ComIT group activities while developing your scientific domain;
- collaborate with laboratories and universities on an international and/or a national scale, as well as with the other departments of ISAE-SUPAERO;
- contribute to the influence of ISAE-SUPAERO's research activity by publishing your work in top international journals and conferences and participate in learned societies, professional associations, competitiveness clusters and more generally in the local, national and international telecommunications ecosystem;
- supervise young researchers (PhD students, post-doctoral fellows, interns);
- attract funding *via* academic and industrial partnerships; promote technology transfer.

3 Candidate profile

You hold a PhD in telecommunications.

You must have acquired, through your initial training and/or experience, a good knowledge of telecommunications businesses and underlying required skills in order to design and implement coherent courses in this area (if possible, with a prior background on satellite communications). You have a taste for teaching, didactics and the desire to invest in an ambitious training project.

A successful research experience is required after the PhD. It must be validated by international publications in top journals. Research skills are expected in disciplines such as optimization (*e.g.*, resource allocation) or statistical signal processing (*e.g.*, estimation/detection). You have demonstrated the ability to conduct research projects in collaboration with institutional and industrial partners.

4 Contacts and application procedure

Contacts for additional information:

- Damien Roque (head of the ComIT group) - <mailto:damien.roque@isae-supero.fr>;

- David Mimoun (head of the DEOS) - <mailto:david.mimoun@isae-supaero.fr>.

Application details:

- send CV, cover letter, research/teaching statement *via* <https://recrutement.isae-supero.fr/fr/annonce/1938999-enseignant-chercheur-en-telecommunications-hf-fdp-n896-31400-toulouse>;
- application deadline: 31-Mar-2023;
- salary: according to professional experience.