

PhD position: Researcher in the field of mmWave active antenna systems.

The next-generation mobile communication systems (e.g. 5G) and the Internet of Things (IoT) attract a lot of attention from industry and research centers around the globe, as they open up new and exciting applications and consumer markets. However, the requirements of high data-rate, massive numbers of interconnected devices, and inconspicuous integration pose immense challenges that cannot be solved with the current technology stack.

Increasingly shrinking (CMOS) transistor sizes & improving performance brings the mmWave (30-300 GHz) frequency range into view. It has high potential to fulfill the needs of future communication systems, owing to the large bandwidth, (mostly) unused spectrum, and small wavelength size. The wired/wireless interface (i.e. antenna systems and their interfacing with other front-end circuitry) are of major importance, as they directly influence the achievable bandwidth, communication range, and overall system efficiency. The increasing operating frequency create a myriad of opportunities, but also of challenges, as “low frequency” design methodologies and fabrication techniques are unsuited or too limited for application at mmWaves due to the increased sensitivity to parasitics and to the need to accurately model interconnects. Therefore, research must be performed into novel antenna solutions and their integration with other front-end components.

Job description

- High quality research and engineering design focusing on mmWave (active) antenna systems for 5G and future internet applications
- Development of innovative concepts for mmWave antenna systems, System-on-Package realizations & mmWave measurement procedures
- Publishing and presenting results both at international conferences and in scientific journals
- Working towards realizing a PhD in about 4 years.
- Participation in the framework of European and national research projects (in collaboration with industry).

Requirements

The ideal candidate:

- Master of science in Electrical Engineering or Engineering Physics
- Solid background in Antennas & Propagation, Electromagnetism, microwave engineering, and analog electronics with excellent study results.
- Working knowledge of CAD tools such as CST Microwave Studio and Keysight ADS
- Working knowledge of scripting languages such as Python and Matlab
- Fluent in English, both orally and in writing. Experience with scientific writing is a plus.
- Self-driven & independent worker, with a well-developed analytic mind and ability to combine theory and experiment
- Good communication skills and ability to work in an international team

- Willingness to participate in national and international collaboration and to travel
- Willingness to work in the clean room

Offer

- This project enables you to work in an inspiring environment with a team of enthusiastic colleagues on a highly timely research topic.
- Competitive salary with holiday- and end-of the year allowances
- Doctoral schools program: opportunity to develop technical, social, and transferable skills.
- Optional assistance to find appropriate accommodation.
- Access to state-of-the-art research labs and clean rooms

Application procedure

Review of applications starts and will continue until the position is filled, but for full consideration please applying before June 30th, 2017. If you are interested in this job opening and your profile corresponds to the requirements listed above, please

- Send your motivation letter and CV to sam.agneessens@ugent.be, indicating “Application: mmWave antenna systems” in the subject.
- Include a motivation letter explaining clearly the relevance of your skills for the position.
- Include the name, email address, phone number and some recommendation letter of at least two persons that we can contact for references.

Evaluation procedure

- Analysis of CV
- Analysis of Master thesis and other scientific publications (if any)
- Interview

We

Inter-university Microelectronics Center (imec) is a world-leading independent research center in nano-electronics and digital technology. imec is headquartered in Leuven, Belgium, and also has distributed R&D groups at a number of Flemish universities (such as Ghent University), in the Netherlands, Taiwan, USA, China, and offices in India and Japan. Imec staffs more than 3500 people including over 600 industrial residents and guest researchers. imec's uniqueness relies in the combination of a widely acclaimed leadership in microchip technology and a profound software and ICT expertise. imec leverages its world-class infrastructure and local and global ecosystem of partners across a multitude of industries to create innovation in application domains such as healthcare, smart cities and mobility, logistics and manufacturing, and energy. imec's research bridges the gap between fundamental research at universities and technological development in industry.

IDLab is a core research group of imec with research activities embedded in Ghent University and University of Antwerp. IDLab performs applied research and development of high speed and densely

deployed wireless Internet technologies and data science. IDLab's research areas cover machine learning and data mining; semantic intelligence; distributed intelligence for IoT; cloud and big data infrastructures; multimedia coding and delivery; wireless and fixed networking; electromagnetics, RF and high-speed circuits and systems. The IDLab team counts about 300 members (40 professors, 50 post docs, 200 researchers, 15 support staff members). Innovative solutions are developed both through fundamental research projects, as well as through collaborations with international industry partners. A well-established experimental test environment and a number of technology platforms support these activities.

EM group of IDLab, originally founded in 1964 by Prof. Jean Van Bladel, has as its mission to perform ground-breaking research and offer top-class academic courses on the fundamentals of Electromagnetic fields and their application in Electrical and Applied Physics Engineering. Current research topics range from the computational solution of Maxwell's equations for extremely large and complex simulation geometries, over the design of active antenna systems and the characterization of radio wave propagation, to Electromagnetic Compatibility and Signal/Power Integrity.