

Post-doc Position “Technologies for Large-Scale Programmable Photonics”



Ghent University – IMEC, Photonics Research Group
Tech Lane Ghent Science Park – Campus A
Technologiepark – Zwijnaarde 126, B-9052 Gent, Belgium

Job context:

We are looking for a motivated postdoctoral researcher to work on large-scale photonic integrated circuits (silicon photonics) where thousands of tunable elements can be programmed to perform any optical function, e.g. an arbitrary linear transformation. This research is part of the ERC project PhotonicSWARM, that explores new topologies, architectures and applications for large-scale programmable photonic circuits. The project aims to demonstrate experimental realizations of large circuits, which requires a combination of photonics, electronics and software. By programming these generic circuits, they can be used as communication components, sensors, spectrometers, etc. Essentially, they are essentially an optical FPGA.

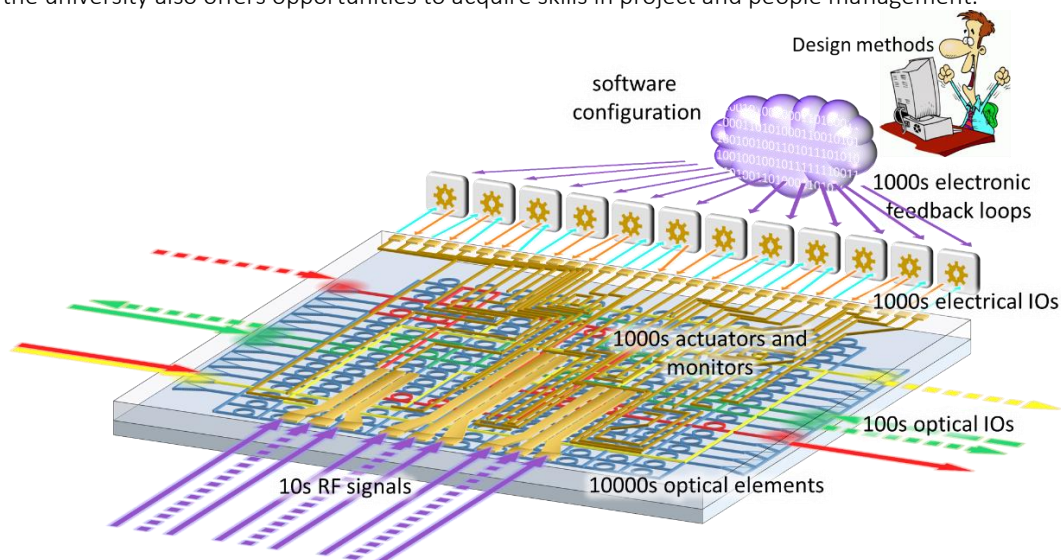
We look for a recently graduated PhD with a background in photonics, applied physics and/or electrical engineering. As programmable photonics combines photonics, electronics and software, a broad interest that spans across these disciplines is very necessary.

Job description:

You should enjoy experimental work, such as optical measurements or constructing measurement setups, but there will be little or no cleanroom work involved. Given the nature of the project, experience with electronics, and/or FPGA programming is a definite plus, and basic generic programming skills are essential (Python is the standard language in our lab).

As a postdoc, you will also carry some coordinating responsibilities in the small team of the PhotonicSWARM project. Therefore, a healthy interest in basic management skills and coaching is required. As a researcher, the broad scope of the project will also generate numerous opportunities to develop your personal research portfolio.

We offer you the opportunity to work in a large, multi-disciplinary research group that covers a broad spectrum from fundamental to very applied research in the field of integrated photonics. There will be opportunities to collaborate with other groups in Ghent University and in an international context with various partnering research institutes. As a postdoc, the university also offers opportunities to acquire skills in project and people management.



Application:

Please submit your expression of interest with resume and motivation letter by applying online through the following link: photonics.intec.ugent.be/contact/vacancies/Application.htm

For more information, please contact wim.bogaerts@ugent.be

About the Photonics Research Group

The Photonics Research Group (about 90 people) is associated with IMEC, and is part of the Department of Information Technology of Ghent University. The group is headed by Prof. R. Baets and has been active in photonics device research for many years. The other professors in the group are P. Bienstman, W. Bogaerts, B. Kuyken, N. Le Thomas, G. Morthier, G. Roelkens and D. Van Thourhout. The main research directions are silicon nanophotonics, heterogeneous integration, optical communication, photonic (bio)sensors and photonic integrated circuits for biomedical applications in the near-infrared and mid-infrared wavelength range. More so, the silicon nanophotonics work focuses on the design and fabrication of SOI-based photonic devices using standard lithographic techniques compatible with CMOS-processing.

The Photonics Research Group has been coordinating the network of excellence ePIXnet and is involved in a number of EU-projects, including the FP7 projects ActPhast, PLAT4M, Cando, and Pocket and the H2020 projects MORPHIC, TOPHIT, TeraBoard, PIX4Life, MIRPHAB and Phresco. Furthermore, the group is partner of the Center for Nano- and Biophotonics of Ghent University and the group has been awarded three ERC Independent Researcher Starting Grants, one ERC consolidator grant (this PhotonicSWARM project) and one ERC Advanced Investigator Grant.

About the PhotonicSWARM project

The PhotonicSWARM project is a 5-year (2017 – 2022) consolidator grant awarded by the European Research Council (ERC) to Wim Bogaerts. In PhotonicSWARM, Wim Bogaerts researches different architectures for scaling photonic integrated circuits by distributing light over many on-chip optical paths at the same time. This can make optical circuits more robust and create new functionalities that are not possible with simple one-path circuits. Distributed circuits will need some form of control (tuning) to realize the functionality, and as such the system becomes a combination of photonics, electronics and software. PhotonicSWARM looks at different circuit architectures, ways to implement large-scale tuning, and the control algorithms needed to create stable distributed circuits.