JOB OFFER: 4 POSTDOC POSITIONS IN INTEGRATED QUANTUM PHOTONICS

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Context

The Photonics Research Group has been granted funding for advancing essential quantum information technologies:
- quantum circuits for Quantum key distribution: MDI-QKD transceivers [1] and quantum memoryless repeaters [2]
- integrated single photon avalanche photodiodes [3]
- silicon photonics high bandwidth squeezers [4]
- photonics interface to color centers [5]

Our group is also looking for a coordinator of the Belgian quantum infrastructure deployment. This position may or may not be coupled to a research activity on integrated quantum photonics.

Job description

The candidate will be responsible for the research work including design, modelling, and complete characterization of the quantum ICs. The candidate will collaborate with partners groups in Belgium or at the European level. Responsibilities include:

- Performing research in an independant way
- Reporting on the research to supervisor and collaborators
- Communication to peers at conference and via journal publications

Profile

- At the starting time of the contract, the applicant must hold a PhD in physics, physics engineering or photonics engineering.
- Good knowledge of optics and/or material science
- Active, hands-on experience with quantum photonics is highly recommended. Deep theoretical understanding of what is and is not feasible in quantum photonics is major plus.
- Proficient level in English
- Satisfying the international mobility conditions is a plus (living and working outside Belgium more than 24 months over the past 3 years).

Benefits

Benefits include mandatory health insurance, laptop, travel to conferences and a moving allowance. The contract is for an initial duration of 1 year with foreseen extensions.

About the Photonics Research Group

The project will take place primarily at the University of Ghent in the photonics research group (PRG). PRG has pioneered the field of integrated photonics for the past two decades and hosts a fully equipped measurement

infrastructure (equipped with single photon detectors, higher power lasers, ...), a cleanroom facility, and an extensive simulation infrastructure. The group is also an affiliated lab of IMEC: one of the world leading research institution in microelectronics. The photonics research group hosts 12 professors, 15 postdocs and 50+ PhD students of many nationalities.

Application

The positions are open at the date of publication and evaluations are performed as they are received.

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

For more information, please contact
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http://www.photonics.intec.ugent.be/

References

[1] Lo, Hoi-Kwong, Marcos Curty, and Bing Qi. "Measurement-device-independent quantum key distribution." *Physical review letters* 108.13 (2012): 130503 ; Liu, Yang, et al. "Experimental measurement-device-independent quantum key distribution." *Physical review letters*111.13 (2013): 130502.
[2] Li, Zheng-Da, et al. "Experimental quantum repeater without quantum memory." *Nature photonics* 13.9 (2019): 644-648.
[3] Srinivasan, Srinivasan Ashwyn, et al. "27 GHz silicon-contacted waveguide-coupled Ge/Si avalanche photodiode." *Journal of Lightwave Technology* 38.11 (2020): 3044-3050; Cuyvers, Stijn, et al. "Heterogeneous integration of Si photodiodes on silicon nitride for near-visible light detection." *Optics Letters* 47.4 (2022): 937-940.
[4] A. Dutt et al., Phys. Rev. Applied, 3 (4) pp. 044005, [2015]; Z. Vernon et al., Phys. Rev. Applied 12 (6), pp. 064024, [2019]
[5] Wan, Noel H., et al. "Large-scale integration of artificial atoms in hybrid photonic circuits." *Nature* 583.7815 (2020): 226-231.