

Integrated Quantum Photonics on a III-V platform

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A new generation of photonic integrated circuits (PICs) is being developed for application in quantum communications and quantum simulations. While the passive functionalities needed in these quantum PICs are very similar to those of their classical counterparts, light generation and detection must be controlled at the single-photon level. III-V semiconductors are very well suited for quantum PICs in view of their direct bandgap and corresponding ability to produce single photons by radiative recombination of excitonic states in nanostructures [1]. In this talk I will review our recent progress in the development of multifunctional quantum PICs, including the demonstration of fully-tuneable waveguide-coupled single-photon sources and of efficient waveguide single-photon detectors on nanobeams.

References

- [1] C.P. Dietrich, A. Fiore, M.G. Thompson, M. Kamp and S. Höfling, *GaAs integrated quantum photonics: Towards compact and multi-functional quantum photonic integrated circuits*, Laser Photonics Rev., vol. 10, no. 6, pp. 870-894, 2016