

## **Some Thoughts on Hybrid Photonic Systems**

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Photonics, i.e., the science of emission, transmission, amplification, detection and modulation of light, greatly benefits from the development of advanced micro- and nano-structured materials and devices. As a result, the past decade has witnessed tremendous progress in photonics – albeit predominantly on the level of a classical description of light.

It is only very recently, that efforts to combine the concepts of photonics with the concepts of traditional quantum optics have been significantly increased, thus creating the emerging field of quantum photonics/nano-scale quantum optics.

In this talk, a (necessarily biased) selection of recent developments in quantum photonics/nano-scale quantum optics will be presented. This includes few-photon transport in integrated optical systems with embedded quantum impurities, quantum-emitter based imaging, and phenomena that exploit vacuum fluctuations of the quantized electromagnetic field which are controllably modified in photonic systems.