



Seminar/Talk

Exploiting Quantum Photonics for Quantum Computing and Machine Learning

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Host: Johannes Fink

After providing a brief overview of recent advancements in the generation and processing of multi-photon states [1], I will show the potential of photonic quantum machine learning. After presenting a quantum-enhanced reinforcement learning using a tunable integrated processor [2], I will discuss our development of a so-called quantum memristor for single photons [3]. These devices, which can mimic the behavior of neurons and synapses, hold great promise for the realization of quantum neural networks. I will also present how photonic processors can implementing quantum-enhanced kernels for machine learning tasks [4]. At the end I will change topic by briefly discussing the flexibility of photonic systems for tasks that require non-standard quantum computer architectures [5]; and potentially update about our ongoing experimental research aiming to explore the interface between quantum mechanics and general relativity by performing high-precision experiments using entangled photon states as probe [6]. [1] Science Advances 10, eadj0993 (2024). [2] Nature 591, 229 (2021). [3] Nature Photonics 16, 318 (2022). [4] Nature Photonics 19, 1020 (2025). [5] Optica 10, 200 (2023). [6] Science Advances 10, eadov0215 (2024).

Friday, November 28, 2025 02:00pm - 03:00pm

Sunstone Bldg / Ground floor / Big Seminar Room B / 63 seats (I23.EG.102)



This invitation is valid as a ticket for the ISTA Shuttle from and to Heiligenstadt Station.

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