

PREIN Workshop on Quantum Technologies

10–11 November 2022, Science Park, Länsikatu 15, 80110 Joensuu, Finland

Wednesday, November 9

Welcome reception in the UEF Metria building at 19:00–21:00 (Yliopistokatu 7). Registration is open at the event.

Thursday, November 10

08:30–09:00 *Registration*

09:00–09:10 *Opening*

Session 1 – Tampere University

09:10–09:30 **Robert Fickler**
Quantum photonics research at Tampere University

09:30–09:50 **Teemu Hakkarainen**
Emerging optoelectronics platforms for quantum photonics

09:50–10:10 **Carlos Rodríguez-Fernández**
Atomically thin layers coupled to plasmonic structures and metasurfaces

10:10–10:30 **Ibrahim Issah**
Quantum entanglement mediated by epsilon-near-zero waveguide reservoirs

10:30–11:00 *Coffee break*

Session 2 – Aalto University

11:00–11:20 **Zhipei Sun**
Quantum photonics at Aalto University

11:20–11:40 **Vladimir Kornienko**
Towards single photon interference on a silicon chip

11:40–12:00 **Susobhan Das**
Nonlinear optics with 2D materials

12:00–14:00 *Lunch break*

Session 3 – VTT Technical Research Centre of Finland

14:00–14:20 **Matteo Cherchi**
How to support quantum technologies with a thick silicon photonics platform

14:20–14:40 **Arijit Bera**
Photonic control / readout link for superconducting qubits

14:40–15:00 **Brigitte Lanz**
Photonics packaging for quantum technology

15:00–15:20 **Matteo Cherchi**
The Finnish path towards a European quantum communication infrastructure

15:20–16:00 *Coffee break*

Session 4 – University of Eastern Finland

16:00–16:20 **Andreas Norrman**
Theoretical quantum photonics at the University of Eastern Finland

16:20–16:40 **Sergei Malykhin**
Fluorescent diamonds for quantum technologies and beyond

16:40–17:00 **Alexey Basharin**
Quantum meta-atom with anapole response

17:00–17:20 **Timofei Eremin**
Zero-dimensional quantum defects in the structure of single-walled carbon nanotubes

Bonus lecture

17:20–18:00 **Robert Fickler**
Nobel Prize in Physics 2022: Experiments on quantum entanglement

19:30–22:00 *Dinner at restaurant Local Bistro (Kauppakatu 32)*

Friday, November 11

08:30–09:00 *Set-up of posters*

09:00–12:00 **Poster Session and Discussion**

1. Lea Kopf (Tampere University)

Towards three-photon spatial-mode entanglement by cascaded spontaneous parametric down-conversion

2. Jaime Moreno (Tampere University)

Characterizing frequency correlations in down conversion processes via polarization only measurements

3. Madona Mekhael (Tampere University)

Inter-modal phasematching of silicon waveguides for spontaneous parametric down-conversion (SPDC)

4. Abhiroop Chellu (Tampere University)

Towards ultra-bright source of non-classical light based on single InAs/GaAs quantum dot in a hybrid metal-semiconductor nanopillar cavity

5. Rafael Barros (Tampere University)

Observation of the quantum Gouy phase

6. Matias Koivurova (Tampere University)

Photon statistics of nonstationary light

7. Oussama Korichi (Tampere University)

High-efficiency interface between multi-mode and single-mode fibers

8. Jaani Nissilä (VTT Technical Research Centre of Finland)

Development of methods to drive superconducting electronics optically

9. Le Phuoc Thao Nguyen (University of Eastern Finland)

Quantum chemical design of new carbene-gold-amide OLED materials

10. Elvis Pillinen (University of Eastern Finland)

Geometric phase and wave-particle duality of the photon

11. Reuben Amedalor (University of Eastern Finland)

Towards two-dimensional metasurface grating for entangled photon-pair generation

12. Mariam Quarshie (University of Eastern Finland)

Bottom-up approach for synthesis of diamond arrays

13. Janne Heikkinen (University of Eastern Finland)

Dark and bright modes in photonic and plasmonic lattices

12:00– **Lunch and Departure**
