

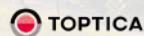
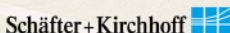
THE 29TH CENTRAL EUROPEAN WORKSHOP ON QUANTUM OPTICS CEWQO29, VILNIUS, LITHUANIA 23 - 27 JUNE 2025

PROGRAM

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Faculty of
Physics



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PROGRAM

DAY 0 | Sunday, 22 June

17:00 - 19:00

WALKING TOUR of the Old Town of Vilnius
Starting at the entrance to Vilnius Town Hall

DAY 1 | Monday, 23 June

08:00 - 08:45

Registration

08:45 - 09:00

OPENING

09:00 - 10:30

SESSION 1

Chair: Gediminas Juzeliūnas

09:00 - 09:30

Vectorial light-matter interaction- imprinting polarisation textures into atoms

Sonja Franke-Arnold (University of Glasgow) [VIDEO](#) 

09:30 - 10:00

Multiparameter quantum metrology with an array of entangled atomic sensors

Philipp Treutlein (University of Basel) [VIDEO](#) 

10:00 - 10:15

Towards a 1D Array of Cold Rydberg Atoms Near the Surface of an Optical Nanofibre

Sile Nic Chormaic (OIST Graduate University) [VIDEO](#) 

10:15 - 10:30

Cavity-Enhanced On-Demand Efficient Solid-State Quantum Memory

Antariksha Das (ICFO)

10:30 - 11:00

COFFEE BREAK

11:00 - 12:45

SESSION 2

Chair: Yu-Ju Lin

11:00 - 11:30

Testing the Interplay Between Gravity and Quantum Mechanics with Optomechanical Systems

David Vitali (University of Camerino) [VIDEO](#) 

11:30 - 12:00

Challenges in Free Space Quantum Communication

Christoph Marquardt (Universität Erlangen-Nürnberg) [VIDEO](#) 

12:00 - 12:15

Quantum Metrology in the Ultrastrong Coupling Regime of Light-Matter Interactions: Leveraging Virtual Excitations without Extracting Them

Karol Gietka (University of Innsbruck) [VIDEO](#) 

12:15 - 12:30

Visualizing Quantum Dynamics in Phase Space using Wigner's Current

Ole Steuernagel (NTHU) [VIDEO](#) 

12:30 - 12:45 **Deterministic generation of large Schrödinger cat states beyond Gaussian coupling**
Michele Nicola Notarnicola (Palacky University in Olomouc)
VIDEO ▶

12:45 - 14:15 LUNCH

14:15 - 15:45 SESSION 3
Chair: Kęstutis Staliūnas

14:15 - 14:45 **Topological state transfer and PT/anti-PT symmetries in dissipatively coupled quantum networks**
Natalia Korolkova (University of St. Andrews) **VIDEO** ▶

14:45 - 15:00 **Interference of Photons from Independent Hot Atoms**
Jaromír Mika (Palacky University Olomouc) **VIDEO** ▶

15:00 - 15:15 **A tensor network approach to sensing quantum light-matter interactions**
Francesco Albarelli (Scuola Normale Superiore) **VIDEO** ▶

15:15 - 15:30 **Optical Key Distribution with a Noisy Laser Source**
Mateusz Kucharczyk (University of Warsaw) **VIDEO** ▶

15:30 - 15:45 **Femtosecond laser-based creation of single-photon sources in hBN for quantum communications applications**
Tadas Paulauskas (FTMC) **VIDEO** ▶

15:45 - 16:15 COFFEE BREAK

16:15 - 18:00 SESSION 4
Chair: Karolina Słowik

16:15 - 16:45 **Enhanced quantum frequency estimation by nonlinear scrambling**
Matteo Paris (University of Milan) **VIDEO** ▶

16:45 - 17:00 **Capacity of phase sensitive preamplified receivers**
Marcin Jarzyna (Centre of New technologies, University of Warsaw) **VIDEO** ▶

17:00 - 17:15 **Parametric amplification for witnessing non-classicality and non-Gaussianity**
Marcello Henrique Marques Passos (Max Planck Institute for the Science of Light) **VIDEO** ▶

17:15 - 17:30 **Experimental noiseless quantum amplification of coherent states of light by two-photon addition and subtraction**
Michal Neset (Palacký University Olomouc) **VIDEO** ▶

17:30 - 17:45 **Control and Scattering Properties in Dipolar Spin Mixtures**
Louis Lafforgue (Universität Innsbruck) **VIDEO** ▶

17:45 - 18:00 **STANDA UAB precision positioning products overview**
Giedrius Mikulis (Standa) **VIDEO** ▶

18:00 - 21:00 WELCOME RECEPTION
At the Conference Site

DAY 2 | Tuesday, 24 June

08:30 - 09:00 Registration

09:00 - 10:30 SESSION 5

Chair: Christoph Marquardt

09:00 - 09:30 **Optical neural networks for computation and computer vision**
Aleksander Lvovski (University of Oxford) [VIDEO](#)

09:30 - 10:00 **Emergence of Quantum Coherence**
Radim Filip (Palacky University Olomouc)

10:00 - 10:15 **Programmable quantum photonic circuit in free space**
Filippo Cardano (Università degli Studi di Napoli Federico II) [VIDEO](#)

10:15 - 10:30 **Disordered Gauge Fields for Atomic Bose Gases**
Edvinas Gvozdiovas (National Institute of Standards and Technology and University of Maryland, Vilnius University) [VIDEO](#)

10:30 - 11:00 COFFEE BREAK

11:00 - 12:45 SESSION 6

Chair: Anna Musiał

11:00 - 11:30 **Photonic Interconnects: Advancing Quantum Networking for Communication and Computing**
Julien Laurat (Sorbonne Université) [VIDEO](#)

11:30 - 12:00 **Engineering Unitary and Dissipative Dynamics for Quantum Applications**
Chiao-Hsuan Wang (National Taiwan University)

12:00 - 12:15 **Noise correlation measurements as a probe of spontaneously symmetry-broken phases in cold atoms**
Javier Argüello (Universitat Politècnica de Catalunya) [VIDEO](#)

12:15 - 12:30 **Inelastic Scattering of a Photon by a Quantum Phase-Slip**
Leonid Glazman (Yale University) [VIDEO](#)

12:30 - 12:45 **Is Diamagnetism Really Acausal?**
Niclas Westerberg (University of Glasgow) [VIDEO](#)

12:45 - 14:15 LUNCH

14:15 - 15:45 SESSION 7

Chair: Matteo Paris

14:15 - 14:45 **Hybrid State Discrimination Strategy Exploiting Classical And Nonclassical Features**
Alessia Allevi (University of Insubria) [VIDEO](#)

14:45 - 15:15 **Light interactions with polar quantum systems**
Karolina Słowik (Nicolaus Copernicus University in Toruń) [VIDEO](#)

15:15 - 15:30 **Enabling Hybrid Quantum Networks: Protocols and Experimental Progress Toward Memory-Compatible Links**
Matteo Pasini (The Barcelona Institute of Science and Technology) [VIDEO](#)

15:30 - 15:45	<u>Building a neutral atoms platform for the study of collective light-matter interactions</u> Sara Pancaldi (Universite Paris Saclay) VIDEO
15:45 - 16:00	<u>From Lasers for Quantum Technologies to Optical Clocks</u> Jennifer Koch (TOPTICA Photonics AG) VIDEO
16:00 - 19:00	COFFEE BREAK & <u>POSTER SESSION I</u> (NO. PI-1 – PI-48)

DAY 3 | Wednesday, 25 June

08:30 - 09:00	Registration
09:00 - 10:30	SESSION 8 Chair: Radim Filip
09:00 - 09:30	<u>Quantum Mechanics in a Quantum Reference Frame</u> Eugene Polzik (Copenhagen University)
09:30 - 09:45	<u>Measuring the Earth's rotation with entangled photons</u> Raffaele Silvestri (University of Vienna, Austria) VIDEO
09:45 - 10:00	<u>Control of Mechanical Systems in the Quantum Regime</u> Piotr T. Grochowski (Palacký University) VIDEO
10:00 - 10:15	<u>Interaction between atoms and light: the ultimate bounds precision for atomic clock frequency measurement</u> Stefano Olivares (University of Milan) VIDEO
10:15 - 10:30	<u>Critical quantum metrology with KERR resonators</u> Roberto Di Candia (Aalto University) VIDEO
10:30 - 11:00	COFFEE BREAK
11:00 - 12:45	SESSION 9 Chair: Egidijus Anisimovas
11:00 - 11:30	<u>Intertwined entanglement in topological pumps</u> Tilman Esslinger (ETH Zürich) VIDEO
11:30 - 12:00	<u>Vortex nucleations in spinor Bose condensates under localized synthetic magnetic fields</u> Yu-Ju Lin (Institute of Atomic and Molecular Sciences, Academia Sinica)
12:00 - 12:15	<u>Self organisation and metastability of cavity bosons beyond the adiabatic elimination approximation</u> Piotr Deuar (Polish Academy of Sciences) VIDEO
12:15 - 12:30	<u>Engineering interactions by collective coupling of atom pairs to cavity photons for entanglement generation</u> Tomasz Wasak (Nicolaus Copernicus University in Toru) VIDEO
12:30 - 12:45	<u>Quantum Morse-Smale topology for Kerr-Cat qubits</u> Kilian Seibold (University of Konstanz)
12:45 - 12:55	Conference PHOTO
12:55 - 14:15	LUNCH

14:15 - 15:45	SESSION 10 <i>Chair: Mažena Mackoīt</i>
14:15 - 14:45	<u>Manipulating Light with Bound States in the Continuum</u> <i>Grazia Salerno (Aalto University School of Science) VIDEO </i>
14:45 - 15:00	<u>Probing Two-Body Contact Dynamics near a Narrow Feshbach Resonance</u> <i>Alexandre Journeaux (Laboratoire Kastler Brossel - ENS-PSL, Collège de France, CNRS) VIDEO </i>
15:00 - 15:15	<u>Two-dimensional sub-wavelength topological lattices for dark-state ultracold atoms</u> <i>Domantas Burba (Vilnius University) VIDEO </i>
15:15 - 15:30	<u>Unmasking the Polygamous Nature of Quantum Nonlocality</u> <i>Wiesław Laskowski (University of Gdansk) VIDEO </i>
15:30 - 15:45	<u>Transfer and conversion of intra- and inter-mode correlations in a system of coupled bosonic modes</u> <i>Zbigniew Ficek (University of Zielona Gora) VIDEO </i>
15:45 - 16:15	COFFEE BREAK
16:15 - 18:00	SESSION 11 <i>Chair: Nikolay Vitanov</i>
16:15 - 16:45	<u>Preparation and Characterization of non-Gaussian Quantum States of Motion in a Mechanical Resonator</u> <i>Matteo Fadel (ETH Zurich)</i>
16:45 - 17:00	<u>Hierarchical verification of non-Gaussian coherence in bosonic quantum states</u> <i>Lukaš Lachman (Sorbonne Université) VIDEO </i>
17:00 - 17:15	<u>Up-Conversion Photon-Number-Resolving Detector</u> <i>Silvia Cassina (University of Insubria)</i>
17:15 - 17:30	<u>Interaction-based and imaginary time-based bosonic pairing mechanisms</u> <i>Tomasz Polak (Adam Mickiewicz University in Poznań) VIDEO </i>
19:15 - 22:00	CONFERENCE DINNER <i>At the Palace of the Grand Dukes of Lithuania (Katedros Square 4, Vilnius)</i>

DAY 4 | Thursday, 26 June

08:30 - 09:00 Registration

09:00 - 10:30	SESSION 12 <i>Chair: Yvonne Gao</i>
09:00 - 09:30	<u>Quantum Control for Quantum Computation, Sensing and Imaging</u> <i>Nikolay Vitanov (Sofia University) VIDEO </i>

09:30 - 10:00	<u>Quantum Theory of Rotor-Like Systems</u> <i>Zdeněk Hradil (Palacký University) VIDEO </i>
10:00 - 10:15	<u>Bosonic Two-Stroke Heat Engines with Polynomial Nonlinear Coupling</u> <i>Giovanni Chesi (Università degli Studi di Pavia) VIDEO </i>
10:15 - 10:30	<u>Bosonic error mitigation and suppression with linear optics</u> <i>Yong Siah Teo (Seoul National University) VIDEO </i>
10:30 - 11:00	COFFEE BREAK
11:00 - 12:45	SESSION 13 <i>Chair: Nadine Mayer</i>
11:00 - 11:30	<u>Collective light matter interactions in free-space atomic ensembles</u> <i>Igor Ferrier-Barbut (Institut d'Optique, CNRS) VIDEO </i>
11:30 - 12:00	<u>Critical parametric sensing with a Kerr superconducting resonator</u> <i>Gheorghe-Sorin Paraoanu (Aalto University) VIDEO </i>
12:00 - 12:15	<u>Towards generating a GKP Bell state by entangling two qunaught states with a beamsplitter</u> <i>Florence Berterottière (Institute for Quantum Electronics) VIDEO </i>
12:15 - 12:30	<u>Necessity of non-Gaussianity in the joint Estimation of Position and Momentum with arbitrarily high precision</u> <i>Massimo Frigerio (Sorbonne Université) VIDEO </i>
12:30 - 12:45	<u>Memory-Dependent Quantum Transformations with a Photonic Quantum Memristor</u> <i>Karol Bartkiewicz (Adam Mickiewicz University) VIDEO </i>
12:45 - 14:15	LUNCH
14:15 - 15:45	SESSION 14 <i>Chair: Michał Parniak</i>
14:15 - 14:45	<u>Quantum dot-based non-classical light sources for quantum cryptography applications at telecom wavelengths</u> <i>Anna Musiał (Wrocław University of Science and Technology) VIDEO </i>
14:45 - 15:00	<u>Fully reconfigurable quantum state interference in a frequency encoding</u> <i>Patrick Folge (Paderborn University) VIDEO </i>
15:00 - 15:15	<u>Adressing Challenges in Near-Infrared Squeezed Light Generation: Absorption Effects and Phase Stabilization</u> <i>Santiago Tabares (ICFO) VIDEO </i>
15:15 - 15:30	<u>Quantum optimal precision by inner-variable resolving two-photon correlations</u> <i>Danilo Triggiani (Politecnico di Bari) VIDEO </i>
15:30 - 15:45	<u>Distinguishability tomography of multiple interfering photons</u> <i>Emilio Annoni (C2N / Quandelà) VIDEO </i>
15:45 - 18:30	COFFEE BREAK & <u>POSTER SESSION II (NO. PII-1 – PII-47)</u>

DAY 5 | Friday, 27 June

08:30 - 09:00 Registration

09:00 - 10:30 **SESSION 15** *Chair: David Vitali*

09:00 - 09:30 **Quantum information processing via on-demand light-matter interaction**
Yvone Gao (National University of Singapore) [VIDEO](#) 

09:30 - 10:00 **Quantum Metrology with Rydberg Atoms**
Michał Parniak (University of Warsaw) [VIDEO](#) 

10:00 - 10:15 **All-fiber microendoscopic polarization sensing at single-photon level aided by deep-learning**
Martin Bielak (Palacky University Olomouc) [VIDEO](#) 

10:15 - 10:30 **Inhibition of circular Rydberg atoms decay: towards the realisation of quantum simulation of slow processes**
Guillaume Coeuret Cauquil (Sorbonne Universite) [VIDEO](#) 

10:30 - 11:00 **COFFEE BREAK**

11:00 - 12:45 **SESSION 16** *Chair: Mariusz Gajda*

11:00 - 11:30 **Accelerated State Expansion of a Nanoparticle in a Dark Inverted Potential**
Nadine Meyer (ETH Zurich) [VIDEO](#) 

11:30 - 12:00 **Entanglement distillation rates exceeding the direct transmission bound**
Farzad Ghafari (Griffith University) [VIDEO](#) 

12:00 - 12:15 **Environment-Assisted Generation of Bosonic Wavepacket Quantum States**
Maryam Khanahmadi (Chalmers University of Technology) [VIDEO](#) 

12:15 - 12:30 **A single emitter emitting resonance fluorescence into a coherent probe beam**
Tomas Lamich (The Barcelona Institute of Science and Technology) [VIDEO](#) 

12:30 - 12:45 Closing remarks

12:45 - 14:15 **LUNCH**

14:30 - 19:00 **EXCURSION**
Starting at the entrance to Vilnius Town Hall