

Current Paths and New Horizons

June 10–14, 2024, Joensuu, Finland

Monday, June 10

Welcome reception at Rosita 19:00-21:30 (Torikatu 20, see 1 on the map). Possibility to register from 18:30 onwards. Presentations on the city of Joensuu and photonics in Joensuu at 20:00.

Tuesday, June 11

All sessions will be held in Hall M103. In the evening we will have the conference dinner at restaurant Local Bistro which is located in the city center (Kauppakatu 32, see 4 on the map).

10:00–10:20 *Opening*

Session 1a: Quantum optics I – Moderator: Robert Fickler

10:20–10:40 **Luis Sánchez-Soto**
Random Majorana constellations

10:40–11:00 **Braian Pinheiro da Silva**
Spin-orbit non separability in nonlinear and quantum optics

11:00–11:20 **Lukasz Rudnicki**
Practical tests for sub-Rayleigh source discrimination with imperfect demultiplexers

11:20–11:40 *Coffee break*

Session 1b: Quantum optics II

11:40–12:00 **Mayukh Lahiri**
Interference by path identity with independent sources

12:00–12:20 **Bhaskar Kanseri**
Partially coherent entangled qubits for applications in quantum communication and imaging

12:20–12:40 **Alfredo Luis**
Quantum coherence and classical optics

12:40–14:30 *Lunch at restaurant Futura*

Session 2a: Sensing and applications – Moderator: Sergey A. Ponomarenko

14:30–14:50 **Aristide Dogariu**
Sensing with structured optical wavefronts

14:50–15:10 **Tomohiro Shirai**
Simulating temporal speckle in optical lithography

15:10–15:30 **Kalle Ventola**
Applications of polarization-sensitive gratings in diffractive waveguides

15:30–15:50 *Coffee break*

Session 2b: 3D polarization and nonparaxial light

15:50–16:10 **Sophie Brasselet**
Polarized microscopy for 3D nano-polarimetry and super-resolution structural imaging

16:10–16:30 **Mark R. Dennis**
Spin weighted angular spectra, the quantum pendulum and nonparaxial vector beams

16:30–16:50 **José J. Gil**
Dual structure of purity of three-dimensional polarization states

19:00–22:00 *Conference dinner at restaurant Local Bistro*

Wednesday, June 12

The poster session will be held in the lobby area near Hall M103. Barbeque party (weather permitting) takes place at Kalmo (see 14 on the map). If you wish to participate in the event, please register the day before at the conference notice board.

Session 3a: Scattering and random media – Moderator: Greg Gbur

10:00–10:20 **Taco D. Visser**

Scattering of partially coherent electromagnetic beams by a sphere

10:20–10:40 **Rémi Carminati**

Non-Gaussian intensity statistics of multiply scattered light in spatially or temporally random media

10:40–11:00 **Matthew R. Foreman**

Polarisation statistics of light propagating in disordered scattering media

11:00–11:20 **John C. Schotland**

Collective spontaneous emission in random media

11:20–11:40 *Coffee break*

Session 3b: Light-field control and photonic structures I

11:40–12:00 **Philip St. J. Russell**

Optical multivortices and localisation in chiral photonic crystal fibres

12:00–12:20 **Alessio D’Errico**

Novel characterization methods and applications of structured photons

12:20–12:40 **Benjamin Vest**

Controlling far-field radiation with photoluminescent and incandescent metasurfaces

12:40–14:30 *Lunch at restaurant Futura*

Session 4a: Optomechanics – Moderator: Aristide Dogariu

14:30–14:50 **Joanna A. Zielińska**

Rotational dynamics of a nanoparticle levitated using engineered polarization states of light

14:50–15:10 **Carlos Gonzalez-Ballester**

Laser noise suppression in levitated optomechanics using squeezed light

15:10–15:30 **Martin Frimmer**

Squeezed states of light and motion with optically levitated nanoparticles

15:30–15:50 *Coffee break*

Session 4b: Random light + EOS

15:50–16:10 **Julien Fade**

Frustration and invariance in coherence analysis of partially polarized light

16:10–16:30 **Daniel F. V. James**

Partial coherence of band-limited fields

16:30–16:50 **Gilles Pauliat**

The European Optical Society

17:00–19:00 *Poster session*

20:00– *Barbeque party at Kalmo*

Thursday, June 13

At 13:45 (sharp) we will gather at the parking area near Metria building (see 12, ‘bus stop to excursion’ on the map) for transportation to Valamo monastery in Heinävesi. We will have bus transportation back to Joensuu, arriving around 21:00. The first stop is at Jokiasema (see 5 on the map), where Finnish-style sauna (separate dressing rooms for men and women but sauna and other rooms are common), snacks, drinks, and towels are arranged. Those who decide to skip this opportunity may continue by the bus to downtown. If you wish to participate in the evening sauna at Jokiasema, please register at least the day before at the conference notice board.

Session 5a: Fundamental optics I – Moderator: Bernhard J. Hoenders

- 10:00–10:20 Robert Fickler**
Spatio-spectral vector beams and higher-order Poincaré spheres
- 10:20–10:40 Francisco De Zela**
Geometric phases arising from strong measurements of weak values
- 10:40–11:00 Riccardo Borghi**
Paraxial sharp-edge diffraction theory: a catastrophe optics perspective
- 11:00–11:20 Coffee break*

Session 5b: Fundamental optics II

- 11:20–11:40 Marco Ornigotti**
Nonabelian geometric phases, fibre bundles, and vector beams
- 11:40–12:00 Sergey A. Ponomarenko**
Optics meets number theory: Number factorization with structured light
- 12:00–13:45 Lunch at restaurant Futura*
- 13:45–21:00 Excursion*
- 21:00–* *Sauna, snacks, and drinks at Jokiasema*
Short walk or self-organized transportation back to the hotels

Friday, June 14

Session 6a: Partially coherent beams I – Moderator: Taco D. Visser

- 10:00–10:20 Milo W. Hyde**
Coherence control via optical coordinate transformations
- 10:20–10:40 Greg Gbur**
Deterministic vortex beams and other partially coherent singular beams
- 10:40–11:00 Bernhard J. Hoenders**
A remarkable connection between various (natural) mode expansions
- 11:00–11:20 Yahong Chen**
Applications of optical spatial coherence structure engineering
- 11:20–11:40 Coffee break*

Session 6b: Partially coherent beams II

- 11:40–12:00 Tatiana Alieva**
Decomposition of Schell-model beam by Hermite-Laguerre-Gaussian modes and its evolution during propagation
- 12:00–12:20 Chaoliang Ding**
Generation and propagation of spatiotemporal coherency vortices
- 12:20–12:40 Ángel S. Sanz**
Trajectory analysis of partially coherent Airy beams
- 12:40–14:30 Lunch at restaurant Futura*

Session 7: Light-field control and photonic structures II – Moderator: TBA

14:30–14:50 Antti J. Moilanen

Photoluminescence and electroluminescence control of 2D semiconductors coupled to nanophotonic structures

14:50–15:10 Kimmo Luoma

Non-Markovian Quantum State diffusion approach to microcavity polariton dynamics

15:10–15:30 Myriam Zerrad

Optical coatings for broadband loss-less depolarizing devices

15:30–15:40 Closing

Poster Session, Wednesday, June 12, 17:00–19:00

1. Reuben Amedalor

Resonance enhanced evanescent optical lattices

2. Laura Ares

Quantum walks and entanglement in cavity networks

3. Alexey Basharin

Devaney-Wolf invisibility theorems for compound particles and metamaterials

4. Kasimir Blomstedt

An AR waveguide geometry: basic principles

5. Roman Calpe

Enhanced epsilon-near-zero effects in resonant stratified media

6. Maria Cojocari

High-Q factor dual-layer anapole metamaterial

7. Zhen Dong

Detection of near-field polarization with a nanoscatterer

8. Isaac Doughan

Experimental determination of mode strengths in channel waveguide by wavefront folding interferometry

9. Julien Fade

Microwave photonics approach to interrogate the spatial light (de)-polarization phenomena at the speckle grain scale

10. Atri Halder

Splitting the orbital angular momentum via Mach-Zehnder type interferometer

11. Martti Hanhisalo

Quantum uncertainty in double-slit vector-light interference

12. Jyrki Laatikainen

Spectral scale transformations of nonstationary optical fields by hybrid refractive-diffractive imaging systems

13. Timo Leppälä

Linear optical properties of organic microcavity polaritons with non-Markovian quantum state diffusion

14. Jaime Moreno

Measuring two-photon frequency correlations from polarization measurements

15. Anar Ospanova

Planar metamaterial design for absolute transmission

16. Elvis Pillinen

Polarization modulation and geometric phase in double-slit interference with multimode NOON states

17. Kaisa Rantaeskola

Geometric phase of partially polarized light beams

18. Kimmo Saastamoinen

Measurement of temporal degree of electromagnetic coherence with polarimetric means

19. Sangeeta

An ultrafast heralded single photon source at telecom wavelength

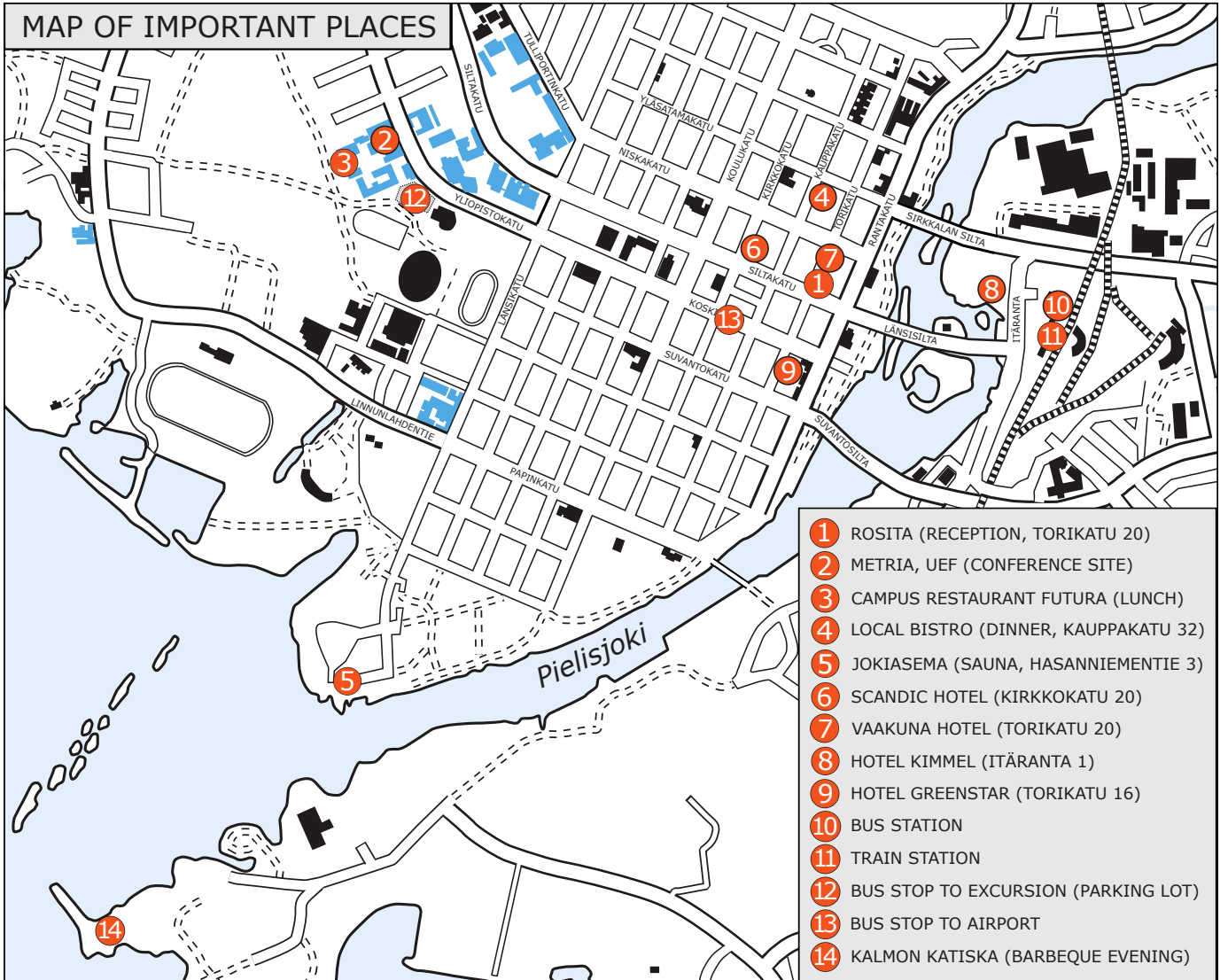
20. Joscelyn van der Veen

Averages in optical coherence: resolving the Magyar and Mandel-Wolf paradox

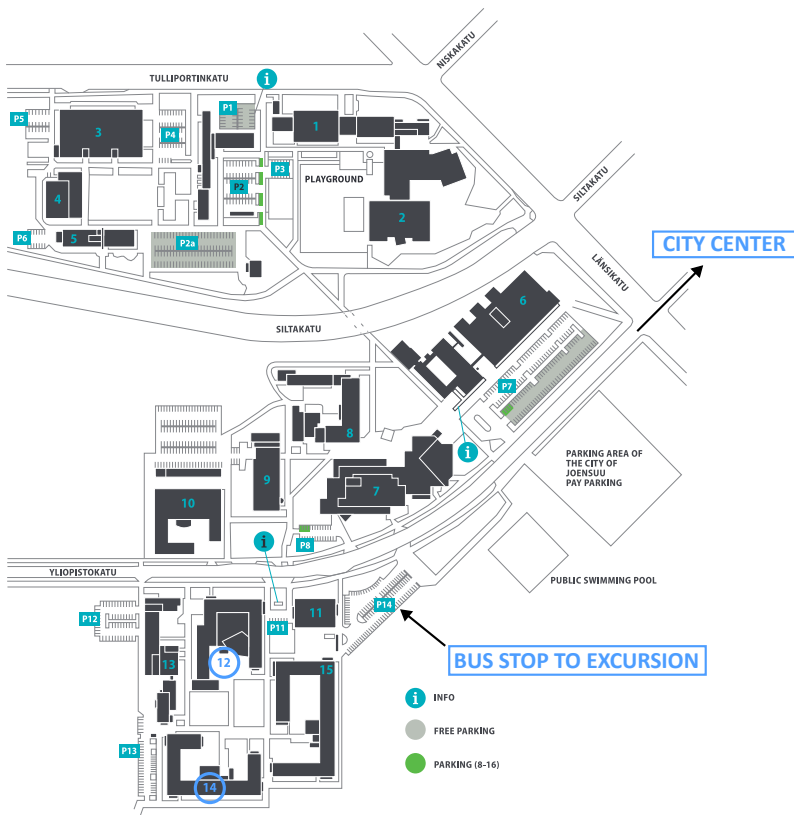
21. Jia Xu

Circular polarizers and their effect on partial coherence

MAP OF IMPORTANT PLACES



- 1 ROSITA (RECEPTION, TORIKATU 20)
- 2 METRIA, UEF (CONFERENCE SITE)
- 3 CAMPUS RESTAURANT FUTURA (LUNCH)
- 4 LOCAL BISTRO (DINNER, KAUPPAKATU 32)
- 5 JOKIASEMA (SAUNA, HASANNIEMENTIE 3)
- 6 SCANDIC HOTEL (KIRKKOKATU 20)
- 7 VAAKUNA HOTEL (TORIKATU 20)
- 8 HOTEL KIMMEL (ITÄRANTA 1)
- 9 HOTEL GREENSTAR (TORIKATU 16)
- 10 BUS STATION
- 11 TRAIN STATION
- 12 BUS STOP TO EXCURSION (PARKING LOT)
- 13 BUS STOP TO AIRPORT
- 14 KALMON KATISKA (BARBEQUE EVENING)



TULLIPORTINKATU 1

- 1 EDUCA** Faculty of Science and Forestry
Department of Physics and Mathematics
Philosophical Faculty
School of Applied Educational Science and Teacher Education, Music
- 2 LÄNSIKADUN KOULU** University Practice School
Comprehensive School, grades e and 1 - 6
- 3 - 4 TULLIPORTIN KOULU** University Practice School
Comprehensive School, grades 7 - 9 and Upper Secondary School
- 5 TAITOLA** Philosophical Faculty, Practical Subjects

YLIOPISTOKATU 2

- 6 AURORA** Rector, University Services
International Relations, Facilities Management
Student and Learning Services
Faculty of Social Sciences and Business Studies
Business School
Law School
Karelian Institute
Language Centre
Finnish Student Health Service
Aducate, Centre for Training and Development

YLIOPISTOKATU 4

- 7 CARELIA** Carelia Hall, Joensuu City Orchestra
Library, Oppari and Oppitupa Support Services
- 8 AGORA** Philosophical Faculty
School of Humanities
Finnish Language and Cultural Research
Foreign Languages and Translation Studies
School of Theology
Western Theology
Orthodox Theology

YLIOPISTOKATU 6

- 9** Provincial Archives
- 10 LUKE** Natural Resources Institute Finland

YLIOPISTOKATU 7

- 11 HALTIA** Maintenance Services
Student Union of the University of Eastern Finland

12 METRIA CONFERENCE SITE

- 12 METRIA** Faculty of Science and Forestry
Department of Physics and Mathematics
Faculty of Social Sciences and Business Studies
Department of Geographical and Historical Studies
Department of Social Sciences
Philosophical Faculty
School of Educational Sciences and Psychology
Psychology
IT Services

13 BOREALIS

- 13 BOREALIS** Faculty of Science and Forestry
School of Forest Sciences
Philosophical Faculty

14 FUTURA RESTAURANT FUTURA

- 14 FUTURA** Faculty of Science and Forestry
Department of Chemistry
Philosophical Faculty
School of Applied Educational Science and Teacher Education
School of Educational Sciences and Psychology

15 NATURA

- 15 NATURA** Faculty of Science and Forestry
Department of Environmental and Biological Sciences
Finnish Environment Institute, Joensuu Office
Environmental Laboratory