

For more information about the Symposium including **abstracts** and the **list of presented posters** visit

<http://zon8.physd.amu.edu.pl/~miran/workshop5.html>

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Designed by K. Bartkiewicz

## Research Topics of the Workshop

In the area of **quantum technologies**, the workshop covers the following topics:

- quantum information processing
- cavity QED
- circuit QED
- microwave photonics
- quantum cryptography
- quantum machine learning
- quantum nonlinear optics
- non-Hermitian quantum mechanics
- plasmonics and photonics
- ultrastrong-coupling of light and matter
- quantum dissipative engineering
- quantum entanglement
- topological quantum sensors
- temporal steering

In the area of **magnonics and metamaterials**, we are mainly interested in:

- spin waves in confined geometries and (quasi)periodic structures
- magnetization switching in the systems with shape anisotropy
- stabilization and dynamics in magnetic textures, domain structures, skyrmions, curvilinear magnetic structures
- phononics and magneto-elastic interactions
- phase-sensitive effect in magnonics
- magnonic metamaterials and magnetic multilayers
- micromagnetic simulations
- experimental techniques for characterization of magnetic structures and for measurements of magnetization dynamics

# QUTECNOMM'19

15X-15XI

The Fifth Poznań Symposium  
on Quantum Technologies,  
Nonlinear Optics,  
Magnonics, and Metamaterials



foto: Rafał Wojtyniak

## SYMPOSIUM VENUE

Adam Mickiewicz University  
in Poznań

Collegium Physicum  
ul. Uniwersytetu Poznańskiego 2  
61-614, Poznań, Poland



9:00 Adam Miranowicz Symposium Opening and Welcome Note

### PLASMONICS & PHOTONICS (15 OCT), CHAIRMAN: JAROSLAW W. KŁOS

9:10 Igor L. Lyubchanskii One-dimensional multiperiodic photonic structures: a new route in photonics (four-component media) (invited talk)

9:30 Vishal Vashistha 4f system design and performing spatial filtering using independent amplitude and phase control metasurfaces

### QUANTUM TECHNOLOGIES I (15 OCT), CHAIRMAN: RYSZARD TANAŚ

9:45 Karel Lemr Experimental implementation of a programmable controlled-phase gate (work in progress) (invited talk)

10:05 Grzegorz Chimczak Two-photon blockade via interaction with a nonlinear reservoir

10:25 Jan Soubusta New experimental tests of three-qubit nonlocality (invited talk)

10:45 Vojtěch Trávníček Experimental measurement of Hilbert-Schmidt distance

11:00 COFFEE BREAK (11:00 - 11:20)

### QUANTUM TECHNOLOGIES II (15 OCT), CHAIRMAN: KAREL LEMR

11:20 Zakarya Lasmar When can many fermions exhibit bosonic behaviour?

11:35 Marcin Karczewski Generating entanglement with single-photon subtractions

11:50 Paweł Kurzyński Contextuality of identical particles

12:10 Rafał Demkowicz-Dobrzański The great unified theory of quantum metrology (invited talk)

12:20 LUNCH BREAK (12:20 - 14:00), POSTER SESSION I (14:00 - 14:30)

### QUANTUM TECHNOLOGIES III (15 OCT), CHAIRMAN: JAN SOUBUSTA

14:30 Karol Bartkiewicz Kernel based quantum machine learning with photons

14:50 Jan Roik Comparison of three experimental approaches to weak value estimation

15:05 Kateřina Jiráková Experimental implementation of a machine-learned quantum gate

15:20 Antonín Černoš Interferometers in the service of quantum information processing (invited talk)

### QUANTUM TECHNOLOGIES IV (18 OCT), CHAIRMAN: ADAM MIRANOWICZ

13:00 Jan Peřina Jr. Waves in spatio-spectral and -temporal coherence of evolving ultra-intense twin beams (invited talk)

13:30 Shilan Ismael Abo Unconventional multiphoton blockade

### QUANTUM TECHNOLOGIES V (23 OCT), CHAIRMAN: WIESLAW LEOŃSKI

11:00 Ryszard Tanaś Collective nonclassical effects in a three-atom system (invited talk)

11:20 Yueh-Nan Chen Temporal quantum steering (invited talk)

11:40 Zbigniew Ficek Phase control of entanglement and quantum steering in a three-mode optomechanical system (invited talk)

12:00 LUNCH BREAK (12:00 - 13:00)

### QUANTUM TECHNOLOGIES VI (23 OCT), CHAIRMAN: YUEH-NAN CHEN

13:00 Wiesław Leoński Quantum steering and its transfer along the chains of nonlinear oscillators (invited talk)

13:20 Jhen-Dong Lin Quantifying quantum scrambling with temporal quantum steering (invited talk)

13:35 Huan-Yu Ku Quantum computations on IBM Q: Experimental test of non-macrorealistic cat states in the cloud (invited talk)

### QUANTUM TECHNOLOGIES VII (23 OCT), CHAIRMAN: ZBIGNIEW FICEK

13:50 Joanna Kalaga Entanglement generation in the system of two coupled nonlinear oscillators (invited talk)

14:10 Izabela Domagalska Thermodynamic properties of superconductivity - the numerical and semi-analytical approaches

14:25 Mateusz Nowotarski Frequency of violation of Bell-Type inequalities as a quantifier of nonlocality

14:40 COFFEE BREAK, POSTER SESSION II (14:40 - 15:15)

### MAGNONICS AND METAMATERIALS I (14 NOV)

to be announced

### MAGNONICS AND METAMATERIALS II (15 NOV)

to be announced

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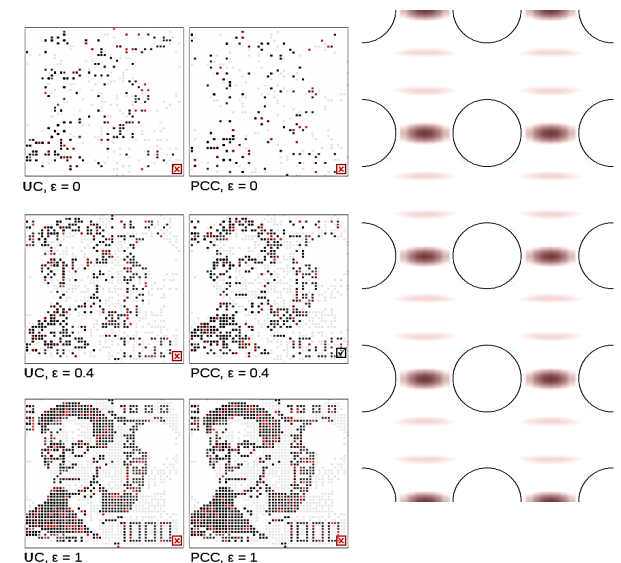
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15X-15XI

The Fifth Poznań Symposium  
on Quantum Technologies,  
Nonlinear Optics,  
Magnonics, and Metamaterials



The talks of doctors and professors are scheduled for 20 min., while those of Ph.D. students will be for 15 min.

**Conference language:** English

**Main organizers of the Sessions on Quantum Technologies and Nonlinear Optics:**

Adam Miranowicz, Krzysztof Grygiel, Karol Bartkiewicz, and Grzegorz Chimczak

**Main organizers of the Sessions on Magnonics and Metamaterials:**

Jarosław Kłos, Sławomir Mamica, and Paweł Gruszecki