

December 5th-8th, 2022, Gdańsk

PROGRAMME

Place: Institute of Informatics, Faculty of Mathematics, Physics and Computer Science, University of Gdańsk, Wita Stwosza 57, Gdańsk, lecture room no. 1.15

Monday, December 5th, 2022

16:00 – 19:30 Registration

17:00 – 17:10 **Official opening by Piotr Bojarski – Dean of the Faculty of Mathematics, Physics and Computer Science**

17:10 – 18:00 **Keynote speaker: Marek Żukowski***

*2022, Nobel Prize for our branch of physics. Why these three?
Historical remarks, and personal memories from 1990s.*

18:00 – 18:50 **Keynote speaker: Stephen Walborn***

Photonic quantum information processing with multi-core optical fibers

19:00 - Welcome reception & Discussion time

* Open talks broadcast via Zoom <https://zoom.us/j/95792394930?pwd=OEkwSlgyRGltbVRrcXhhNkd0T01lQT09>
(Meeting ID: 957 9239 4930, Passcode: k6MrxK)

Tuesday, December 6th, 2022

10:00 – 10:30 **SpeedTalks I**

Luis Cort-Barrada (ICTQT, UG)

Ana Belen Sainz (ICTQT, UG)

Jan Tuziemski (CTP, PAS)

Paweł Cieśliński (WMFiI, UG)

Konrad Schlichholz (ICTQT, UG)

Antonio Mandarino (ICTQT, UG)

Otávio Molitor (ICTQT, UG)

Aravinth Balaji Ravichandran (ICTQT, UG)

Albert Rico (WFAiI, UJ)

Break & Discussion time

10:45 – 11:15 **SpeedTalks II**

Michał Parniak (QOT, UW)

Bartosz Niewelt (QOT, UW)

Fattah Sakuldee (ICTQT, UG)

Marco Erba (ICTQT, UG)

Tushita Prasad (ICTQT, UG)

Gerardo Suarez (ICTQT, UG)

Moises Bermejo Moran (WFAiI, UJ)

Stanisław Kurzyna (QOT, UW)

Break & Discussion time

11:30 – 12:00 **SpeedTalks III**

Marcin Markiewicz (ICTQT, UG)

Mathias Salzger (ICTQT, UG)

Tomasz Linowski (ICTQT, UG)

Marcin Karczewski (ICTQT, UG)

Vinicius Pretti Rossi (ICTQT, UG)

Moein Naseri (QOT, UW)

Maciej Demianowicz (GUT)

Chithra Raj (ICTQT, UG)

Pedro Dieguez (ICTQT, UG)

Lunch Break

15:00 – 18:00 **Tuesday Poster Session**

Wednesday, December 7th, 2022

10:00 – 10:30

SpeedTalks IV

Marcin Marciniak (WMFiI, UG)
Jan Nowosielski (QOT, UW)
Daniel McNulty (CTP, PAS)
Artur Czerwiński (WFAiI, NCU)
Julia Chupryna (WFAiI, NCU)

Michał Cholewiak (WMFiI, UG)
Marcin Jastrzębski (QOT, UW)
Karol Łukanowski (QOT, UW)
Akshata Shenoy (ICTQT, UG)
Anuradha Anarthe (WFAiI, NCU)

Break & Discussion time

10:45 – 11:15

SpeedTalks V

Kaushik Joarder (WFAiI, NCU)
Borhan Ahmadi (ICTQT, UG)
Susane Celegari (CTP, PAS)
Sumit Rout (ICTQT, UG)
Marek Winczewski (ICTQT, UG)

Paweł Mazurek (ICTQT, UG)
Michał Banacki (ICTQT, UG)
Wojciech Bruzda (WFAiI, UJ)
Tanmoy Biswas (ICTQT, UG)
Saeid Izadshenas (WFAiI, NCU)

Break & Discussion time

11:30 – 12:00

SpeedTalks VI

Marcin Pawłowski (ICTQT, UG)
Marcus Grassl (ICTQT, UG)
Marcin Łobejko (ICTQT, UG)
Karthik Hosapete Seshadri (ICTQT, UG)
Giuseppe Viola (ICTQT, UG)

John Selby (ICTQT, UG)
Saronath Halder (QOT, UW)
Piotr Mironowicz (ICTQT, UG)
Paulo Cavalcanti (ICTQT, UG)
Marcin Wieśniak (ICTQT, UG)

Lunch Break

15:00 – 18:00

Wednesday Poster Session

Thursday, December 8th, 2022

9:00 – 11:00

Broadcast of the Nobel Lecture

11:00 – 11:30

Closing remarks

11:30 –

Farewell coffee

Acronyms

UG – University of Gdańsk

ICTQT – International Centre for Theory of Quantum Technologies

WMFiI – Faculty of Mathematics, Physics and Computer Science

UW – University of Warsaw

QOT – Centre for Quantum Optical Technologies, Centre of New Technologies

UJ – Jagiellonian University

NCU – Nicolas Copernicus University in Toruń

WFAiI - Faculty of Physics, Astronomy and Informatics,

PG – Gdańsk University of Technology

CTP PAS – Center for Theoretical Physics, Polish Academy of Sciences

KCIK – National Quantum Information Centre

List of speed talks / poster sessions

Tuesday Poster Session	
Albert Rico	Multilinear entanglement detection from $\mathbb{C}S_n$
Ana Belen Sainz	An open-source linear program for testing nonclassicality
Antonio Mandarino	Quantum phase detection generalisation from marginal quantum neural network models
Aravindh Balaji Ravichandran	Photonic encoding of qubits using W state encoding
Bartosz Niewelt	Optimization of the performance of quantum memory by tuning external magnetic fields
Chithra Raj	On the Quantum Monogamy Bounds from Information Causality
Fattah Sakuldee	Suppression of Displacement Noise and Recovery of Superresolution in Displacement Measurement
Gerardo Suarez	Optimal control of charging quantum batteries
Jan Tuziemski	Efficient Learning of Readout Noise Cross-Talk Models in Near-Term Quantum Devices
Konrad Schlichtholz	Contextuality of bosonic fields in states with undefined particle numbers
Luis Cort-Barrada	Effect of non-markovian bath to the dynamics of the qubit-cavity hybrid
Maciej Demianowicz	Genuinely entangled subspaces
Marcin Karczewski	Heralded entanglement via bosonic subtraction
Marcin Markiewicz	Duality of averaging of quantum states over arbitrary symmetry groups.
Marco Erba	Classical theories with entanglement and generalised noncontextuality
Matthias Salzger	Connecting indefinite causal order processes to composable quantum protocols in a spacetime
Michał Parniak	Spectral superresolution achieved using a quantum memory
Moein Naseri	Speed Limit for the Change of Basis
Moises Bermejo Moran	Overlapping Bell Inequalities
Paweł Cieśliński	Reliable Entanglement Verification with Finite Copies of a Quantum State
Pedro Dieguez	Thermal devices powered by generalized measurements with indefinite causal order
Stanisław Kurzyna	Storage of light in gradient echo memory
Tomasz Linowski	Application range of crosstalk-affected spatial demultiplexing for resolving separations between unbalanced sources
Tushita Prasad	$1/n$ expansion of the regularised coherent information of a noisy quantum channel
Vinicius Pretti Rossi	Contextuality with vanishing coherence and maximal robustness to dephasing

Wednesday Poster Session	
Akshata Shenoy	Practical Quantum Key Distribution Onboard Satellites
Anuradha Anarthe	Design of a breadboard for optical telemetry ranging including atmospheric turbulence simulator for optical satellite link
Artur Czerwinski	Quantum tomography of time-bin entangled photon pairs
Borhan Ahmad	Catalysis in charging quantum batteries
Daniel McNulty	Estimating Quantum Hamiltonians via Joint Measurements of Noisy Non-Commuting Observables
Giuseppe Viola	Entanglement Witnessing with Untrusted Detectors
Jan Nowosielski	Fractional Fourier transform in gradient echo memory

QUANTUMSPEEDUP

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John Selby	Generalised process theories
Julia Chupryna	Design of a breadboard for optical telemetry ranging including atmospheric turbulence simulator for optical satellite link
Karol Łukanowski	Quantum Limits on the Capacity of Multispan Links with Phase-sensitive Amplification
Karthik Hosapete Seshadri	Noise-adapted strategies for quantum random access codes
Kaushik Joarder, Jakub Szlachetka	Ultrabright Sagnac-type source for satellite quantum communication
Marcin Jastrzębski	How to experimentally rotate the Wigner function of a pulse?
Marcin Łobejko	Towards reconciliation of completely positive open system dynamics with the equilibration postulate
Marcin Marciniak	On some generalization of Gleason theorem
Marcin Pawłowski	Extending loophole-free nonlocal correlations to arbitrarily large distances
Marcin Wieśniak	Two-Qutrit Entanglement: 56 years old algorithm challenges machine learning
Marek Winczewski	On the exponential quantum dynamical maps with the relaxation property
Markus Grassl	How Much Entanglement Does a Quantum Code Need?
Michał Banacki	Security in scenarios of post-quantum channel steering
Michał Cholewiak	Two approaches to Zauner Conjecture
Otávio Molitor	Salient signatures of entanglement in the surrounding environment
Paulo Cavalcanti	Representing all multipartite non-signalling channels via quasiprobabilistic mixtures of local channels in generalised probabilistic theories
Paweł Mazurek	The asymptotic emergence of the Second Law for a repeated charging process
Piotr Mironowicz	Entangled Rendezvous: A Possible Application of Bell Non-Locality For Mobile Agents on Networks
Saeid Izadshenas	Broadband metasurface for Raman spectroscopy beyond single molecule detection level
Saronath Halder	Quantum vs classical: identifying the value of a random variable unambiguously
Sumit Rout	Arbitrary Separation in One-way Zero-error Quantum Communication Complexity of Relations with Finite Set of Inputs
Susane Calegari	Fermion Sampling under realistic assumptions
Wojciech Bruzda	Local Hidden Variable Values Without Optimization Procedures

Committees

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Marek Żukowski (ICTQT, UG)
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