



XV Symposium KCIK-ICTQT on
QUANTUM INFORMATION
16-18 May 2024, Sopot, Poland

PROGRAMME

Venue: Centrum Dydaktyczno-Konferencyjne (Conference Centre), University of Gdańsk
Piaskowa 9 Street, 81-864 Sopot

Thursday, May 16

08:30 – 09:00	Registration	
09:00 – 09:10	Opening ceremony Piotr Stepnowski, Rector of the University of Gdańsk	
Session I	Chair: Paweł Horodecki	
09:10 – 09:35	Charles Bennett	<i>How Science, and Scientists individually, can stabilize democracies against misinformation-driven discord and disintegration</i>
09:35 – 10:00	Lorenzo Maccone	<i>Mutual Information Bounded by Fisher Information</i>
10:00 – 10:25	Felix Leditzky	<i>Enhancing classical communication networks with quantum resources</i>
	<i>Coffee break – 40 min</i>	
Session II	Chair: Adam Miranowicz	
11:05 – 11:30	Christiane P. Koch	<i>Minimizing resources for quantum devices with control theory</i>
11:30 – 11:55	Paweł Caban	<i>Entanglement and Bell violation in H to ZZ decay with anomalous coupling</i>
12:55 – 12:20	Marcin Płodzień	<i>Generation and storage of many-body quantum correlations in analog and digital quantum simulators</i>
	<i>Lunch – 100 min</i>	

Session III	Chair: Tomasz Sowiński	
14:00 – 14:25	Volodymyr Tkachuk	<i>Simulation of spin systems with quantum computers</i>
14:25 – 14:50	Tomasz Śmierzchalski	<i>AI-Powered Error Correction for Quantum Annealers</i>
14:50 – 15:15	Piotr Kolenderski	<i>Quantum technologies based on single photons</i>
15:15 – 15.20	Final remarks	
<i>Coffee break – 40 min</i>		

Special Evening Session Chair: Adam Sawicki

16:00 – 16:15	Distinguished PhD Thesis 2023	
16:15 – 16:40	Silver KCIK Award 2023	
16:40 –	Charles Bennett	<i>Evening lecture on the early history of quantum information</i>
19:00 -	Dinner speeches	Conference dinner (Restaurant "Nad potokiem", Morska 4 Street , Gdańsk-Jelitkowo)

Friday, May 17

Session V	Chair: Marek Żukowski	
09:20 – 09:45	Lev Vaidman	<i>An update on counterfactual communication</i>
09:45 – 10:10	Marco Genovese	<i>New perspectives in quantum imaging: quantum-enhanced quantitative phase imaging</i>
10:10 – 10:35	Rafał Demkowicz-Dobrzański	<i>Quantum metrology using quantum combs and tensor network formalism</i>
10:35 – 11:00	Artur Barasiński	<i>Quantification of Quantum Correlations in Gaussian States Using Photon-Number Measurements</i>
<i>Coffee break – 40 min</i>		

Session VI	Chair: Jakub Rembieliński	
11:40 – 12:05	Jukka Pekola	<i>Trajectory-based detection in stochastic and quantum thermodynamics</i>
12:05 – 12:30	Hermann Kampermann	<i>Tight finite secret key rates for the six state protocol</i>
12:30 – 12:55	Paweł Kurzyński	<i>Exposing Hypersensitivity in Quantum Chaotic Dynamics</i>
12:55 – 13:20	Alexandre Orthey	<i>Progress on device-independent and almost device-independent schemes of certification of quantum states and measurements</i>
Conference photo		
<i>Lunch – 100 min (including the photo)</i>		

Session VII	Chair: Andrzej Grudka	
15:00 – 15:25	Khrystyna Gnatenko	<i>Studies of the properties of weighted and directed graphs on a quantum computer</i>
15:25 – 15:50	Aleksander Lasek	<i>Non-Abelian symmetry can increase entanglement entropy</i>
15:50 – 16:15	Pradeep Kiran Sarvepalli	<i>Quantum communication complexity of secret sharing: An emerging direction</i>

16:15 – 16:40	Piotr Mironowicz	<i>Entanglement Assisted Collaboration</i>
16:40 – 16.50	Final remarks	
17:00 – 19:00	Poster session	

Saturday, May 18

Session VIII	Chair: Karol Życzkowski	
09:20 – 9:45	Oriol Romero-Isart	<i>Levitated Nanoparticles in Macroscopic Quantum Superpositions: Pushing the Boundaries of Quantum Mechanics</i>
09:45 – 10:10	Paweł Machnikowski	<i>Controlling photons with acoustic fields using a solid-state quantum emitter</i>
10:10 – 10:35	Vahid Karimipour	<i>The noisy Werner-Holevo channel and its properties</i>
10:35 – 11:00	Marek Sawerwain	<i>On the use of Fredholm determinants to analysis the entropy of quantum infinite-dimensional systems</i>
<i>Coffee break – 40 min</i>		
Session IX	Chair: Zbigniew Puchała	
11:40 – 12:05	Akshata Shenoy	<i>Quantum machine learning powered quantitative finance</i>
12:05 – 12:30	Piotr Szańkowski	<i>Phenomenological Quantum Mechanics: deducing the formalism from experimental observations</i>
12:30 – 12:55	Jakub Czartowski	<i>Iso-entangled Measurements: Uncharted Territory in Quantum Entanglement</i>
12:55 – 13:00	Final remarks	
<i>Lunch</i>		
14:00 – 16:00	Meeting of the KCIK Scientific Council	

List of posters

1.	Borhan Ahmadi	<i>Charging Quantum Batteries by an Incoherent Source</i>
2.	Michał Banacki	<i>On steering in the C^*-algebraic framework</i>
3.	Bihalan Bhattacharya	<i>Schwarz qubit maps with diagonal unitary and orthogonal symmetries</i>
4.	Marta Bielińska	<i>Superluminal signalling and chaos in nonlinear quantum mechanics</i>
5.	Rafał Bistróń, Marcin Rudziński	<i>Error accumulation in Quantum Volume circuit</i>
6.	Wojciech Bruzda	<i>Perfect Tensors and Multipartite Entanglement</i>
7.	Anubhav Chaturvedi	<i>Extending loophole-free nonlocal correlations to arbitrarily large distances</i>
8.	Paweł Cieśliński	<i>Unmasking the Polygamous Nature of Quantum Nonlocality</i>
9.	Otávio Augusto Dantas Molitor	<i>Quantum Switch as a Thermodynamic Resource in the context of Passive States</i>
10.	Arpan Das	<i>Universal time scalings of sensitivity in Markovian quantum metrology</i>

11.	Anita Dąbrowska	<i>Optimization of two-photon absorption for three-level atom</i>
12.	Piotr Dulian	<i>Quantum metrology using quantum combs and tensor network formalism</i>
13.	Jorge Escandón-Monardes	<i>Transcribing quantum channels into quantum states</i>
14.	Madhura Ghosh Dastidar	<i>Quantum Random Number Generation using 2-emitter systems</i>
15.	Karthik Hosapete-Seshadri	<i>Noise adapted quantum random access codes</i>
16.	Ryszard Paweł Kostecki	<i>Extended Brègman entropic geometry and nonlinear operators on state spaces of GPTs</i>
17.	Ryszard Kukulski	<i>Causal order discrimination</i>
18.	Stanisław Kurdziałek	<i>Fundamental bounds and optimal strategies in adaptive quantum metrology</i>
19.	Owidiusz Makuta	<i>All genuinely entangled stabilizer subspaces are multipartite fully nonlocal</i>
20.	André Malavazi	<i>Quantum switch instabilities with an open contro</i>
21.	Marcin Marciniak	<i>Local quantum measurement and no-signaling do not imply quantum correlations in QFT</i>
22.	Robert Okuła	<i>How decoherence affects the security of BB84 quantum key distribution protocol</i>
23.	Ekta Panwar	<i>Robust self-testing of Bell inequalities tilted for maximal loophole-free nonlocality</i>
24.	Oliver Reardon-Smith	<i>Epsilon-nets t-designs and heat kernels</i>
25.	Sumit Rout	<i>A Novel Instance of Unbounded Quantum Advantage (tentative title)</i>
26.	Adam Sawicki	<i>Random approximate t-designs</i>
27.	Gerardo Suarez	<i>Complete positive maps in Open quantum systems</i>
28.	Krzysztof Szczygielski	<i>D-divisible quantum evolution families</i>
29.	Lisa T. Weinbrenner	<i>Certifying the topology of quantum networks: theory and experiment</i>
30.	Marek Winczewski	<i>Cumulant Equation for a Damped Quantum Harmonic Oscillator</i>

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