



XVII Symposium KCIK-ICTQT on  
**QUANTUM INFORMATION**  
13-15 May 2026, Sopot-Gdańsk, Poland

## PROGRAMME

**Venue:** Centrum Dydaktyczno-Konferencyjne (Conference Centre), University of Gdańsk, 9 Piaskowa Str., **Sopot (sessions I-VIII)**  
Faculty of Mathematics, Physics and Informatics, University of Gdańsk, 57 Wita Stwosza Str., **Gdańsk (session IX)**

### Wednesday, May 13

|                    |   |  |
|--------------------|---|--|
| 08:30              | Registration & networking   |  |
| 09:30 – 09:40      | <b>Welcome Speeches</b>   |  |
| <b>Session I</b>   | <b>Foundations</b>  | <b>Chair: Marek Żukowski</b>   |
| 09:40 – 10:10      | <b>Philippe Grangier</b>  | <i>Heading towards an Algebraic Heisenberg Cut</i>   |
| 10:10 – 10:40      | <b>Marek Czachor</b>  | <i>Swapping Space for Time: A new and quite counterintuitive type of quantum interferometry</i>                    |
| 10:40 – 11:10      | <b>Michał Eckstein</b>  | <i>A unified framework for causation and correlations in relativistic spacetimes</i>                               |
| 11:10 – 11:40      | <b>Sohyun Park</b>  | <i>Can tachyons explain all possible non-local effects?</i>  |
|                    | Coffee break & networking   |  |
| <b>Session II</b>  | <b>Quantum Information and Technologies</b>                       | <b>Chair: Jakub Rembieliński</b>   |
| 12:20 – 12:50      | <b>Josef Lazar</b>  | <i>Quantum Technology Landscape at the Czech Academy of Sciences and Beyond</i>                                    |
| 12:50 – 13:20      | <b>Jan Kołodzyński</b>  | <i>Quantum information meets particle physics: Detecting entanglement in para-positronium annihilation photons</i> |
| 13:20 – 13:50      | <b>Michał Gawełczyk</b>   | <i>Controlling quantum dot charge and spin states with sound</i>   |
|                    | Lunch & networking  |  |
| <b>Session III</b> | <b>Many body quantum systems</b>                                  | <b>Chair: Dariusz Chruściński</b>  |
| 15:20 – 15:50      | <b>Giovanna Morigi</b>  | <i>Time complexity of a monitored quantum search with resetting</i>  |
| 15:50 – 16:20      | <b>Volodymyr Tkachuk</b>  | <i>Encoding the Decision Partition Problem in Central-Spin Hamiltonians and Solving It on Quantum Processors</i>   |
| 16:20 – 16:50      | <b>Tristan Kraft</b>  | <i>Bounded-Error Quantum Simulation via Hamiltonian and Lindbladian Learning</i>                                   |
| 16:50 – 17:20      | <b>Pedro Nicacio Falcao</b>                                       | <i>Nonstabilizerness dynamics in many-body localized systems</i>   |
| 19:00              | Banquet (“Nad Potokiem” restaurant, 4 Morska Str., 80-341 Gdańsk) |  |

## Thursday, May 14

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|---------------------------|--|--|
| 09:00                     | Registration & networking                                |  |
| <b>Session IV</b>         | <b>Quantum Computing: Complexity and Tensor Networks</b> | <b>Chair: Karol Życzkowski</b>   |
| 09:30 – 10:00             | <b>Ignacio Cirac</b>                                     | <i>Efficient Preparation and Manipulation of Tensor Network Quantum States</i>   |
| 10:00 – 10:30             | <b>Barbara Kraus</b>                                     | <i>Phases of matrix-product states with symmetries and measurements</i>  |
| 10:30 – 11:00             | <b>Michał Oszmaniec</b>                                  | <i>Towards verifiable and useful quantum advantage in photonics</i>  |
| 11:00 – 11:30             | <b>Łukasz Paweła</b>                                     | <i>Closing the scaling gap: towards fair quantum-classical runtime comparisons</i>   |
| Coffee break & networking |  |  |
| <b>Session V</b>          | <b>Machine Learning and Correlations</b>                 | <b>Chair: Mariusz Gajda</b>  |
| 12:15 – 12:45             | <b>Sergii Strelchuk</b>                                  | <i>From Classical to Quantum Learning Theory: Learnability, Boosting and Quantum Advantage</i>   |
| 12:45 – 13:15             | <b>Karol Bartkiewicz</b>                                 | <i>Spin chirality across quantum state copies detects hidden entanglement</i>  |
| 13:15 – 13:45             | <b>Marek Krośnicki</b>                                   | <i>Electronic structure of <math>^{229}\text{Th}</math>-Doped <math>\text{CaF}_2</math> crystals. A step towards to Nuclear Clocks</i>     |
| Conference photo          |  |  |
| Lunch & networking        |  |  |
| <b>Session VI</b>         | <b>Quantum Coding</b>                                    | <b>Chair: Zbigniew Puchala</b>   |
| 15:20 – 15:50             | <b>Andre Chailloux</b>                                   | <i>Quantum algorithms for decoding problems inspired by Regev's reduction</i>  |
| 15:50 – 16:20             | <b>Khrystyna Gnatenko</b>                                | <i>Properties of Multiqubit Quantum States Representing <math>n</math>-Partite Graphs and Their Quantification Using Quantum Computing</i> |
| 16:20 – 16:50             | <b>Marcin Jarzyna</b>                                    | <i>Coherent beam combination in the photon starved regime</i>  |
| Break                     |  |  |
| 17:10 – 18:30             | Closed meeting of the KCIK Scientific Council            |  |

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## Friday, May 15

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|---------------------------|---|--|
| 09:00                     | Registration & networking                         |  |
| <b>Session VII</b>        | <b>Physical Platforms and Nonclassical states</b> | <b>Chair: Adam Miranowicz</b>  |
| 09:30 – 10:00             | <b>Mohamed Bourennane</b>                         | <i>Topological quantum photonics</i>   |
| 10:00 – 10:30             | <b>Marcin Markiewicz</b>                          | <i>When interference is not enough: a definitive Bell test for path-identity experiments</i> |
| 10:30 – 11:00             | <b>Zbigniew Ficek</b>                             | <i>Nonreciprocity in bosonic coupling without breaking time-reversal symmetry</i>            |
| Coffee break & networking |   |  |

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|---|--|---|
| <b>Session VIII</b>   | <b>Quantum Resources and Detection</b> | <b>Chair:</b> Paweł Machnikowski  |
| 11:40 – 12:10   | <b>Paweł Caban</b>                     | <i>Violation of Bell inequalities in 2×3 dimensional systems</i>                            |
| 12:10 – 12:40   | <b>Gniewomir Sarbicki</b>              | <i>Third-Order Local Randomized Measurements for Finite-size Entanglement Certification</i> |
| 12:40 – 13:10   | <b>Piotr Kopszak</b>                   | <i>Entanglement recycling in two-step port-based teleportation</i>                          |
| Lunch & networking  |  |   |
| <b>Session IX</b>   | <b>PUBLIC SESSION</b>                  | <b>Chair:</b> Marcin Marciniak  |
| <b>Venue:</b> Faculty of Mathematics, Physics and Informatics, University of Gdańsk, 57 Wita Stwosza Str, <b>Gdańsk</b> |  |   |
| 15:00 – 17:00   | <b>Poster Session</b>                  |   |
| 17:00 – 17:45   | <b>Philippe Grangier</b>               | <i>Quantum Mechanics: from Fundamental Principles to Technological Revolutions</i>          |
| 17:45 – 18:00   | <b>Questions from the audience</b>     |   |
| 18:00 – 18:15   | <b>Final Speech</b>                    |   |

## List of posters

|     |                |                          |   |
|-----|----------------|--------------------------|---|
| 1.  | Dhruv          | <b>Baheti</b>            | <i>Dyanamics Cross-Resource Recycling on Networks</i>   |
| 2.  | Gerard         | <b>Anglès Munné</b>      | <i>Holographic quantum codes with trapped ions</i>  |
| 3.  | Artur          | <b>Barasiński</b>        | <i>Efficient Characterization of Quantum Correlations in Three-Beam Gaussian Fields via Photon-Number-Resolving Detection</i> |
| 4.  | Luis Cort      | <b>Barrada</b>           | <i>Classical–Quantum Hybrid Algorithms for Constrained Search in Imaginary Time</i>   |
| 5.  | Jiafu          | <b>Cheng</b>             | <i>Optimal Choice of Guessed Channels in Quantum Noise Deconvolution with Partially Known Noise</i>                           |
| 6.  | Przemysław     | <b>Czapla</b>            | <i>Towards Rigorous Entanglement Detection of Para-Positronium Annihilation Photons</i>                                       |
| 7.  | Mikołaj        | <b>Czechlewski</b>       | <b>On polynomial classical complexity of quantum entanglement distillation</b>  |
| 8.  | Bogdan S.      | <b>Damski</b>            | <i>Product Weyl–Heisenberg Covariant Mutually Unbiased Bases and Extremal Non-Stabilizerness</i>                              |
| 9.  | Otávio Augusto | <b>Dantas Molitor</b>    | <i>Quantum Computation with Decoherence-Free Subsystems within the Mixed Schur-Weyl Duality</i>                               |
| 10. | Jorge          | <b>Escandón-Monardes</b> | <i>Multiparameter estimation with a photonic quantum switch</i>   |
| 11. | Alfonso        | <b>Fernandez</b>         | <i>Towards Characterizing the Reachable Set for Qubit Evolution Under Constrained Lindblad Dynamics</i>                       |
| 12. | Markus         | <b>Grassl</b>            | <i>An Update on the SIC-POVM Problem</i>  |
| 13. | Mykhailo       | <b>Hontarenko</b>        | <i>Towards Characterizing the Reachable Set for Qubit Evolution Under Constrained Lindblad Dynamics</i>                       |
| 14. | Michał         | <b>Horodecki</b>         | <i>Modular Machine for On-Chip Autonomous Energy Transport in cQED</i>  |
| 15. | Felix          | <b>Huber</b>             | <i>A Lovász theta lower bound on Quantum Max Cut</i>  |
| 16. | Ryszard        | <b>Kukulski</b>          | <i>High-rate QKD</i>  |

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|-----|-------------|--------------------|---|
| 17. | Mateusz     | <b>Kuniej</b>      | <i>Higher-harmonic acoustic control of a quantum emitter</i>  |
| 18. | Wiesław     | <b>Leoński</b>     | <i>Violation of the inequalities for the correlations in space and time for various states</i><br><i>Poster 1: The Legget-Garg inequality violation for two-mode Kerr-type stat</i><br><i>Poster 2: The Bell-CHSH inequality violations 'identification and quantification for W-Class States</i> |
| 19. | Paulina     | <b>Lewandowska</b> | <i>Shared entanglement for three-party causal order guessing game</i>   |
| 20. | Antonio     | <b>Mandarino</b>   | <i>Statistics of topological defects across a phase transition in a digital superconducting quantum processor</i>   |
| 21. | Patryk      | <b>Michalski</b>   | <i>Certifying Majorana Fermions with Bipartite and Network Bell Inequalities</i>  |
| 22. | Vikash      | <b>Mittal</b>      | <i>Discrete time quantum walk of locally interacting walkers</i>  |
| 23. | Muhammad    | <b>Mohsin</b>      | <i>Violation of CGLMP Inequality In two-qutrit state</i>  |
| 24. | Moein       | <b>Naseri</b>      | <i>Noise Cancellation in Quantum Battery Charging</i>   |
| 25. | Ritopriyo   | <b>Pal</b>         | <i>Persistent local content of GME qubit states under finite von Neumann measurements</i>   |
| 26. | Aby         | <b>Philip</b>      | <i>Robustness of quantum data hiding against entangled catalysts and memory</i>   |
| 27. | Hanussek    | <b>Philipp</b>     | <i>Quantum-inspired dynamical models on quantum and classical annealers</i>   |
| 28. | Lucas       | <b>Pollyceno</b>   | <i>Security of DIQKD from multipartite information causality</i>  |
| 29. | Diego       | <b>Ponterio</b>    | <i>Product Weyl-Heisenberg covariant mutually unbiased bases and extremal non-stabilizerness</i>  |
| 30. | Sumit       | <b>Rout</b>        | <i>Quantum Work Extraction beyond Classical Limits</i>  |
| 31. | Juan Pablo  | <b>Rubio Perez</b> | <i>Efficient classical training of Bosonic Born Machines beyond binary outputs</i>  |
| 32. | Marcin      | <b>Rudziński</b>   | <i>Entangling power and Schmidt-resolved fidelity diagnostics for two-qubit quantum channels</i>  |
| 33. | Matthias    | <b>Salzger</b>     | <i>Higher-order quantum processes respecting closed labs in a spacetime have quantum controlled causal order</i>  |
| 34. | Luís Felipe | <b>Santos</b>      | <i>Waiting time statistics for a double quantum dot coupled to an optical cavity</i>  |
| 35. | Shubhayan   | <b>Sarkar</b>      | <i>Entanglement is not sufficient for most practical entanglement-based QKD protocols</i>   |
| 36. | Marek       | <b>Sawerwain</b>   | <i>Quantum features in handwritten images of digits and letters</i>   |
| 37. | John        | <b>Selby</b>       | <i>Generalised Process Theories</i>   |
| 38. | Amrapali    | <b>Sen</b>         | <i>Superluminal Transformations and Indeterminism</i>   |
| 39. | Michał      | <b>Senderski</b>   | <i>Modeling Nanodiamond Clusters for NV Center-Based Quantum Technologies</i>   |
| 40. | Leonard     | <b>Sikorski</b>    | <i>Update on the Bound Key Conjecture</i>   |
| 41. | Chirag      | <b>Srivastava</b>  | <i>Quantum waste management: Utilizing residual states in quantum information processing</i>  |
| 42. | Jędrzej     | <b>Stempin</b>     | <i>Locally interacting Discrete-Time Quantum Walk of Multiple Particles</i>   |
| 43. | Alexander   | <b>Streltsov</b>   | <i>Second Law of Entanglement Manipulation with Entanglement Battery</i>  |
| 44. | Michał      | <b>Studziński</b>  | <i>Oscillator partition functions in walled Brauer algebras</i>   |
| 45. | Gianluigi   | <b>Tartaglione</b> | <i>Uncertainty equality for <math>SU(N)</math> observables enabling the experimentally friendly detection of <math>k</math>-inseparability via purity measurements</i>  |

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|-----|-----------|-------------------|--|
| 46. | Masood    | <b>Valipour</b>   | <i>Optimization of two-photon absorption: Indistinguishable photon pairs</i>                         |
| 47. | Marek     | <b>Winczewski</b> | <i>Energy Cost of a Quantum Operation: From Axioms to a Hamiltonian Framework</i>                    |
| 48. | Jakub     | <b>Wójcik</b>     | <i>On Non-Existence of Stabilizer Absolutely Maximally Entangled States in Even Local Dimensions</i> |
| 49. | Jan       | <b>Wójcik</b>     | <i>Mean hitting time perspective on quantum advantage in quantum walk model</i>                      |
| 50. | Adamantia | <b>Zampeli</b>    | <i>(Relativistic) quantum causal instruments</i>   |
| 51. | Beata     | <b>Zjawin</b>     | <i>How typical is contextuality?</i>   |

## COMMITTEES

### Scientific Committee

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