



XIV Symposium KCIK-ICTQT on  
**QUANTUM INFORMATION**  
18-20 May 2023, Sopot, Poland

**PROGRAM**

**Place:** Sopot, Armii Krajowej 119 Str., Faculty of Economics, University of Gdansk (Building C, Hall D)

**Thursday, May 18**

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**08:30 – 09:00**    **Registration**

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**09:00 – 09:10**    **Opening ceremony**  
Prof. dr hab. Piotr Stepnowski, Rector of the University of Gdańsk

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**Session I**            Chair: **Marek Żukowski**

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**09:10 – 09:35**    **Eugen Polzik**                            *Quantum state engineering of a macroscopic object*

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**09:35 – 10:00**    **Adam Miranowicz**                      *Novel methods and applications of parametric amplification*

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**10:00 – 10:25**    **Florian Mintert**                         *Quantum control with quantum invariants*

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*Coffee break*

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**Session II**            Chair: **Dariusz Chruściński**

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**11:00 – 11:25**    **Gerd Leuchs**                            *Interfering the bright and the dark - improving the sensitivity of an interferometer using Kerr squeezed light*

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**11:25 – 11:50**    **Karol Bartkiewicz**                      *Quantum exceptional points of non-Hermitian systems via quantum process tomography*

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**11:50 – 12:15**    **Michał Karpiński**                       *Phase-only temporal mode transformations*

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*Lunch*

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<b>Session III</b>	Chair: <b>Krzysztof Kowalski</b>	
14:15 – 14:40	<b>Khrystyna Gnathenko</b>	<i>Relation of characteristics of quantum graph states with graph properties and their detection on a quantum computer</i>
14:40 – 15:05	<b>Marcus Grassl</b>	<i>SIC-POVMS: Construction and Implementation</i>
15:05 – 15:30	<b>Oliver Reardon-Smith</b>	<i>Improved simulation of quantum circuits dominated by free Fermionic operations</i>
	<i>Coffee break</i>	
<b>Session IV</b>	Chair: <b>Nitica Sakharwade</b>	
16:00 – 16:25	<b>Emilia Witkowska</b>	<i>Spin squeezing in Heisenberg spin chains</i>
16:25 – 16:50	<b>Bronze KCIK Award 2022</b>	
16:50 – 17:15	<b>Silver KCIK Award 2022</b>	
17:15 - 17:25	<b>Final remarks</b>	
18.00 – 20:00	Meeting of the ICTQT International Scientific Committee	

## Friday, May 19

### All Day Special Session on the occasion of 80<sup>th</sup> anniversary of Prof. Ryszard Horodecki

<b>9:00 - 9:05</b>	<b>Opening</b>	
<b>Session V</b>	Chair: <b>Karol Życzkowski</b>	
09:05 – 09:15	<b>Artur Ekert</b>	<i>Short speech (online)</i>
09:15 – 09:40	<b>Richard Jozsa</b>	<i>On validating high complexity performance of quantum computers</i>
09:40 – 10:05	<b>Marek Kuś</b>	<i>Entanglement of indiscernibles. Some fundamental remarks</i>
10:05 – 10:30	<b>Paweł Caban, Jakub Rembieliński</b>	<i>Spin correlations of vector bosons from the Higgs decay</i>
	<i>Coffee break</i>	
<b>Session VI</b>	Chair: <b>Adam Miranowicz</b>	
11:00 – 11:25	<b>Anna Sanpera</b>	<i>Convex set geometry, copositive matrices, and local-Hamiltonians</i>
11:25 – 11:50	<b>Jonathan Oppenheim</b>	<i>Decoherence vs diffusion: testing the quantum nature of gravity</i>
11:50 – 12:15	<b>Michał Studziński</b>	<i>When the symmetric group meets partial transposition: new tools for studying quantum systems</i>
12:15 – 12:20	<b>Conference photo</b>	
	<i>Lunch</i>	

<b>Session VII</b>	Chair: <b>Rafał Demkowicz-Dobrzański</b>	
14:30 – 14:55	<b>Mohamed Bourennane</b>	<i>Weak entanglement improves quantum communication using only passive linear optics</i>
14:55 – 15:10	<b>Maciej Lewenstein</b>	<i>Short speech (online)</i>
15:10 – 15:35	<b>Ravishankar Ramanathan</b>	<i>Device-independent randomness amplification of public weak seeds with finite devices (online)</i>
15:35 – 16:00	<b>Maciej Demianowicz</b>	<i>Entangled subspaces</i>
	<i>Coffee break</i>	
<b>Session VIII</b>	Chair: <b>Hanna Wojewódka-Ściążko</b>	
16:30 – 16:55	<b>Géza Tóth</b>	<i>Activation of metrologically useful genuine multipartite entanglement</i>
16:55 – 17:20	<b>Gláucia Murta</b>	<i>Self-testing with dishonest parties and entanglement certification in quantum networks</i>
17:20 – 17:45	<b>Marek Żukowski</b>	<i>Adventures with entanglement with Ryszard</i>
17:45– 18.00	<b>Final remarks</b>	
<b>18:30 – 20:45</b>	<b>Dinner speeches</b>	<b>Jubilee Dinner</b> Restaurant Harnaś, Stanisława Moniuszki 9 Str., 81-829 Sopot

## Saturday, May 20

<b>Session IX</b>	Chair: <b>Andrzej Jamiołkowski</b>	
09:15 – 9:40	<b>Ana Predojević</b>	<i>Quantum light sources: entanglement generation and characterization</i>
9:40 – 10:05	<b>Piotr Surówka</b>	<i>Fractons: entanglement and renormalization</i>
10:05 – 10:30	<b>Gniewomir Sarbicki</b>	<i>New families of optimal entanglement witnesses</i>
10:30 – 10:55	<b>Ryszard Kukulski</b>	<i>Probabilistic quantum error correction</i>
	<i>Coffee break</i>	
<b>Session X</b>	Chair: <b>Andrzej Grudka</b>	
11:25 – 11:50	<b>Wiesław Leoński</b>	<i>Quantum correlations and their transfer in two physical models</i>
11:50 – 12:15	<b>Piotr Dulian</b>	<i>Haar random approximate <math>t</math>-designs and Gaussian ensembles</i>
12:15 – 12:40	<b>Hanna Wojewódka-Ściążko</b>	<i>Resource engines</i>
12:45 – 12:50	<b>Final remarks</b>	
	<i>Lunch</i>	
14:15 – 15:15	Meeting of the KCIK Scientific Council	