International Conference on Quantum Communications, Networking, and Computing

(QCNC 2026)

6 - 8 April 2026 (Japan Standard Time)

Conference Program and Information Booklet

Sponsored by

Advanced Program Summary (Japan Standard Time Zone)

6 April 2026 (Monday)			
	Room: 4F Terrace Room	**Room: 6F Oriental Room West**	**Room: 6F Oriental Room East**
09:00-09:20	**Opening Ceremony (5F Royal Ballroom)**		
09:20-10:20	**Keynote Speech-1 (5F Royal Ballroom)**		
10:20-10:50	**Break**		
10:50-11:50	**Keynote Speech-2 (5F Royal Ballroom)**		
11:50-13:00	**Break**		
13:00-14:15	QCNC-1: Quantum Networking Architectures I	QCNC-2: Quantum Systems and Applications	QCNC-3: QKD Systems and Security I
14:15-14:20	**Break**		
14:20-15:35	QCNC-4: Quantum Security, QKD, and Distributed Computing	QCNC-5: QKD Systems and Security II	QCNC-6: Quantum Networking Systems and Testbeds I
15:35-16:00	**Break**		
16:00-17:00	QCNC-7: [Short Paper] Quantum Networking and Routing	QCNC-8: Quantum Networks and Foundations	QCNC-10: [Short Paper] QKD and Applied Security
17:00-17:10		**Break**	
17:10-17:50		QCNC-9: [Short Paper] Security, Communications, and Systems	
17:40-18:30	**Break**		
18:30-20:30	**QCNC-11: Poster Session & Reception (5F Royal Ballroom)**		

7 April 2026 (Tuesday)		
	Room: 6F Oriental Room West	**Room: 6F Oriental Room East**
09:00-10:15	QCNC-12: Quantum Networking Systems, Scheduling, and Verification	QCNC-13: Quantum Networking Architectures and Security I
10:15-10:45	**Break**	
10:45-12:00	QCNC-14: Quantum Simulation, Testbeds, and Scheduling	QCNC-15: Quantum Communications, Cryptography, and Networked Intelligence
12:00-13:00	**Break**	
13:00-14:30	**QCNC-16 Tutorial: Q2NS: An Open-Source Simulator for the Quantum Internet**	QCNC-17: Quantum Computing, Optimization, and Learning II
14:30-14:40		**Break**
14:40-16:10		QCNC-18: Quantum Systems, Compilation, and Implementation
16:10-16:30	**Break**	
16:30-17:45	QCNC-19: Quantum Sensing and Quantum Machine Learning	QCNC-20: Quantum AI, Secure Learning, and Authentication
17:45-18:30	**Break**	
18:30-20:30	**Banquet (5F Royal Ballroom)**	

8 April 2026 (Wednesday)			
	Room: 4F Terrace Room	**Room: 6F Oriental Room West**	**Room: 6F Oriental Room East**
09:00-10:20	Session QCNC-21: Workshop 3-Connecting the Dots: Technology, People, and Society in the Quantum Era	QCNC-22: [Short Paper] Advanced Quantum Networking	QCNC-23: [Short Paper] Quantum Computing and Learning
10:20-10:45		**Break**	

10:45-11:55		QCNC-24: [Short Paper] Algorithms, Learning, and Simulation	QCNC-25: [Short Paper] Quantum Communications, Security, and Applications
12:00-13:00	**Break**		
13:00-15:00	QCNC-26: Workshop 1-Quantum Computing for Classical Computational Challenges in HPC	QCNC-27: Workshop 2-Quantum Computing - Artificial Intelligence for Industry Applications and Scientific Discovery, Part I	QCNC-28: Workshop 4-Quantum Networking and Computing, Part I
15:00-15:30	**Break**		
15:30-16:30		QCNC-29: Workshop 2-Quantum Computing - Artificial Intelligence for Industry Applications and Scientific Discovery, Part II	QCNC-30: Workshop 4-Quantum Networking and Computing, Part II
16:30-16:40	**Closing (Room: 6F Oriental Room East)**		

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Session Chair: Robert Malaney, University of New South Wales, Australia

Keynote Speech 1

Quantum Information and Decision Systems: Design of Distinguishable States

Prof. Andrea Conti

Quantum Information Laboratory, University of Ferrara, Italy

Abstract

Next-generation networks will see the coexistence of classical and quantum systems to unlock unprecedented sensing and communication capabilities. Unleashing the full potential of such networks hinge upon the distinguishability among quantum states. Of particular interest is to explore the distinguishability of a broad class of non-Gaussian states, namely the photon-varied Gaussian states (PVGSs), which can be generated with current technologies from Gaussian states of the electromagnetic field. This talk will present how to leverage ideas from algebraic geometry, establishing connections between the structural parameters of PVGSs and algebraic varieties of generalized polynomials. By studying the geometric properties of such varieties, one can develop methodologies for determining parameters that can be used to construct distinguishable PVGSs for quantum information and decision systems.

Biography

Andrea Conti is a Professor and the founding director of the Wireless Communication and Localization Networks Laboratory and of the Quantum Information Laboratory, University of Ferrara, Italy. His research focuses on decision science and quantum information. His current topics include network localization and navigation, distributed sensing, and quantum information science. He has served as editor for IEEE journals and chaired international conferences. He serves as Series Editor-in-Chief for the IEEE JSAC Quantum Series: Quantum Communications and Networking. He was elected Chair of the IEEE Communications Society's Radio Communications Technical Committee and is Co-founder of the IEEE Quantum Communications and Information Technology Emerging Technical Subcommittee. He is an elected Fellow of the IEEE and of the IET.

Session Chair: Diego Lopez, Telefonica, Spain

Keynote Speech 2

Certifying QKD Devices: Bridging Security Proofs and Real-World Deployment

Prof. Go Kato

National Insitute of Information and Communications Technology, Japan

Abstract

Quantum Key Distribution (QKD) offers information-theoretic security, yet a significant gap persists between abstract security proofs and the behavior of real-world devices. This gap poses a major obstacle to practical deployment and, in particular, to the certification of QKD systems. Conventional security proofs rely on idealized assumptions and complex parameter estimation procedures that are difficult to verify in practice.

In this talk, we argue that enabling QKD certification requires revisiting the structure of security proofs themselves. We highlight key limitations of existing approaches and present recent advances toward certification-friendly QKD, focusing on methods that reduce modeling assumptions and simplify parameter estimation. These developments make security claims more transparent and amenable to device-level validation. We conclude by discussing how such approaches support scalable and trustworthy quantum communication networks, where certification plays a central role in bridging theory and deployment.

Biography

Dr. **Go Kato** is the Director of the Quantum ICT Laboratory at the National Institute of Information and Communications Technology (NICT), Japan. His research interests include the security proofs of quantum key distribution (QKD), protocol design for QKD networks, and theoretical frameworks for quantum control.

Technical Program *(Time zone: Japan Standard Time)*

Main Conference Day 1 *(Tokyo Time, UTC+9)*

Monday, 6 April 2026

Monday, 6 April 2026 | 5F Royal Ballroom, 09:00 – 09:20 (Tokyo Time)
Monday, 6 April 2026 | 5F Royal Ballroom, 00:00 – 00:20 (London Time)
Monday, 5 April 2026 | 5F Royal Ballroom, 20:00 – 20:20 (New York Time)
Opening Ceremony
Session Chair: Ruidong Li, Kanazawa University, Japan

Monday, 6 April 2026 | 5F Royal Ballroom, 09:20 – 10:20 (Tokyo Time)
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Sunday, 5 April 2026 | 5F Royal Ballroom, 20:20 – 21:20 (New York Time)

Keynote Speech 1: Quantum Information and Decision Systems: Design of Distinguishable States
- Prof. Andrea Conti (Quantum Information Laboratory, University of Ferrara, Italy)
Session Chair: Robert Malaney, University of New South Wales, Australia

Monday, 6 April 2026 | 5F Royal Ballroom, 10:50 – 11:50 (Tokyo Time)
Monday, 6 April 2026 | 5F Royal Ballroom, 01:50 – 02:50 (London Time)
Sunday, 5 April 2026 | 5F Royal Ballroom, 21:50 – 22:50 (New York Time)

Keynote Speech 2: Certifying QKD Devices: Bridging Security Proofs and Real-World Deployment
- Prof. Go Kato (National Insitute of Information and Communications Technology, Japan)
Session Chair: Diego Lopez, Telefonica, Spain

Monday, 6 April 2026 | 13:00 – 14:15 (Tokyo Time)
Monday, 6 April 2026 | 04:00 – 05:15 (London Time)
Monday, 6 April 2026 | 00:00 – 01:15 (New York Time)

Session QCNC-1: Quantum Networking Architectures I（4F Terrace Room）
Session Chair: Joaquin Chung, Argonne National Laboratory, USA

Extending Repeater Spacing in All-Photonic Quantum Repeaters
Ryosuke Shiina, Kenneth Goodenough and Filip Rozpedek

Online Optimal Probe Allocation for Quantum Network Tomography
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Panagiotis Promponas, Leonardo Bacciottini, Paul A. Polakos, Gayane Vardoyan, Donald Towsley and Leandros Tassiulas

Quantum MIMO Diversity Framework Using Approximate Cloning and Probabilistic Purification
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Monday, 6 April 2026 | 13:00 – 14:15 (Tokyo Time)
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Session Chair: Yury Kurochkin, Technology Innovation Institute, UAE

Combining Continuous and Discrete Variables for Quantum Information Processing
Luca Bianchi, Carlo Marconi and Davide Bacco

Quantum Circuits for CRISPR-Guided Gene Regulatory Network Inference
Rubayat Khan, Mazhar Razon, Nuruzzaman Sojib and Don Roosan

Tunneling based atom interferometry using Bose-Einstein condensate in a double-well potential
S. Benel, Sandra Babu, Simon Haine and Manju Perumbil

A Quantum SMT Solver for Bit-Vector Theory
Shang-Wei Lin, Si-Han Chen, Lei-Han Yao, Yu-Chung Chen and Yean-Ru Chen

QuMod: Parallel Quantum Job Scheduling on Modular QPUs using Circuit Cutting
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Monday, 6 April 2026 | 13:00 – 14:15 (Tokyo Time)
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Session Chair: Momtchil Peev, Huawei Technologies Duesseldorf GmbH, Germany

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Bridging the Gap: Systematic IT Security Assessment and Hardening of Commercial QKD Systems
David Koch, Sebastian Deuerling, Amelie Dieterich and Fabian Farina

A Stochastic Model for Key Supply and Session Demand in Quantum Key Distribution Systems
Hamid Taramit, Leduin Jose Cuenca Macas, Juan P. Brito and Vicente Martin

Combined Quantum and Post-Quantum Security Performance Under Finite Keys
Aman Gupta, Ravi Singh Adhikari, Anju Rani, Xiaoyu Ai and Robert Malaney

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Christoph Doberl, Wolfgang Eibner, Hannes Hubel, Manuela Kos, Florian Kutschera, Stephan Laschet, Andreas Neuhold, Sebastian Ramacher, Philipp Stanzer and Werner Strasser

Monday, 6 April 2026 | 14:20 – 15:35 (Tokyo Time)
Monday, 6 April 2026 | 05:20 – 06:35 (London Time)
Monday, 6 April 2026 | 01:20 – 02:35 (New York Time)

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Session Chair: Vicente Martin, Universidad Politécnica de Madrid, Spain

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Distributed Quantum Computing with Fan-Out Operations and Qudits: the Case of Distributed Global Gates
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Harnessing Entanglement in Quantum Federated Learning Under Efficiency Constraints
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David Koch, Fabian Farina, Hedwig Korfgen, Hanns Zimmermann, Nils Gentschen Felde and Arno Wacker

Monday, 6 April 2026 | 14:20 – 15:35 (Tokyo Time)
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Ane Sanz, Eire Salegi, Asier Atutxa, Gaizka Gonzalez, Jasone Astorga and Eduardo Jacob

Efficient Quantum Generic Key-Recovery Attack on Feistel Ciphers
Kun Zhang, Tao Shang and Yuanjing Zhang

Quantum Dominating Set Problem: An Unbalanced Penalization Analysis
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Monday, 6 April 2026 | 14:20 – 15:35 (Tokyo Time)
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Interoperable Multi-Vendor, Multi-Domain, Multi-Layer, Multi-Service Quantum Key Distribution Network Field-Trial
Konstantinos Tsimvrakidis, Alkinoos Papageorgopoulos, Stephan Laschet, Florian Kutschera, Paul James, Luca Torresetti, Sebastian Ramacher, Nikolas Makris, Persefoni Konteli, Jaime S. Buruaga, Rafael J. Vicente, Yorlandy Lobaina, Juan Pedro Brito, Petros Papapetropoulos, Ilias Papastamatiou, Hannes Hubel, Vicente Martin and George T. Kanellos

Entanglement Throughput Measurements and Capacity Estimates for Aerial-Inground Fiber
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Coordinating Time-Critical Quantum Operations with a Programmable Control Plane
Ziyan Zhang and Paola Grosso

Monday, 6 April 2026 | 16:00 – 17:10 (Tokyo Time)
Monday, 6 April 2026 | 07:00 – 08:10 (London Time)
Monday, 6 April 2026 | 03:00 – 04:10 (New York Time)

Session QCNC-7: [Short Paper] Quantum Networking and Routing (4F Terrace Room)
Session Chair: Sounak Kar, QuTech, TU Delft, Finland

Dimensioning of Quantum Memories for Distilled Quantum EPR Packets
Lorenzo Valentini, Diego Forlivesi, Andrea Talarico and Marco Chiani

On the Specification and Analysis of Quantum Repeater Protocols
Lorenzo La Corte, Anita Buckley, Pavel Chuprikov and Patrick Eugster

Distributing Quantum Circuits Using Pre-Distributed Entanglement Pairs over Quantum Networks
Yukun Yang, Ranjani G. Sundaram and Himanshu Gupta

Joint Optimization of Routing and Purification to Meet Fidelity Targets in Quantum Networks
Gongyu Ni, Lester Ho and Holger Claussen

Online Scheduling and Distribution of Quantum Circuits over Quantum Networks
Yukun Yang and Himanshu Gupta

A Time/Utility Function for Scheduling Quantum Applications
Luca Marchese, Bethany Davies and Stephanie Wehner

Addressing a Device in a Quantum Network: A Quantum Approach including Routing
Alexander Pirker

Monday, 6 April 2026 | 16:00 – 17:00 (Tokyo Time)
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Session QCNC-8: Quantum Networks and Foundations (6F Oriental Room West)
Session Chair: Diego Lopez, Telefonica, Spain

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Nonlocality Distillation Can Outperform Entanglement Distillation
Razeen Ud Din, Peter Hoyer and Jibran Rashid

Quantum Advantage Without Real-Time Classical Communication in Networks with Tripartite Entangled Sources
Leonardo Oleynik, Seid Koudia and Symeon Chatzinotas

Fidelity-Age–Aware Scheduling in Quantum Repeater Networks
Ozgur Ercetin and Zafer Gedik

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Monday, 6 April 2026 | 04:10 – 04:50 (New York Time)

Session QCNC-9: [Short Paper] Security, Communications, and Systems (6F Oriental Room West)
Session Chair: Kushtrim Dini, University of Duisburg-Essen, Germany

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Towards Real-World Solutions: QSVM with NSGA-II Feature Map Search for Imbalanced Classification
Jay Patel, Yaqi Han, Erin Li and Jamal Kawach

A Quantum Computation Method for the Graph Fourier Transform of Graph Signal
Chien-Cheng Tseng and Su-Ling Lee

Turbo Equalization for Thermal States Based Wireless Quantum Optical Multipath Communications Using Polar Codes
Peter Jung and Kushtrim Dini

Monday, 6 April 2026 | 16:00 – 17:10 (Tokyo Time)
Monday, 6 April 2026 | 07:00 – 18:10 (London Time)
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Session QCNC-10: [Short Paper] QKD and Applied Security (6F Oriental Room East)
Session Chair: Costantino Agnesi, University of Padova, Itlay

Security of a Secret Sharing Protocol on the Qline
Lucas Hanouz, Alex Bredariol Grilo and Anne Marin

Experimental Validation of AUX scheme for Quantum Homomorphic Encryption on IBM Quantum Platforms
Gia Dang, Jim Basilakis, Weisheng Si and Belal Alsinglawi

Challenges and Hybrid Approaches for Satellite QKD Networks
Angela Diaz-Bricio, Ivan Vidal and Francisco Valera

Analysis of SDN Control Protocols in Industrial-Grade QKD Networks
Ruben B. Mendez, Jesus Ballesta, Ramon Querol, Carmen Escribano, Luis Mengual, Juan Robles, Antonio Pastor, Rafael Canto, Jesus Folgueira, Diego Lopez, Vicente Martin and Juan P. Brito

PQC-Enhanced QKD Networks: A Layered Approach

Paul Spooren, Andreas Neuhold, Sebastian Ramacher and Thomas Huhn

FPGA Implementation of High-Speed LDPC Decoder with Cross-Layer Scheduling for CV-QKD
Hao Cheng, Weicheng Yu, Yong Chen, Genlong Chen, Yi Yang and Xue-Qin Jiang

Quantum Key Distribution over Multimode Fiber Infrastructure
Ondrej Klicnik, Nikolaos Makris, Argiris Ntanos, Aris Stathis, Grigoris Anastasiou, Konstantinos Tsimvrakidis, Giannis Giannoulis, Hercules Avramopoulos, Petr Munster, George Kanellos and Tomas Horvath

Monday, 6 April 2026 | 18:30 – 20:30 (Tokyo Time)
Monday, 6 April 2026 | 09:30 – 11:30 (London Time)
Monday, 6 April 2026 | 05:30 – 07:30 (New York Time)

Session QCNC-11: Poster Session & Reception (5F Royal Ballroom)
Session Chair: Hao Chen, Kanazawa University, Japan

Quantum Circuit for Quantum Fourier Transform for Arbitrary Qubit Connectivity Graphs
Kamil Khadiev, Aliya Khadieva, Vadim Sagitov and Kamil Khasanov

Toward Quantum-Resilient Software Supply Chains: A DevSecOps Case Study with Hybrid Post-Quantum Artifact Signing
Rafael Silva

Application-Specific Routing Strategies in SDN-Enabled Quantum Key Distribution Networks for 6G Security
Haftay Gebreslasie Abreha, Francesco Vista, Intidhar Bedhief, Seid Koudia and Symeon Chatzinotas

Multi-domain IPsec over MACsec QKD Field Deployed Demonstration
Alkinoos Papageorgopoulos, Konstantinos Tsimvrakidis, Nikolas Makris, Persefoni Konteli, Grigoris Anastasiou, Evrydiki Kyriazi, Petros Papapetropoulos, Ilias Papastamatiou, Andreas Agrafiotis, Giannis Giannoulis and George T. Kanellos

Field-deployed 800 (2x400) Gbps Bidirectional Fiber-Wireless-Fiber QKD-encrypted OTNsec Transmission
Nikolaos Makris, Panagiotis Kourelias, Persefoni Konteli, Evrydiki Kyriazi, Alkinoos Papageorgopoulos, Panagiotis Toumasis, Zafeirios Georgiadis, Argiris Ntanos, Aristeidis Stathis, Konstantinos Tsimvrakidis, Hercules Avramopoulos, Giannis Giannoulis and George T. Kanellos

IPsec based on Quantum Key Distribution: Adapting non-3GPP access to 5G Networks to the Quantum Era
Asier Atutxa, Ane Sanz, Eire Salegi, Gaizka Gonzalez, Jasone Astorga and Eduardo Jacob

CV-QKD security improvement through SNMP-based quantum-network management
Alberto Sebastian-Lombrana, Laura Ortiz, Sebastian Etcheverry, Arturo Villegas, Josefina Cresta, Marco Cofano and Vicente Martin-Ayuso

A Shared Risk Link Group Approach for Multi-Path Key Relay in QKD Networks
Hedwig Koerfgen, David Schatz, Guido Ernest Smeenk and Guenter Schaefer

BBM92 Quantum Key Distribution with Non-Maximally Entangled States in Random Scattering Media Using Kraus Operators
Nour Rizk, Angelique Dremeau and Arnaud Coatanhay

Quantum Technology Readiness Adoption Model: A TOE-Aligned Framework for Addressing Dual Quantum Technology Risk Exposure
Shadya Maldonado Rosado, Trevor Bowman, Anna Shebanow, Andrew Smallwood and William Butler

Main Conference Day 2 *(Time zone: Tokyo Time, UTC+9)*

Tuesday, 7 April 2026

Tuesday, 7 April 2026 | 6F Oriental Room West, 09:00 – 10:15 (Tokyo Time)
Tuesday, 7 April 2026 | 6F Oriental Room West, 00:00 – 01:15 (London Time)
Monday, 6 April 2026 | 6F Oriental Room West, 20:00 – 21:15 (New York Time)

Session QCNC-12: Quantum Networking Systems, Scheduling, and Verification (6F Oriental Room West)
Session Chair: Brian Doolittle, Aliro Technologies, Inc., USA

(Invited Paper) Effective Entanglement Scheduling in Quantum Networks via Deep Reinforcement Learning
Xun Wang, Longbo Huang and John C.S. Lui

(Invited Paper) Task Concurrency and Compatibility in Measurement-Based Quantum Networks
Jakob Kaltoft Sondergaard, Rene Bodker Christensen and Petar Popovski

Temporal Framework for Causality-Preserving Scheduling of Measurements in Quantum Networks
Jakob Kaltoft Sondergaard, Rene Bodker Christensen and Petar Popovski

Formal Verification of Scalable Remote CNOT Protocol Architectures in Linear Quantum Repeater Networks Using Mathematical Induction
Yi Liu, Canh Minh Do and Tsubasa Takagi

Routing Entanglement in Complex Quantum Networks Using GHZ States
Xinan Chen, Caitao Zhan, Joaquin Chung and Jeffrey Larson

Tuesday, 7 April 2026 | 6F Oriental Room East, 09:00 – 10:15 (Tokyo Time)
Tuesday, 7 April 2026 | 6F Oriental Room East, 00:00 – 01:15 (London Time)
Monday, 6 April 2026 | 6F Oriental Room East, 20:00 – 21:15 (New York Time)

Session QCNC-13: Quantum Networking Architectures and Security I (6F Oriental Room East)
Session Chair: Sima Bahrani, University of Bristol, U. K.

(Invited Paper) Toward Quantum-Optimized Flow Scheduling in Multi-Beam Digital Satellites
Qiben Yan, John P. Stenger and Daniel Gunlycke

(Invited Paper) Enhancing Security in Near-Field Location Division Multiple Access by Variational Quantum Circuit
Quan Minh Nguyen, Bhaskara Narottama, Minh-Hien T. Nguyen, Vishal Sharma, Quang Nhat Le and Trung Q. Duong

QFiLa: Entanglement-Assured Link Metric Design for Long-Distance Quantum Networks
Thu Trang Nguyen, Yuto Lim and Ruidong Li

Quantum Repeater Architectures in the Hollow-Core Fibre Era: Performance and Design Implications
Sima Bahrani, Vaibhav Jain, Rui Wang and Dimitra Simeonidou

On Utility-optimal Entanglement Routing in Quantum Networks
Sounak Kar and Arpan Mukhopadhyay

Tuesday, 7 April 2026 | 6F Oriental Room West, 10:45 – 12:00 (Tokyo Time)
Tuesday, 7 April 2026 | 6F Oriental Room West, 01:45 – 03:00 (London Time)
Monday, 6 April 2026 | 6F Oriental Room West, 21:45 – 23:00 (New York Time)

Session QCNC-14: Quantum Simulation, Testbeds, and Scheduling (6F Oriental Room West)
Session Chair: Vinay Kumar, IIT-CNR, Italy

(Invited Paper) Q2NS: A Modular Framework for Quantum Network Simulation in ns-3
Adam Pearson, Francesco Mazza, Marcello Caleffi and Angela Sara Cacciapuoti

(Invited Paper) Minimum Cost Swapping and Purification Scheduling over Quantum Repeater Chains
Jiyao Liu, Lei Fan, Yuanxiong Guo, Zhu Han and Yu Wang

Simulation of a Heterogeneous Quantum Network
Hayden Miller, Caitao Zhan, Michael Bishof, Xu Han, Prem Kumar, Joaquin Chung and Rajkumar Kettimuthu

Symbolic Quantum State Representation and its Simulation
Simon Sekavcnik and Janis Notzel

Designing an Emulation Platform for Realistic Experimentation on Quantum Networks
Blanca Lopez, Ivan Vidal, Francisco Valera and Diego Lopez

Tuesday, 7 April 2026 | 6F Oriental Room East, 10:45 – 12:00 (Tokyo Time)
Tuesday, 7 April 2026 | 6F Oriental Room East, 01:45 – 03:00 (London Time)
Monday, 6 April 2026 | 6F Oriental Room East, 21:45 – 23:00 (New York Time)

Session QCNC-15: Quantum Communications, Cryptography, and Networked Intelligence (6F Oriental Room East)
Session Chair: Diego Lopez, Telefonica, Spain

(Invited Paper) Obfuscated Quantum and Post-Quantum Cryptography
Anju Rani, Xiaoyu Ai, Aman Gupta, Ravi Singh Adhikari and Robert Malaney

Multipartite Quantum Cryptography
Nicolas Laurent-Puig, Matilde Baroni, Laura dos Santos Martins, Santiago Scheiner, Luis Bugalho, Majid Hassani, Federico Centrone, Sean Moore, Damian Markham and Eleni Diamanti

Adaptive Coding for Quantum Communications in Quantum Internet
Diego Forlivesi, Lorenzo Valentini, Andrea Talarico and Marco Chiani

Time-Switching Quantum Relay-Assisted Free-Space Optical Communication
Nizar Khalfet and Ioannis Krikidis

Consensus Protocols for Entanglement-Aware Scheduling in Distributed Quantum Neural Networks
Kuan-Cheng Chen, Samuel Yen-Chi Chen, Mahdi Chehimi, Felix Burt and Kin Leung

Tuesday, 7 April 2026 | 6F Oriental Room West, 13:00 – 16:10 (Tokyo Time)
Tuesday, 7 April 2026 | 6F Oriental Room West, 04:00 – 07:10 (London Time)
Tuesday, 7 April 2026 | 6F Oriental Room West, 00:00 – 01:10 (New York Time)

Session QCNC-16 Tutorial: Q2NS: An Open-Source Simulator for the Quantum Internet (6F Oriental Room West)
Session Chair: Adam Pearson, University of Naples Federico II, Italy

Tuesday, 7 April 2026 | 6F Oriental Room East, 13:00 – 14:30 (Tokyo Time)
Tuesday, 7 April 2026 | 6F Oriental Room East, 04:00 – 05:30 (London Time)
Tuesday, 7 April 2026 | 6F Oriental Room East, 00:00 – 01:30 (New York Time)

Session QCNC-17: Quantum Computing, Optimization, and Learning II (6F Oriental Room East)
Session Chair: Jungwoo Lee, Seoul National University, South Korea

Solving Capacitated Vehicle Routing Problem with Quantum Alternating Operator Ansatz and Column Generation
Wei-Hao Huang, Hiromichi Matsuyama and Yu Yamashiro

MPS-JuliQAOA: User-friendly, Scalable MPS-based Simulation for Quantum Optimization
Sean Feeney, Reuben Tate, John Golden and Stephan Eidenbenz

Efficient and Practical Black-Box Verification of Quantum Metric Learning Algorithms
Ahmed Shokry, Movahhed Sadeghi and Mahmut Kandemir

HQCPA: A Hybrid Quantum-Classical Parallel Architecture for Quantum Reinforcement Learning
Xinliang Wei, Kejiang Ye, Cheng-Zhong Xu and Yu Wang

DyLoC: A Dual-Layer Architecture for Secure and Trainable Quantum Machine Learning Under Polynomial-DLA constraint
Chenyi Zhang, Tao Shang, Chao Guo and Ruohan He

QFlowNet: Fast, Diverse, and Efficient Unitary Synthesis with Generative Flow Networks
Inhoe Koo, Hyunho Cha and Jungwoo Lee

Tuesday, 7 April 2026 | 6F Oriental Room East, 14:40 – 16:10 (Tokyo Time)
Tuesday, 7 April 2026 | 6F Oriental Room East, 05:40 – 07:10 (London Time)
Tuesday, 7 April 2026 | 6F Oriental Room East, 01:40 – 03:10 (New York Time)

Session QCNC-18: Quantum Systems, Compilation, and Implementation (6F Oriental Room East)
Session Chair: Joaquin Chung, Argonne National Laboratory, USA

Quantum Network Simulation and Emulation: A Roadmap for Quantum Internet Design
Brian Doolittle

Cross Talk in Multiplexed Continuous-Variable Quantum Key Distribution
Olena Kovalenko and Vladyslav Usenko

BiBiEQ: Bivariate Bicycle Codes on Erasure Qubits
Ameya S. Bhave, Navnil Choudhury, Andrew Nemec and Kanad Basu

LAUREL: Logic Dependency-Aware Qubit Routing via Reinforcement Learning
Ming-Bang Fan, Cheng-Yun Hsieh, Meng-Chen Wu, Chun-Yi Lee and James Chien-Mo Li

Deadline-Aware Scheduling of Distributed Quantum Circuits in Near-Term Quantum Cloud
Nour Dehaini, Christia Chahoud and Mahdi Chehimi

Quantum Annealing for Staff Scheduling in Educational Environments
Alessia Ciacco, Francesca Guerriero and Eneko Osaba

Tuesday, 7 April 2026 | 6F Oriental Room West, 16:30 – 17:45 (Tokyo Time)

Tuesday, 7 April 2026 | 6F Oriental Room West, 07:30 – 08:45 (London Time)
Tuesday, 7 April 2026 | 6F Oriental Room West, 03:30 – 04:45 (New York Time)

Session QCNC-19: Quantum Sensing and Quantum Machine Learning (6F Oriental Room West)
Session Chair: Shehbaz Tariq, University of Luxembourg, Luxembourg

Multi-Shot Quantum Sensing for RF Signal Detection with MIMO Rydberg-Atom Receivers
Saman Atapattu, Harini Hapuarachchi and Nathan Ross

Optimising Spectral Purity and Brightness with Pump Pulse Shaping
Hugh Barrett, Zulekha Samiullah, Ben Burridge, Jorge Barreto and Imad Faruque

QKAN-LSTM: Quantum-inspired Kolmogorov-Arnold Long Short-term Memory
Yu-Chao Hsu, Jiun-Cheng Jiang, Chun-Hua Lin, Kuo-Chung Peng, Nan-Yow Chen, Samuel Yen-Chi Chen, En-Jui Kuo and Hsi-Sheng Goan

Learning Gaussian Processes with Randomized Quantum Local Kernels
Yu-Chao Hsu, Jiun-Cheng Jiang, Chun-Hua Lin, Kuo-Chung Peng, Nan-Yow Chen, Abdallah Aaraba, Soumaya Cherkaoui, Jean-Frederic Laprade, Ola Ahmad and Shengrui Wang

A Distributed Quantum Neural Network for Network Anomaly Detection
Moe Hdaib, Sutharshan Rajasegarar and Seng Loke

Tuesday, 7 April 2026 | 6F Oriental Room East, 16:30 – 17:45 (Tokyo Time)
Tuesday, 7 April 2026 | 6F Oriental Room East, 07:30 – 08:45 (London Time)
Tuesday, 7 April 2026 | 6F Oriental Room East, 03:30 – 04:45 (New York Time)

Session QCNC-20: Quantum AI, Secure Learning, and Authentication (6F Oriental Room East)
Session Chair: Jungwoo Lee, Seoul National University, South Korea

Learning to Correct Errors in Quantum Circuits via Transformer-Predicted PQCs
Ashutosh Tiwari, Zian Wang and Himanshu Gupta

HarmQ: Harmonic Backdoor Attacks Against Quantum Neural Networks
Junrui Zhang, Zemin Chen, Chunsheng Xin, Hongyi Wu and Rui Ning

Hybrid Quantum Kolmogorov-Arnold Network Autoencoders for Anomaly Detection
Moe Hdaib, Sutharshan Rajasegarar and Lei Pan

Hybrid Quantum-AI Model for Robust Phishing Detection in Next-Generation Consumer Electronics
Akshat Gaurav, Varsha Arya, Brij B. Gupta and Kwok Tai Chui

Scalable Quantum Device Authentication Using Hardware-Efficient Quantum Physical Unclonable Functions
Franco Cirillo and Christian Esposito

Main Conference Day 3 *(Time zone: Tokyo Time, UTC+9)*

Wednesday, 8 April 2026

Wednesday, 8 April 2025 | 09:00 – 10:20 (Tokyo Time)
Wednesday, 8 April 2025 | 00:00 – 01:20 (London Time)
Tuesday, 7 April 2025 | 20:00 – 21:20 (New York Time)

Session QCNC-21: Workshop 3-Connecting the Dots: Technology, People, and Society in the Quantum Era (4F Terrace Room)
Session Chair: Shota Nagayama, Keio University, Japan

- 09:00-09:05: General guidance from organizers
- 09:05-09:45: Invited talk by Konomi Higo and Yusuke Nagato — Title TBA
- 09:45-10:15: First contributed talk
- 10:15-10:45: Coffee break and ice-breaking
- 10:45-11:10: Second contributed talk
- 11:10-12:00: Interactive discussions and wrap-up

Wednesday, 8 April 2025 | 09:00 – 10:20 (Tokyo Time)
Wednesday, 8 April 2025 | 00:00 – 01:20 (London Time)
Tuesday, 7 April 2025 | 20:00 – 21:20 (New York Time)

Session QCNC-22: [Short Paper] Advanced Quantum Networking (6F Oriental Room West)
Session Chair: Lorenzo Valentini, University of Bologna, Spain

Software Defined Networks and Key Relay for Large-Scale Quantum Key Distribution Networks
Stephan Laschet, Gergely Lendvay, Thomas Lorunser, Paul James, Luca Torresetti and Alessandro Colombo

Efficient Time-Aware Partitioning of Quantum Circuits for Distributed Quantum Computing
Raymond P. H. Wu, Jinho Choi, Chathu Ranaweera, Ria Rushin Joseph, Sutharshan Rajasegarar and Seng Loke

Full-Mesh Quantum Key Distribution Network Based on Time-Shared Entanglement Distribution
Yury Kurochkin, Alexei Ponasenko, Karen Sloyan, Jaideep Singh, Vadim Rodimin, Vlad Revici, Rodrigo Piera, Attila Pereszlenyi, Tahar Mehri and James Grieve

Optimizing Orbital Parameters of Satellites for a Global Quantum Network
Athul Ashok, Owen DePoint, Jackson MacDonald, Albert Williams and Don Towsley

Performance Enhancement in Quantum Repeater Chains via Simultaneous Entanglement Swappings
Javier Faba, Andres Agusti, Luis Robledo and Vicente Martin-Ayuso

Topology-Dependent Enhancement of Entanglement Extraction in Repeater Graph States
Poramat Chianvichai, Poramet Pathumsoot, Naphan Benchasattabuse, Michal Hajdusek, Rodney Van Meter and Sujin Suwanna

Entanglement Fidelity and Preservation in Standard Quantum Channels
Niccolò Zanieri and Marios Kountouris

Quantum Optimization for Access Point Selection Under Budget Constraint
Mohamed Khalil Brik, Ahmed Shokry and Moustafa Youssef

Wednesday, 8 April 2025 | 09:00 – 10:20 (Tokyo Time)
Wednesday, 8 April 2025 | 00:00 – 01:20 (London Time)
Tuesday, 7 April 2025 | 20:00 – 21:20 (New York Time)

Session QCNC-23: [Short Paper] Quantum Computing and Learning (6F Oriental Room East)
Session Chair: Zizwe Chase, University of Illinois at Chicago, USA

Lightweight Noise Diagnosis for Photonic Quantum Detectable Byzantine Agreement
Kevin Bogner, Kuan-Cheng Chen, Aysajan Abidin and Kin K. Leung

TNO-QA: Tensor-Network Optimized Quantum Attention
Yaswitha Gujju, Romain Harang and Tetsuo Shibuya

Efficient Transpilation of OpenQASM 3.0 Dynamic Circuits to CUDA-Q: Performance and Expressiveness Advantages
Vinooth Rao Kulkarni, Jaehyun Lee, Adam Hutchings, Anas Albahri, Jai Nana, Shuai Xu and Vipin Chaudhary

A Quantum Variational Approach to Prototypical Recurrent Unit
Mahyar Sadeghi Garjan, Michel Barbeau and Tommaso Cesari

Meta-Learning for Quantum Optimization via Quantum Sequence Model
Yu-Cheng Lin, Yu-Chao Hsu and Samuel Yen-Chi Chen

HQSU: Hybrid Quantum Selective Unlearning for Backdoor Mitigation in Federated Learning
Asitha Kottahachchi Kankanamge Don, Ibrahim Khalil, Shehan Edirimannage, Wathsara Daluwatta, Charitha Elvitigala and Jer Shyuan Ng

QuanNetDetect: A Quantum Hybrid Deep Learning Framework for Encrypted TLS Malicious Traffic Detection
Nirusan Hariharan and Guhanathan Poravi

Wednesday, 8 April 2025 | 10:45 – 11:55 (Tokyo Time)
Wednesday, 8 April 2025 | 01:45 – 02:55 (London Time)
Tuesday, 7 April 2025 | 21:45 – 22:55 (New York Time)

Session QCNC-24: [Short Paper] Algorithms, Learning, and Simulation (6F Oriental Room West)
Session Chair: Kushtrim Dini, University of Duisburg-Essen, Germany

On-Off Keyed Wireless Quantum Optical Communications Via Turbulent Channels With Decoherence
Peter Jung and Kushtrim Dini

Dependency-Aware Circuit Scheduling for Multi-Core Quantum Systems to Minimize Makespan
Rajeswari Suance P. S., Ruchika Gupta, Maurizio Palesi and John Jose

A2G-QFL: Adaptive Aggregation with Two Gains in Quantum Federated learning
Shanika Nanayakkara and Shiva Pokhrel

Lackadaisical Quantum Walk Search on Dicyclic Cayley Graphs
Rou Yan Ng, Yong Qing Tiong and Kai Lin Ong

Low-Depth Construction of Grover Oracles from Fully Functional Quantum Circuits
Jiaqi Gu and Behzad Abdolmaleki

Resolving Bottlenecks in Quantum Machine Learning: Encoding Theory and Data Augmentation

Mariia Baidachna, Isabel Pedraza and Sergei Gleyzer

Quantum-Enhanced LSTM for Sequential Network Flow Analysis: A Hybrid Approach to DDoS Detection
Adam Kadi, Hajar Moudoud, Lyes Khoukhi and Zakaria Abou El Houda

Wednesday, 8 April 2025 | 10:45 – 11:55 (Tokyo Time)
Wednesday, 8 April 2025 | 01:45 – 02:55 (London Time)
Tuesday, 7 April 2025 | 21:45 – 22:55 (New York Time)

Session QCNC-25: [Short Paper] Quantum Communications, Security, and Applications (6F Oriental Room East)
Session Chair: Anju Rani, UNSW Sydney, Australia

Enhancing Continuous-Variable Two-Mode Gate Teleportation via Photon Subtraction
Mingjian He and Shouyin Liu

Quantum Multi-Party Computation (QMPC) for Enhanced Blockchain Consensus
Hsiau Chuen Chong and K. L. Eddie Law

Improved Bounds for Practical Reference-Frame-Independent Quantum Key Distribution
Costantino Agnesi, Paolo Villoresi and Giuseppe Vallone

Scalable Quantum Molecular Generation via GPU-Accelerated Tensor-Network Simulation
Yu-Cheng Xiao, Jen-Yu Chang, Tzu-Ling Kuo, Aninda Astuti, Shu-Chi Wu, Ka-Lok Ng, Yun-Yuan Wang, Yu-Ze Chen, Nan-Yow Chen and Tai-Yue Li

Enhancing Nature-Inspired Metaheuristic Algorithm Using Quantum and Pseudo Randomness-Based Initialization
Krit Klongwithee, Boonyarit Samran, Rajchawit Sarochawikasit, Prapong Prechaprapranwong, Ruchipas Bavontaweepanya and Ekkarat Pongophas

Globally secured end-to-end QKD
Sumit Chaudhary, Baqir Kazmi and Janis Notzel

Compression-Aware Entanglement Efficiency Rate via Multiple Hamming Weighted States
Jan Ostergaard

Wednesday, 8 April 2025 | 13:00 – 15:00 (Tokyo Time)
Wednesday, 8 April 2025 | 04:00 – 06:00 (London Time)
Tuesday, 7 April 2025 | 00:00 – 02:00 (New York Time)

Session QCNC-26: Workshop 1-Quantum Computing for Classical Computational Challenges in HPC (4F Terrace Room)
Session Chair: Kuan-Cheng (Louis) Chen, JIJ Europe Ltd. / Imperial College London, U.K.

QUBO-Based Wildfire Evacuation Host Community Selection Using a Quantum-Inspired GPU Annealer
Chia-Ho Ou and Raphael Franco

A Model Context Protocol Server for Quantum Execution in Hybrid Quantum-HPC Environments
Masaki Shiraishi, Ikko Hamamura, Tatsuya Ishigaki and Tadashi Kadowaki

MADQRL: Distributed Quantum Reinforcement Learning Framework for Multi-Agent Environments
Abhishek Sawaika, Samuel Yen-Chi Chen, Udaya Parampalli and Rajkumar Buyya

Q-DIVER: Integrated Quantum Transfer Learning and Differentiable Quantum Architecture Search with EEG Data
Junghoon Justin Park, Yeonghyeon Park and Jiook Cha

Scalable Tensor-Network Simulation for Quantum–Classical Dual Kernel
Mei Ian Sam and Tai Yue Li

Hybrid Quantum Temporal Convolutional Networks
Junghoon Justin Park, Maria Pak, Sebin Lee, Samuel Yen-Chi Chen, Shinjae Yoo, Huan-Hsin Tseng and Jiook Cha

Annealing-based Approach to Solving Partial Differential Equations
Kazue Kudo

Quantum Walk-based Hash Function: Scalable Readout for Proof of Quantum Work
Shogo Shimada, Pulak Ranjan Giri, Rei Sato and Kazuhiro Saito

High-Order Epistasis Detection Using Factorization Machine with Quadratic-Optimization Annealing and MDR-Based Evaluation
Shuta Kikuchi and Shu Tanaka

Benchmarking Classical and Quantum Optimization Approaches for Rider–Order Assignment
Tharrmashastha Sapv, Surya Prakash Palanivel, Jasjyot Singh Gulati and Maruthu Pandi M.

Wednesday, 8 April 2025 | 13:00 – 15:00 (Tokyo Time)
Wednesday, 8 April 2025 | 04:00 – 06:00 (London Time)
Wednesday, 8 April 2025 | 00:00 – 02:00 (New York Time)

Session QCNC-27: Workshop 2-Quantum Computing - Artificial Intelligence for Industry Applications and Scientific Discovery, Part I (6F Oriental Room West)
Session Chair: Thilanka Munasinghe, Rensselaer Polytechnic Institute, USA

Workshop Keynote Speaker: Chen-Yu Liu, Quantinuum, London, UK

Meta-Learning for GPU-Accelerated Quantum Many-Body Problems
Yun-Hsuan Chen, Ran-Yu Chang, Tsung-Wei Huang and En-Jui Kuo

Contextuality-Informed Randomized Kernels for Qutrit Classification
Jia-Yang Gao

QuIC: A Quantum-Inspired Interaction Classifier for Revitalizing Shallow CNNs in Fine-Grained Recognition
Cheng Ying Wu and Yen Jui Chang

National Quantum Strategies: A Data-Driven Approach to Understanding the Quantum Ecosystem
Simon Richard Goorney, Emre Aslan, Borja Munoz, Aleksandrs Baskakovs and Jacob Sherson

Leggett-type Tests as a Benchmark for NISQ Entanglement Quality
Alex Radocea

Quantum Random Forest for the Regression Problem
Kamil Khadiev and Liliya Safina

Wednesday, 8 April 2025 | 13:00 – 15:00 (Tokyo Time)

Wednesday, 8 April 2025 | 04:00 – 06:00 (London Time)
Wednesday, 8 April 2025 | 01:00 – 02:00 (New York Time)

Session QCNC-28: Workshop 4-Quantum Networking and Computing, Part I (6F Oriental Room East)
Session Chair: Ahmed Abdelhadi, University of North Dakota, USA

Resource-Constrained Quantum Implementation and Analysis of Mini-AES Cipher
Syed Shah Mir, Ghulam Murtaza, Elmahdi Bentafat, Mohamed Abdallah, Ala Al-Fuqaha, Saif Al-Kuwari and Tasawar Abbas

Quantum Circuit Watermarking: Design and Evaluation of a Quantum Watermarking Framework using Qiskit
Nathanael Ian Gunadi and Yoshito Tobe

Teleportation of Coherent-State Qubits with Asymmetric and Lossy Entanglement Distribution
Davide Andromari, Andrea Giani, Moe Z. Win and Andrea Conti

Optimizing Resource Allocation in a Distributed Quantum Computing Cloud: A Game-Theoretic Approach
Bernard Ousmane Sane, Michal Hajdusek and Rodney Van Meter

Responsible Entanglement Revocation Protocol for Quantum Networks
Agi Prasetiadi and Masahiro Mambo

Optimization of Interference-Aware Wireless Mesh Networks using Quantum Algorithm
Istiak Mahmud and Ahmed Abdelhadi

Parallel Multi-Circuit Quantum Feature Fusion in Hybrid Quantum-Classical Convolutional Neural Networks for Breast Tumor Classification
Ece Yurtseven

Quantum Spin–Driven Mechanistic Insights into Drug Adverse Reactions
S. Janani Lakshmanan

Applied Quantum Machine Learning on PCB Multi-Class Defect Detection
Ching-Wen Huang, Kuan-Cheng Chen and Ching-Jui Lai

Real Quantum Computers Applied to Audio
Alex Alani and Eduardo Miranda

Instruction-Set Architecture for Programmable NV-Center Quantum Repeater Nodes
Vinay Kumar, Claudio Cicconetti, Riccardo Bassoli, Marco Conti and Andrea Passarella

(Poster) Quantum Key Distribution Using Entangled Pairs with Random Grouping
Archana Jayprakash Singh, Zouheir Rezki, Zain Ali and Hamid Sadjadpour

Wednesday, 8 April 2025 | 15:30 – 16:30 (Tokyo Time)
Wednesday, 8 April 2025 | 06:30 – 07:30 (London Time)
Wednesday, 8 April 2025 | 02:30 – 03:30 (New York Time)

Session QCNC-29: Workshop 2-Quantum Computing - Artificial Intelligence for Industry Applications and Scientific Discovery, Part II (6F Oriental Room West)
Session Chair: Thilanka Munasinghe, Rensselaer Polytechnic Institute, USA

Quantum-Enhanced Temporal Embeddings via a Hybrid Seq2Seq Architecture
Tien-Ching Hsieh, Yun-Cheng Tsai and Samuel Yen-Chi Chen

Federated Quantum Kernel Learning for Decentralized Anomaly Detection in Zero Trust Edge Networks
Shengjie Xu and Yi Qian

A Portable Hybrid Quantum-Classical Neural Network for Continual Learning
Zeyu Yang, Yunpeng Bai, Changyi Li and Yu Xiao

Active Sampling Sample-based Quantum Diagonalization from Finite-Shot Measurements
Rinka Miura

Generating Probability Distributions using Variational Quantum Circuits
Ronit Raj, Kshitij Durge, Manish Mallapur, Rohit Taeja Kumar and Ankur Raina

Qiamese: Quantum-Hybrid Siamese Network for predicting Drug-Protein Interaction
Soham Pawar, Siddharth Ayathu and Naganand Y

Wednesday, 8 April 2025 | 15:30 – 16:30 (Tokyo Time)
Wednesday, 8 April 2025 | 06:30 – 07:30 (London Time)
Wednesday, 8 April 2025 | 02:30 – 03:30 (New York Time)

Session QCNC-30: Workshop 4-Quantum Networking and Computing, Part II (6F Oriental Room East)
Session Chair: Seng Loke, Deakin University, Australia

Quantum Approximate Optimization for Targeted Weight Removal in Large Language Models
Don Roosan, Mazharul Karim, Rubayat Khan and Avik Mahata

Quantum Shared Information for Probabilistic Distributed Multiagent Coordination
Seng Loke

Quantum Computational Simulation of CRISPR–Cas9 Edits Targeting the Salt Bridge in Amyloid-β
Avik Mahata, Rubayat Khan, Mazhar Razon and Don Roosan

A Clean 2D Floquet Logical Qubit from a Purely Imaginary Phase Drive
Cinque McFarlane-Blake

W-State Leader Election for PBFT Based Quantum Leader Election
Juan Pablo Robledo Meza, Jelena Misic and Vojislav Misic