

2025 IEEE International Conference on Quantum Computing and Engineering (QCE 2025)

**Albuquerque, New Mexico, USA
30 August - 5 September 2025**

**Volume I of III
Part A
Pages 1-626**



**IEEE Catalog Number: CFP25W18-POD
ISBN: 979-8-3315-5737-9**

**Copyright © 2025 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP25W18-POD
ISBN (Print-On-Demand):	979-8-3315-5737-9
ISBN (Online):	979-8-3315-5736-2

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

2025 IEEE International Conference on Quantum Computing and Engineering (QCE) **QCE 2025**

Table of Contents

Message from the QCE 2025 Chairs	xxxviii
QCE 2025 Committees	xlii
Keynote Presentations	lvi
Technical Papers Program	lxvi
Birds-of-a-Feather (BoF) Program	lxvii
Sponsors	lxxi

QCE25 Technical Papers

QALG

Quantum tree Generator Improves QAOA State-of-the-art for the Knapsack Problem	1
<i>Paul J. Christiansen (d-fine GmbH, Germany), Lennart Binkowski (Leibniz Universität Hannover, Germany), Debora Ramacciotti (Leibniz Universität Hannover, Germany), and Sören Wilkening (Leibniz Universität Hannover, Germany)</i>	
Evolving a Multi-Population Evolutionary-QAOA on Distributed QPUs	11
<i>Francesca Schiavello (The Hartree Centre, STFC, United Kingdom), Edoardo Altamura (The Hartree Centre, STFC, United Kingdom; University of Cambridge, United Kingdom), Ivano Tavernelli (IBM Research Zurich, Switzerland), Stefano Mensa (The Hartree Centre, STFC, United Kingdom), and Benjamin Symons (The Hartree Centre, STFC, United Kingdom)</i>	
A Noise-Aware Scalable Subspace Classical Optimizer for the Quantum Approximate Optimization Algorithm	20
<i>Kwassi Joseph Dzahini (Argonne National Laboratory), Jeffrey Larson (Argonne National Laboratory), Matt Menickelly (Argonne National Laboratory), and Stefan Wild (Lawrence Berkeley National Laboratory)</i>	
Exploring Beamforming Solutions Using Recursive Quantum Approximate Optimization Algorithm...	31
<i>Bidisha Dhara (Indian Institute of Technology, India), Monika Agrawal (Indian Institute of Technology, India), and Sumantra Dutta Roy (Indian Institute of Technology, India)</i>	

Combinatorial Optimization with Few Qubits	36
<i>Rudy Raymond (JPMorganChase & Co., USA), Alexander Buts (JPMorganChase & Co., USA), and Marco Pistoia (JPMorganChase & Co., USA)</i>	
QUBO Formulations for Some Graph-Theory Problems: Snake-in-the-box and Coil-in-the-box	48
<i>Federico Fuidio (Universidad de Montevideo, Uruguay), Eduardo Canale (Universidad de la República, Uruguay), and Rafael Sotelo (Universidad de Montevideo, Uruguay)</i>	
Standardization of Multi-Objective QUBOs	58
<i>Loong Kuan Lee (Fraunhofer IAIS, Germany), Thore Gerlach (University of Bonn, Germany), and Nico Piatkowski (Fraunhofer IAIS, Germany)</i>	
SCOOP: A Quantum-Computing Framework for Constrained Combinatorial Optimization	65
<i>Prashanti Priya Angara (University of Victoria, Canada), Emily Martins (University of Victoria, Canada), Ulrike Stege (University of Victoria, Canada), and Hausi Müller (University of Victoria, Canada)</i>	
Enhanced Local Differential Privacy Protection Against Crosstalk Attacks in Quantum Computing	76
<i>Hui Zhong (University of Houston), Xinyue Zhang (Kennesaw State University), Hao Wang (Stevens Institute of Technology), Shucheng Yu (Yeshiva University), Yu Wang (Temple University), and Miao Pan (University of Houston)</i>	
Digital Zero-Noise Extrapolation with Quantum Circuit Unoptimization	87
<i>Elijah Pelofske (Los Alamos National Laboratory) and Vincent Russo (Unitary Foundation)</i>	
Quantum Public Key Encryption for NISQ Devices	100
<i>Nishant Rodrigues (Microsoft Quantum, USA), Walter O. Krawec (University of Connecticut, USA), Brad Lackey (Microsoft Quantum, USA), Deb Mukhopadhyay (Microsoft Security, USA), and Bing Wang (University of Connecticut, USA)</i>	
From Barren Plateaus Through Fertile Valleys: Conic Extensions of Parameterised Quantum Circuits	111
<i>Lennart Binkowski (Leibniz Universität Hannover, Germany), Gereon Koßmann (RWTH Aachen University, Germany), Tobias J. Osborne (Leibniz Universität Hannover, Germany), René Schwonnek (Leibniz Universität Hannover, Germany), and Timo Ziegler (Leibniz Universität Hannover, Germany)</i>	
Dynamic Range Reduction via Branch-and-Bound	119
<i>Thore Gerlach (University of Bonn, Germany) and Nico Piatkowski (Fraunhofer IAIS, Germany)</i>	
Efficient Quantum Gradient and Higher-Order Derivative Estimation via Generalized Hadamard Test	130
<i>Dantong Li (Yale University, USA), Dikshant Dulal (Yale-NUS College, Singapore; SoftServe Inc., Singapore), Mykhailo Ogorodnikov (SoftServe Inc., Singapore), Hanrui Wang (Massachusetts Institute of Technology, USA), and Yongshan Ding (Yale University, USA)</i>	
Structured Clifford+T Circuits for Efficient Generation of Quantum Chaos	142
<i>Asim Sharma (Missouri University of Science and Technology, USA) and Avah Banerjee (Missouri University of Science and Technology, USA)</i>	

Turbo-Annihilation of Hook Errors in Stabilizer Measurement Circuits	148
<i>Michele Pacenti (University of Arizona, USA), Asit K. Pradhan (University of Arizona, USA), Shantom K Borah (University of Arizona, USA), and Bane Vasic (University of Arizona, USA)</i>	
Fault Tolerant Quantum Simulation via Symplectic Transvections	158
<i>Zhuangzhuang Chen (University of Arizona, USA), Jack Owen Weinberg (University of Arizona, USA), and Narayanan Rengaswamy (University of Arizona, USA)</i>	
Depth-Based Matrix Classification for the HHL Quantum Algorithm	169
<i>Mark Danza (Rochester Institute of Technology), Sonia Lopez Alarcon (Rochester Institute of Technology), and Cory Merkel (Rochester Institute of Technology)</i>	
Practical Scalability of LuGo: Benchmarking the HHL Algorithm Using an Enhanced QPE Algorithm	180
<i>Chao Lu (Oak Ridge National Laboratory, USA), Muralikrishnan Gopalakrishnan Meena (Oak Ridge National Laboratory, USA), Antigoni Georgiadou (Oak Ridge National Laboratory, USA), Kalyan Gottiparthi (Oak Ridge National Laboratory, USA), Michael Sandoval (Oak Ridge National Laboratory, USA), Eduardo Antonio Coello Perez (Oak Ridge National Laboratory, USA), Paul Lin (Lawrence Berkeley National Laboratory, USA), In-Saeng Suh (Oak Ridge National Laboratory, USA), Seongmin Kim (Oak Ridge National Laboratory, USA), and Alessandro Baroni (Oak Ridge National Laboratory, USA)</i>	
Simon's Period Finding on a Quantum Annealer	190
<i>Reece Robertson (Department of Physics, University of Maryland, Baltimore County, USA), Emery Doucet (Department of Physics, University of Maryland, Baltimore County, USA), Zakaria Mzaouali (Institut für Theoretische Physik, Universität Tübingen, Germany), Krzysztof Domino (Institute of Theoretical and Applied Informatics, Polish Academy of Sciences, Poland), Bartłomiej Gardas (Institute of Theoretical and Applied Informatics, Polish Academy of Sciences, Poland), and Sebastian Deffner (National Quantum Laboratory, College Park, USA; Department of Physics, University of Maryland, Baltimore County, USA)</i>	
Qracle: A Graph-Neural-Network-Based Parameter Initializer for Variational Quantum Eigensolvers	197
<i>Chi Zhang (Indiana University Bloomington, USA), Lei Jiang (Indiana University Bloomington, USA), and Fan Chen (Indiana University Bloomington, USA)</i>	
An Adaptive Weighted QITE-VQE Algorithm for Combinatorial Optimization Problems	208
<i>Ningyi Xie (University of Tsukuba, Japan), Xinwei Lee (Singapore Management University, Singapore), Tiejun Chen (Arizona State University, United States), Yoshiyuki Saito (ARGO GRAPHICS Inc., Japan), Nobuyoshi Asai (University of Aizu, Japan), and Dongsheng Cai (University of Tsukuba, Japan)</i>	

Quantum-Guided Cluster Algorithms for Combinatorial Optimization	219
<i>Peter J. Eder (Technical University of Munich, Germany; Siemens AG, Germany), Aron Kerschbaumer (Institute of Science and Technology Austria (ISTA)), Jernej Rudi Finžgar (Technical University of Munich, Germany; BMW AG, Germany), Raimel A. Medina (Institute of Science and Technology Austria (ISTA)), Martin J. A. Schuetz (Amazon Advanced Solutions Lab, USA), Helmut G. Katzgraber (Amazon Advanced Solutions Lab, USA), Sarah Braun (Siemens AG, Germany), and Christian B. Mendl (Technical University of Munich, Germany)</i>	
Sublinear Classical-to-Quantum Data Encoding using n -Toffoli Gates	230
<i>Vittorio Pagni (University of Cologne, Institute of Software Technology German Aerospace Center (DLR)), Gary Schmiedinghoff (Institute of Software Technology German Aerospace Center (DLR)), Kevin Lively (Institute of Software Technology German Aerospace Center (DLR)), Michael Epping (Institute of Software Technology German Aerospace Center (DLR)), and Michael Felderer (University of Cologne)</i>	
Efficient Gaussian State Preparation in Quantum Circuits	242
<i>Yichen Xie (La Salle College, HK SAR) and Nadav Ben-Ami (Classiq Technologies, Israel)</i>	
Hybrid and Quantum Graph Algorithms via Quantum Array Search: Applications to Hamiltonian Paths and Path Counting	249
<i>Ethan Hunt (Kennesaw State University, USA), Hieu Nguyen (Kennesaw State University, USA), Dheeraj Tukkugudam (Kennesaw State University, USA), Dillon Horton (Kennesaw State University, USA), and Tu N. Nguyen (Kennesaw State University, USA)</i>	
An Efficient Algorithm for Extending Uniform Superposition States for Time-Series Data	259
<i>Carla Rieger (CERN, Technical University of Munich, Switzerland), Michele Grossi (European Organization for Nuclear Research, Switzerland), Gian Giacomo Guerreschi (Intel Labs, United States of America), Sofia Vallecorsa (European Organization for Nuclear Research, Switzerland), and Martin Werner (Technical University of Munich, Germany)</i>	
Statistical Signal Processing for Quantum Error Mitigation	269
<i>Kausthubh Chandramouli (North Carolina State University, USA), Kelly Mae Allen (North Carolina State University, USA), Christopher Mori (North Carolina State University, USA), Dror Baron (North Carolina State University, USA), and Mario A. T. Figueiredo (Instituto Superior Tecnico, Portugal)</i>	
On the Correct Implementation of the Walsh Series Loader	276
<i>Riccardo Pellini (Politecnico di Milano, Italy) and Maurizio Ferrari Dacrema (Politecnico di Milano, Italy)</i>	
Quantum Solution Framework for Finite-Horizon LQG Control via Block Encodings and QSVT	282
<i>Nahid Binandeh Dehaghani (Aalborg University, Denmark), Rafal Wisniewski (Aalborg University, Denmark), and A. Pedro Aguiar (University of Porto, Portugal)</i>	

Quantum Circuit Design for Decoded Quantum Interferometry	291
<i>Natchapol Patamawisut (Keio University, Japan), Naphan Benchasattabuse (Keio University, Japan), Michal Hajdušek (Keio University, Japan), and Rodney Van Meter (Keio University, Japan)</i>	
Optimizing State Preparation for Variational Quantum Regression on NISQ Hardware	302
<i>Frans Perkkola (University of Helsinki, Finland), Ilmo Salmenperä (University of Helsinki, Finland), Arianne Meijer-van de Griend (University of Helsinki, Finland), C.-C. Joseph Wang (Oak Ridge National Laboratory, USA), Ryan S. Bennink (Oak Ridge National Laboratory, USA), and Jukka K. Nurminen (University of Helsinki, Finland)</i>	
Adaptive Mesh Refinement Quantum Algorithm for Maxwell's Equations	312
<i>Elise Fressart (Thales Research and Technology, France École polytechnique, France), Michel Nowak (Thales Research and Technology, France), and Nicole Spillane (École polytechnique, France)</i>	
Optimal Scaling Quantum Interior Point Method for Linear Optimization	320
<i>Mohammadhossein Mohammadisiahroudi (Lehigh University), Zeguan Wu (Lehigh University), Pouya Sampourmahani (Lehigh University), Jun-Kai You (Lehigh University), and Tamás Terlaky (Lehigh University)</i>	
Benchmarking Fidelity Metrics of Quantum Computers	327
<i>Shubdeep Mohapatra (North Carolina State University, USA), Hrushikesh Pramod Patil (North Carolina State University, USA), Ji Liu (Argonne National Lab, USA), and Huiyang Zhou (North Carolina State University, USA)</i>	
QuOp: A Quantum Operator Representation for Nodes	338
<i>Andrew Vlasic (Deloitte Consulting LLP, FL) and Salvador Aguinaga (Deloitte Touche Tohmatsu Services LLC, IN)</i>	
Quantum Arithmetic Algorithms: Implementation, Resource Estimation, and Comparison	349
<i>Dmytro Fedoriaka (University of Washington, USA), Brian Goldsmith (Independent Researcher, USA), and Yingrong Chen (Microsoft Quantum, USA)</i>	
Efficient QAOA Architecture for Solving Multi-Constrained Optimization Problems	356
<i>David Bucher (Aqarios GmbH, Germany), Daniel Porawski (Aqarios GmbH, Germany), Maximilian Janetschek (Aqarios GmbH, Germany), Jonas Stein (Aqarios GmbH, Germany; LMU Munich, Germany), Corey O'Meara (E.ON Digital Technology, Germany), Giorgio Cortiana (E.ON Digital Technology, Germany), and Claudia Linnhoff-Popien (LMU Munich, Germany)</i>	

QSYS

Is Circuit Depth Accurate for Comparing Quantum Circuit Runtimes?	368
<i>Matthew Tremba (Argonne National Laboratory, United States of America), Paul Hovland (Argonne National Laboratory, United States of America), and Ji Liu (Argonne National Laboratory, United States of America)</i>	

A Practical Framework for Assessing the Performance of Observable Estimation in Quantum Simulation	375
<i>Siyuan Niu (University of Central Florida, USA; Lawrence Berkeley National Laboratory, USA), Efehan Kökcü (Lawrence Berkeley National Laboratory, USA), Sonika Johri (Coherent Computing Inc), Anurag Ramesh (Purdue University, USA), Avimita Chatterjee (Pennsylvania State University, USA), David Bernal Neira (Purdue University, USA), Daan Camps (Lawrence Berkeley National Laboratory, USA), and Thomas Lubinski (Quantum Circuits Inc, QED-C Technical Advisory Committee on Standards, USA)</i>	
Quantum Processing Unit (QPU) Processing Time Prediction with Machine Learning	387
<i>Lucy Xing (IBM Quantum, USA), Sanjay Vishwakarma (IBM Quantum, USA), David Kremer (IBM Quantum, USA), Francisco Martín-Fernández (IBM Quantum, USA), Ismael Faro (IBM Quantum, USA), and Juan Cruz-Benito (IBM Quantum, USA)</i>	
Tailored Quantum Device Calibration with Statistical Model Checking	394
<i>Filip Mazurek (Duke University, USA), Marissa D'Onofrio (Duke University, USA), Andrew Van Horn (Duke University, USA), Jiyong Yu (Duke University, USA), Kavyashree Ranawat (Duke University, USA), Jungsang Kim (Duke University, USA), and Kenneth Brown (Duke University, USA)</i>	
From Ideal to Noisy: Adapting Property-Based Testing for Real-World Noisy Quantum Computers	405
<i>Gabriel Pontolillo (King's College London, United Kingdom), Asmar Muqet (Simula Research Laboratory, University of Oslo, Norway), Shaikat Ali (Simula Research Laboratory, Norway), and Mohammad Reza Mousavi (King's College London, United Kingdom)</i>	
Quantum Circuit Cutting: A Security Methodology	417
<i>George Typaldos (Yale University), Theodoros Trochatos (Yale University), and Jakub Szefer (Northwestern University)</i>	
Is Circuit Cutting Scalable for Practical Quantum Applications?	428
<i>Songqinghao Yang (University of Cambridge) and Prakash Murali (University of Cambridge)</i>	
A Formalization of Measurement-Commuting Unitaries	439
<i>Ulrik de Muelenaere (University of Notre Dame, USA), Sinan Pehlivanoglu (Indiana University, USA), Amr Sabry (Indiana University, USA), and Peter M. Kogge (University of Notre Dame, USA)</i>	
Towards a Pulse-Level Intermediate Representation for Diverse Quantum Control Systems	448
<i>Jude Alnas (Duke University, NC), Aniket S. Dalvi (Duke University, NC), and Kenneth R. Brown (Duke University, NC)</i>	
QIRopt: An Optimization Method for Quantum Intermediate Representation	459
<i>Junjie Luo (Kyushu University, Japan), Haoyu Zhang (Kyushu University, Japan), and Jianjun Zhao (Kyushu University, Japan)</i>	
Bifrost: Topology-Aware Approximate Compilation of Variational Quantum Algorithms	470
<i>Vivek Yanamadula (Amazon Web Services, USA), Jonathan Yang (University of Maryland, USA), and Runzhou Tao (University of Maryland, USA)</i>	

A Lazy Resynthesis Approach for Simultaneous T Gate and Two-Qubit Gate Optimization of Quantum Circuits	481
<i>Mu-Te Lau (National Taiwan University, Taiwan), Hsiang-Chun Yang (National Taiwan University, Taiwan), Hsin-Yu Chen (National Taiwan University, Taiwan), and Chung-Yang Ric Huang (National Taiwan University)</i>	
Lattice Surgery Compilation Beyond the Surface Code	489
<i>Laura S. Herzog (Technical University Munich, Germany), Lucas Berent (Technical University Munich, Germany), Aleksander Kubica (Yale University, USA), and Robert Wille (Technical University of Munich, Germany; Munich Quantum Software Company GmbH, Germany; Software Competence Center Hagenberg GmbH (SCCH), Austria)</i>	
Making Neural Networks More Suitable for Approximate Clifford+T Circuit Synthesis	501
<i>Mathias Weiden (University of California, Berkeley), Justin Kalloor (University of California, Berkeley), John Kubiawicz (University of California, Berkeley), and Costin Iancu (Lawrence Berkeley National Laboratory)</i>	
A New Perspective of Constructing Resource-Efficient Data-Lookup Quantum Oracles	511
<i>Mingfei Yu (Integrated Systems Laboratory, EPFL, Switzerland), Mathias Soeken (Microsoft, Switzerland), and Giovanni De Micheli (Integrated Systems Laboratory, EPFL, Switzerland)</i>	
SimQFL: A Quantum Federated Learning Simulator with Real-Time Visualization	520
<i>Ratun Rahman (The University of Alabama in Huntsville, USA), Atit Pokharel (The University of Alabama in Huntsville, USA), Md Raihan Uddin (The University of Alabama in Huntsville, USA), and Dinh C. Nguyen (The University of Alabama in Huntsville, USA)</i>	
HiPARS: Highly-Parallel Atom Rearrangement Sequencer	530
<i>Jonas Winklmann (Technical University of Munich, Germany) and Martin Schulz (Technical University of Munich, Germany)</i>	
Symbolic Hamiltonian Compiler for Hybrid Qubit-Boson Processors	540
<i>Ethan Decker (University of Pennsylvania, USA), Erik Gustafson (Universities Space Research Association, RIACS at NASA Ames Research Center, USA), Evan McKinney (University of Pittsburgh, USA), Alex K. Jones (Syracuse University, USA), Lucas Goetz (ETH Zurich, Switzerland), Ang Li (Pacific Northwest National Laboratory, USA), Alexander Schuckert (University of Maryland, USA), Samuel Stein (Pacific Northwest National Laboratory, USA), Gushu Li (University of Pennsylvania, USA), and Eleanor Crane (Massachusetts Institute of Technology, USA; King's College London, UK)</i>	
Optimal Qubit Reuse for Quantum Computation with Gate Reordering and Eager Measurement ..	549
<i>Wen-Chen Yu (National Taiwan University, Taiwan), Tian-Fu Chen (Physics Division, National Center for Theoretical Sciences, Taiwan; National Taiwan University, Taiwan), Yu-Hsiang Chan (National Taiwan University, Taiwan), Jie-Hong Jiang (Physics Division, National Center for Theoretical Sciences, Taiwan; National Taiwan University, Taiwan), Dah-Wei Chiou (National Taiwan University, Taiwan), and Yao-Wen Chang (National Taiwan University, Taiwan)</i>	

Optimal Fermion-Qubit Mappings via Quadratic Assignment	560
<i>Mitchell Chiew (Cambridge University, United Kingdom), Cameron Ibrahim (University of Delaware, USA), Ilya Safro (University of Delaware, USA), and Sergii Strelchuk (University of Oxford, UK)</i>	
Local Optimization of Quantum Circuits	572
<i>Jatin Arora (Carnegie Mellon University), Mingkuan Xu (Carnegie Mellon University), Sam Westrick (New York University), Pengyu Liu (Carnegie Mellon University), Dantong Li (Yale University), Yongshan Ding (Yale University), and Umut A. Acar (Carnegie Mellon University)</i>	
Quantum Circuit Optimization for the Fault-Tolerance Era: Do We Have to Start from Scratch?	584
<i>Tobias V. Forster (Technical University of Munich, Germany), Nils Quetschlich (Technical University of Munich, Germany), and Robert Wille (Technical University of Munich, Germany; Munich Quantum Software Company GmbH, Garching near Munich, Germany; Software Competence Center Hagenberg GmbH (SCCH), Austria)</i>	
Predict and Conquer: Navigating Algorithm Trade-offs with Quantum Design Automation	591
<i>Simon Thelen (Technical University of Applied Science Regensburg, Germany) and Wolfgang Mauerer (Technical University of Applied Science Regensburg, Germany)</i>	
Enhancing the Clique Local Decoder to Correct Length-2 Space Errors in the Surface Code	603
<i>Zikang Jia (University of Michigan, USA), Shravan Veerapaneni (University of Michigan, USA), and Gokul Subramanian Ravi (University of Michigan, USA)</i>	
ConiQ: Enabling Concatenated Quantum Error Correction on Neutral Atom Arrays	615
<i>Pengyu Liu (Carnegie Mellon University, U.S.), Mingkuan Xu (Carnegie Mellon University, U.S.), Hengyun Zhou (QuEra Computing Inc, U.S.), Hanrui Wang (University of California, Los Angeles, U.S.), Umut A. Acar (Carnegie Mellon University, U.S.), and Yunong Shi (Amazon Web Services, NY)</i>	
Surface Code Error Correction with Crosstalk Noise	627
<i>Zeyuan Zhou (Yale University, USA), Andrew Ji (University of Chicago Laboratory Schools, USA), and Yongshan Ding (Yale University, USA)</i>	
Moveless: Minimizing QEC Overhead on QCCDs via Versatile Execution and Low Excess Shuttling	637
<i>Sahil Khan (Duke University, USA), Suhas Vittal (Georgia Tech, USA), Kenneth Brown (Duke University, USA), and Jonathan Baker (University of Texas at Austin, USA)</i>	
Distributed Quantum Error Correction Based on Hyperbolic Floquet Codes	649
<i>Evan Sutcliffe (Nu Quantum Ltd., United Kingdom), Bhargavi Jonnadula (Nu Quantum Ltd., United Kingdom), Claire Le Gall (Nu Quantum Ltd., United Kingdom), Alexandra E. Moylett (Nu Quantum Ltd., United Kingdom), and Coral M. Westoby (Nu Quantum Ltd., United Kingdom)</i>	

Erasure Minesweeper: Exploring Hybrid-Erasure Surface Code Architectures for Efficient Quantum Error Correction	658
<i>Jason Chadwick (University of Chicago, USA), Mariesa Teo (University of Chicago, USA), Joshua Visslai (University of Chicago, USA), Willers Yang (University of Chicago, USA), and Frederic Chong (University of Chicago, USA)</i>	
Locality-Aware Pauli-Based Computation for Local Magic State Preparation	670
<i>Yutaka Hirano (The University of Osaka, Japan) and Keisuke Fujii (The University of Osaka, Japan; RIKEN Center for Quantum Computing (RQC), Japan)</i>	
Improving Hardware Requirements for Fault-Tolerant Quantum Computing by Optimizing Error Budget Distributions	681
<i>Tobias Forster (Technical University of Munich, Germany), Nils Quetschlich (Technical University of Munich, Germany), Mathias Soeken (Microsoft Quantum, Switzerland), and Robert Wille (Technical University of Munich, Germany; Munich Quantum Software Company GmbH, Germany; Software Competence Center Hagenberg GmbH (SCCH), Austria)</i>	
Matching Generalized-Bicycle Codes to Neutral Atoms for Low-Overhead Fault-Tolerance	688
<i>Joshua Visslai (University of Chicago), Willers Yang (University of Chicago), Sophia Fuhui Lin (University of Chicago; AWS Center for Quantum Computing), Junyu Liu (University of Chicago; University of Pittsburgh), Natalia Nottingham (University of Chicago), Jonathan M. Baker (University of Texas, Austin), and Frederic T. Chong (University of Chicago)</i>	
BVQC: A Backdoor-Style Watermarking Scheme for Variational Quantum Circuits	700
<i>Cheng Chu (Indiana University Bloomington), Lei Jiang (Indiana University Bloomington), and Fan Chen (Indiana University Bloomington)</i>	
QUARTET: Quantum Utilization and Adaptation via Resource-Tuned Execution Techniques	709
<i>Navnil Choudhury (The University of Texas at Dallas, USA), Ameya S Bhawe (The University of Texas at Dallas, USA), and Kanad Basu (The University of Texas at Dallas, USA)</i>	
Physically-Aware Qubit Reuse for Optimized Quantum Circuit Compilation Using Machine Learning	720
<i>Gopika Kizhuvettill (City University of New York, USA), Georgios Ioannou (New York University, USA), Siyuan Niu (University of Central Florida, USA), and Samah Mohamed Saeed (City University of New York, USA)</i>	
Compilation Strategies for Quantum Network Programs Using Qoala	731
<i>Samuel Oslovich (QuTech, Delft University of Technology and Kavli Institute of Nanoscience, The Netherlands), Bart van der Vecht (QuTech, Delft University of Technology and Kavli Institute of Nanoscience, The Netherlands), and Stephanie Wehner (QuTech, Delft University of Technology and Kavli Institute of Nanoscience, The Netherlands)</i>	
Improving Quantum Compilation via Circuit Partitioning and Floorplanning	742
<i>Giacomo Lancellotti (Politecnico di Milano-DEIB, Italy), Giovanni Agosta (Politecnico di Milano-DEIB, Italy), Alessandro Barenghi (Politecnico di Milano-DEIB, Italy), and Gerardo Pelosi (Politecnico di Milano-DEIB, Italy)</i>	

TeleSABRE: Heuristic Layout Synthesis in Multi-Core Quantum Systems with Teleport Interconnect	749
<i>Enrico Russo (University of Catania, Italy), Elio Vinciguerra (University of Catania, Italy), Maurizio Palesi (University of Catania, Italy), Davide Patti (University of Catania, Italy), Giuseppe Ascia (University of Catania, Italy), and Vincenzo Catania (University of Catania, Italy)</i>	
Rule-Based Hardware-Configurable Static Analysis for Quantum Programs	759
<i>Yi-Ting Chen (AWS Quantum Technologies, USA), Lauren Capelluto (AWS Quantum Technologies, USA), Ryan Shaffer (AWS Quantum Technologies, USA), and Jeffrey Heckey (AWS Quantum Technologies, USA)</i>	
Automatically Refining Assertions for Efficient Debugging of Quantum Programs	766
<i>Damian Rovara (Technical University of Munich, Germany), Lukas Burgholzer (Technical University of Munich, Germany; Munich Quantum Software Company GmbH, Germany), and Robert Wille (Technical University of Munich, Germany; Munich Quantum Software Company GmbH, Germany; Software Competence Center Hagenberg GmbH (SCCH), Austria)</i>	
Self-Adaptive Quantum and Classical Software Systems	773
<i>Antonio Brogi (University of Pisa, Italy), Shahram Dustdar (Distributed Systems Group TU Wien, Austria), Michael Felderer (University of Cologne, Germany), Hausi Muller (Faculty of Engineering, University of Victoria, Canada), Juan Manuel Murillo (Universidad de Extremadura, Cáceres, Spain), Ricardo Pérez-Castillo (Faculty of Social Sciences & IT University of Castilla-La Mancha, Spain), Antonio Ruiz-Cortés (Lab, I3US, Institute Universidad de Sevilla, Spain), Shinobu Saito (Data Science Laboratories, Japan), and Ulrike Stege (Faculty of Engineering, University of Victoria, Canada)</i>	
Online Job Scheduler for Fault-Tolerant Quantum Multiprogramming	779
<i>Ryo Wakizaka (Kyoto University, Japan), Shin Nishio (University College London, United Kingdom; Keio University, Japan), Daisuke Sakuma (Keio University, Japan), Yosuke Ueno (RIKEN, Japan), and Yasunari Suzuki (RIKEN, Japan; NTT Corporation, Japan)</i>	
Quantum Island Mapping: Optimizing Multi-Circuit Execution in Quantum Processors	791
<i>Jaime Alvarado-Valiente (University of Extremadura, Spain), Javier Romero-Alvarez (University of Extremadura, Spain), Jorge Casco-Seco (University of Extremadura, Spain), Enrique Moguel (University of Extremadura, Spain), and Jose Garcia-Alonso (University of Extremadura, Spain)</i>	
A Practical Open-Source Software Stack for a Cloud-Based Quantum Computing System	797
<i>Norihiro Kakuko (Fujitsu LTD., Japan), Shun Gokita (Fujitsu LTD., Japan), Naoyuki Masumoto (Osaka University, Japan), Keita Matsumoto (Systems Engineering Consultants Co.,LTD., Japan), Kosuke Miyaji (Osaka University, Japan), Takafumi Miyanaga (Osaka University, Japan), Toshio Mori (Osaka University, Japan), Haruki Nakayama (Systems Engineering Consultants Co.,LTD., Japan), Keita Sasada (TIS Inc., Japan), Yasuhito Takamiya (TIS Inc., Japan), Satoyuki Tsukano (Osaka University, Japan), Ryo Uchida (Systems Engineering Consultants Co.,LTD., Japan), and Masaomi Yamaguchi (Fujitsu LTD., Japan)</i>	

Qwerty: A Basis-Oriented Quantum Programming Language	804
<i>Austin J. Adams (Georgia Institute of Technology, USA), Sharjeel Khan (Georgia Institute of Technology, USA), Arjun S. Bhamra (Georgia Institute of Technology, USA), Ryan R. Abusaada (Georgia Institute of Technology, USA), Travis S. Humble (Oak Ridge National Laboratory, USA), Jeffrey S. Young (Georgia Institute of Technology, USA), and Thomas M. Conte (Georgia Institute of Technology, USA)</i>	
Productive Quantum Programming Needs Better Abstract Machines	816
<i>Santiago Núñez-Corrales (University of Illinois Urbana-Champaign, USA), Olivia Di Matteo (The University of British Columbia, Canada), John Dumbell (Oxford Quantum Circuits, United Kingdom), Marcus Edwards (The University of British Columbia, Canada), Edoardo Giusto (University of Naples Federico II, Italy), Scott Pakin (Los Alamos National Laboratory, USA), and Vlad Stirbu (University of Jyväskylä, Finland)</i>	
Compiler Design for Hardware Specific Decomposition Optimizations, Tailored to Diamond NV Centers	827
<i>Folkert de Ronde (Delft University of Technology, The Netherlands), Stephan Wong (Delft University of Technology, The Netherlands), and Sebastian Feld (Delft University of Technology, The Netherlands)</i>	
Distinguishing Quantum Software Bugs from Hardware Noise: A Statistical Approach	837
<i>Ahmik Virani (Indian Institute of Technology Hyderabad, India), Devraj D (Indian Institute of Technology Hyderabad, India), Anirudh Suresh (University of Maryland College Park, United States), Lei Zhang (University of Maryland Baltimore County, United States), and Panduranga Rao MV (Indian Institute of Technology Hyderabad, India)</i>	
Q-Cluster: Quantum Error Mitigation Through Noise-Aware Unsupervised Learning	849
<i>Hrushikesh Pramod Patil (North Carolina State University, USA), Dror Baron (North Carolina State University, USA), and Huiyang Zhou (North Carolina State University, USA)</i>	
Optimal Partitioning for Noisy Phase Estimation with the Greenberger-Horne-Zeilinger (GHZ) States	861
<i>Allen Zang (The University of Chicago, USA), Tian-Xing Zheng (The University of Chicago, USA), Peter C. Maurer (The University of Chicago, USA), Frederic T. Chong (The University of Chicago, USA; Inflection Inc., USA), Martin Suchara (Microsoft Azure Quantum, USA), and Tian Zhong (The University of Chicago, USA)</i>	

QNET

A Comparative Study of All-Photonic and Memory-Based Quantum Repeaters and Networks	873
<i>Chuen Hei Chan (Lawrence Berkeley National Laboratory; Virginia Tech), Charu Jain (Lawrence Berkeley National Laboratory), Ezra Kissel (Lawrence Berkeley National Laboratory), Wenji Wu (Lawrence Berkeley National Laboratory), Edwin Barnes (Virginia Tech), Sophia E. Economou (Virginia Tech), and Inder Monga (Lawrence Berkeley National Laboratory)</i>	

Integrating Entanglement Purification into All-Photonic Quantum Repeaters	885
<i>Naphan Benchasattabuse (Keio University, Japan), Michal Hajdušek (Keio University, Japan), and Rodney Van Meter (Keio University, Japan)</i>	
Quantum Repeaters Enhanced by Vacuum beam Guides	896
<i>Yu Gan (University of Pittsburgh, USA), Mohadeseh Azari (University of Pittsburgh, USA), Nitish Kumar Chandra (University of Pittsburgh, USA), Xin Jin (University of Pittsburgh, USA), Jinglei Cheng (University of Pittsburgh, USA), Kaushik P. Seshadreesan (University of Pittsburgh, USA), and Junyu Liu (University of Pittsburgh, USA)</i>	
A Survey of Post-Quantum Cryptography Support in Cryptographic Libraries	906
<i>Nadeem Ahmed (University of Maryland Baltimore County, USA), Lei Zhang (University of Maryland Baltimore County, USA), and Aryya Gangopadhyay (University of Maryland Baltimore County, USA)</i>	
Evaluating Post-Quantum Cryptographic Algorithms on Resource-Constrained Devices	918
<i>Jesus Lopez (University of Texas at El Paso), Viviana Cadena (University of Texas at El Paso), and Mohammad Saidur Rahman (University of Texas at El Paso)</i>	
New Key Rate Bound for High-Dimensional BB84 with Multiple Basis Measurements	926
<i>Trevor N. Thomas (University of Connecticut, USA) and Walter O. Krawec (University of Connecticut, USA)</i>	
Time-Aware Qubit Assignment and Circuit Optimization for Distributed Quantum Computing	937
<i>Leo Sünkel (LMU Munich, Germany), Jonas Stein (LMU Munich, Germany), Maximilian Zorn (LMU Munich, Germany), Thomas Gabor (LMU Munich, Germany), and Claudia Linnhoff-Popien (LMU Munich, Germany)</i>	
Servicing Demands Between Multiple Pairs of Nodes on Heterogeneous Quantum Networks	948
<i>Anoop Kumar Pandey (Indian Institute of Technology Hyderabad, India), Bheemarjuna Reddy Tamma (Indian Institute of Technology Hyderabad, India), and Panduranga Rao MV (Indian Institute of Technology Hyderabad, India)</i>	
A Quantum Speedup in Localizing Transmission Loss Change in Optical Networks	958
<i>Yufei Zheng (University of Massachusetts Amherst, USA), Yu-Zhen Janice Chen (University of Massachusetts Amherst, USA), Prithwish Basu (RTX BBN Technologies, USA), and Don Towsley (University of Massachusetts Amherst, USA)</i>	
Power Reduction of SFQ Readout Circuit for Superconducting Quantum Computers	969
<i>Masumi Kanda (Kyushu University, Japan), Yuki Matsumoto (Kyushu University, Japan), Teruo Tanimoto (Kyushu University, Japan), Masamitsu Tanaka (Nagoya University, Japan), and Takatsugu Ono (Kyushu University, Fukuoka, Japan)</i>	
Performance Analysis of MDI-QKD in Thermal-Loss and Phase Noise Channels	976
<i>Heyang Peng (University of Luxembourg, Luxembourg), Seid Koudia (University of Luxembourg, Luxembourg), Leonardo Oleynik (University of Luxembourg, Luxembourg), and Symeon Chatzinotas (University of Luxembourg, Luxembourg)</i>	

On the Impact of Classical and Quantum Communication Networks Upon Modular Quantum Computing Architecture System Performance	984
<i>Pau Escofet (Universitat Politècnica de Catalunya, Spain), Abhijit Das (Universitat Politècnica de Catalunya, Spain), Sahar Ben Rached (Universitat Politècnica de Catalunya, Spain), Santiago Rodrigo (Universitat Politècnica de Catalunya, Spain), Jordi Domingo (Universitat Politècnica de Catalunya, Spain), Fabio Sebastiano (Delft University of Technology, The Netherlands), Masoud Babaie (Delft University of Technology, The Netherlands), Batuhan Keskin (Ecole Polytechnique Fédérale de Lausanne, Switzerland), Edoardo Charbon (Ecole Polytechnique Fédérale de Lausanne, Switzerland), Peter Haring Bolívar (University of Siegen, Germany), Maurizio Palesi (University of Catania, Italy), Elena Blokhina (Equal1 Labs, Ireland; University College Dublin, Ireland), Bogdan Staszewski (University College Dublin, Ireland), Avishek Nag (University College Dublin, Ireland), Artur Garcia Sáez (Barcelona Supercomputing Center, Spain; Qilimanjaro Quantum Tech, Spain), Sergi Abadal (Universitat Politècnica de Catalunya, Spain), Eduard Alarcón (Universitat Politècnica de Catalunya, Spain), and Carmen G. Almudéver (Universitat Politècnica de València, Spain)</i>	
Temperature Dependence of a warm Ensemble Based Memory on Quantum Communication Rates	996
<i>Kenny Gregory (Carleton University, Canada), Khaled Mnaymneh (National Research Council Canada, Canada), Connor Kupchak (Carleton University, Canada), and Andrew Macrae (University of Victoria, Canada)</i>	
Lower Bounds for the Communication Costs of Distributing Quantum Fourier Transform on Clique Networks	1003
<i>Ali Ebneenasir (Michigan Technological University, USA)</i>	
Enhancing Quantum Federated Learning with Fisher Information-Based Optimization	1015
<i>Amandeep Singh Bhatia (Department of Electrical and Computer Engineering, North Carolina State University, Raleigh, NC, USA) and Sabre Kais (Department of Electrical and Computer Engineering, North Carolina State University, Raleigh, NC, USA)</i>	
Realizing Scalability Limits of Quantum Communication Networks	1021
<i>Connor Howe (University of Minnesota) and Ali Anwar (University of Minnesota)</i>	
A Hybrid Metaheuristic for Route Optimization in Quantum Repeater Networks	1033
<i>Suleiman Onimisi Aliyu (University of Derby, UK) and Hongji Yang (University of Leicester, UK)</i>	
Evaluation of Distimation's Real-World Performance on a Superconducting Quantum Computer	1043
<i>Hikaru Yokomori (Keio University, Japan), Marii Koyama (Keio University, Japan), Naphan Benchasattabuse (Keio University, Japan), Michal Hajdušek (Keio University, Japan), Shota Nagayama (Keio University, Japan; mercari R4D, Mercari, Inc., Japan), and Rodney Van Meter (Keio University, Japan)</i>	

How to Share Multipartite Entanglement in a Real-World Linear Network Connecting Two Metropoles	1052
<i>Janka Memmen (Technische Universität Berlin, Germany) and Anna Pappa (Technische Universität Berlin, Germany)</i>	
Boson Sampling from a Multimode Cavity Containing Bose-Einstein Condensate	1063
<i>Vitaly Kocharovsky (Texas A&M University, USA)</i>	
Orchestrating Multi-Zone Shuttling in Trapped-Ion Quantum Computers	1069
<i>Daniel Schoenberger (Technical University of Munich, Germany) and Robert Wille (Technical University of Munich, Germany; Munich Quantum Software Company GmbH, Germany; Software Competence Center Hagenberg GmbH, Austria)</i>	
A Scalable Real-Time Decoder for Quantum Error Correction Based on Hyperdimensional Computing	1076
<i>Rob A. Damsteegt (Delft University of Technology, The Netherlands), Masoud Babaie (Delft University of Technology, The Netherlands), Sebastian Feld (Delft University of Technology, The Netherlands), and Fabio Sebastiano (Delft University of Technology, The Netherlands)</i>	
Partitioning Cryogenic Integrated Electronics for Scalable Spin Qubit Operation	1083
<i>Lotte Geck (Peter Grünberg Institute – Integrated Computing Architectures (ICA), Germany; RWTH Aachen University, Germany), Pau Dietz Romero (Peter Grünberg Institute – Integrated Computing Architectures (ICA), Germany), Lammert Duipmans (Peter Grünberg Institute – Integrated Computing Architectures (ICA)), and Stefan van Waasen (Peter Grünberg Institute – Integrated Computing Architectures (ICA), Germany; University of Duisburg-Essen, Germany)</i>	
A Double Selection Entanglement Distillation-Based State Estimator	1089
<i>Joshua Carlo A. Casapao (Okinawa Institute of Science and Technology, Japan), Ananda G. Maity (Okinawa Institute of Science and Technology, Japan; S. N. Bose National Centre for Basic Sciences, India), Naphan Benchasattabuse (Keio University Shonan Fujisawa Campus, Japan), Michal Hajdušek (Keio University Shonan Fujisawa Campus, Japan), Akihito Soeda (National Institute of Informatics, Japan), Rodney Van Meter (Keio University Shonan Fujisawa Campus, Japan), and David Elkouss (Okinawa Institute of Science and Technology, Japan)</i>	
Quantum State Transfer Between Heterogenous 3D QPUs	1098
<i>Joey Yaker (Fermi National Accelerator Laboratory), Alessandro Reineri (Fermi National Accelerator Laboratory), Alexander Romanenko (Fermi National Accelerator Laboratory), Anna Grasselino (Fermi National Accelerator Laboratory), Tanay Roy (Fermi National Accelerator Laboratory), Yu-Chiu Chao (Fermi National Accelerator Laboratory), Jens Koch (Northwestern University), Yao Lu (Fermi National Accelerator Laboratory), and Silvia Zorzetti (Fermi National Accelerator Laboratory)</i>	
From Physical to Logical: Graph-State-Based Connectivity in Quantum Networks	1104
<i>Mateo M. Blanco Rodríguez (Universidade de Vigo, Spain), Manuel Fernández-Veiga (Universidade de Vigo, Spain), Ana Fernández-Vilas (Universidade de Vigo, Spain), and Rebeca P. Díaz-Redondo (Universidade de Vigo, Spain)</i>	

Entanglement-Efficient Distribution of Quantum Circuits over Large-Scale Quantum Networks ..	1111
<i>Felix Burt (Imperial College London, UK), Kuan-Cheng Chen (Imperial College London, UK), and Kin K. Leung (Imperial College London, UK)</i>	
Efficient Execution of Multiple Quantum Circuits over a Quantum Network	1123
<i>Yukun Yang (Stony Brook University, USA), Ranjani G. Sundaram (Stony Brook University, USA), and Himanshu Gupta (Stony Brook University, USA)</i>	
Scalable Time-Tagged Data Acquisition for Entanglement Distribution in Quantum Networks	1134
<i>Abderrahim Amlou (National Institute of Standards and Technology, United States; University of Grenoble Alpes, France), Thomas Gerrits (National Institute of Standards and Technology, United States), Anouar Rahmouni (National Institute of Standards and Technology, United States), Amar Abane (National Institute of Standards and Technology, United States), Mheni Merzouki (National Institute of Standards and Technology, United States), Ya-Shian Li-Baboud (National Institute of Standards and Technology, United States), Ahmed Lbath (University of Grenoble Alpes, France), Abdella Battou (National Institute of Standards and Technology, United States), and Oliver Slattery (National Institute of Standards and Technology, United States)</i>	
Hybrid Repeaters with Encoding for Long Distance Entanglement Distribution	1141
<i>Stav Haldar (University of Massachusetts Amherst, USA), Saikat Guha (University of Maryland, USA), Don Towsley (University of Massachusetts Amherst, USA), and Filip Rozpedek (University of Massachusetts Amherst, USA)</i>	
Network-Integrated Decoding System for Real-Time Quantum Error Correction with Lattice Surgery	1148
<i>Namitha Godawatte Liyanage (Yale University, CT), Yue Wu (Yale University, CT), Emmet Houghton (Yale University, CT), and Lin Zhong (Yale University, CT)</i>	
Polynomial-Time Extraction of Entanglement Resources	1160
<i>Siyi Chen (University of Naples Federico II, Italy), Angela Sara Cacciapuoti (University of Naples Federico II, Italy), and Marcello Caleffi (University of Naples Federico II, Italy)</i>	
Entanglement Routing over Networks with Time Multiplexed Repeaters	1170
<i>Emily A. Van Milligen (University of Arizona, USA), Eliana Jacobson (University of Arizona, USA), Ashlesha Patil (University of Arizona, USA), Gayane Vardoyan (University of Massachusetts Amherst, USA), Don Towsley (University of Massachusetts Amherst, USA), and Saikat Guha (University of Maryland, USA)</i>	
Statistical Modeling and Latency Optimization for Entanglement Routing in Quantum Networks.	1179
<i>Jiyao Liu (Temple University, USA) and Yu Wang (Temple University, USA)</i>	
Beyond Traditional Quantum Routing	1190
<i>Siyi Chen (University of Naples Federico II, Italy), Angela Sara Cacciapuoti (University of Naples Federico II, Italy), and Marcello Caleffi (University of Naples Federico II, Italy)</i>	

ShaNQar: Simulator of Network Quantique	1195
<i>Anand Choudhary (Indian Institute of Technology (IIT) Roorkee, India; École Polytechnique Fédérale de Lausanne (EPFL), Switzerland) and Ajay Wasan (Indian Institute of Technology (IIT) Roorkee, India)</i>	
On Designing A Quantum Network Topology: Model, Methodology, and Algorithm	1207
<i>Yuhang Gan (University of California, Santa Cruz, USA), Ruilin Zhou (University of California, Santa Cruz, USA), Shiyi Ling (University of California, Santa Cruz, USA), Yi Liu (University of California, Santa Cruz, USA), and Chen Qian (University of California, Santa Cruz, USA)</i>	
A Tailored Fidelity Estimation and Purification Method for Bootstrapping a Quantum Network...	1219
<i>Takafumi Oka (Keio University, Japan), Michal Hajdušek (Keio University, Japan), Shota Nagayama (Keio University, Japan), and Rodney Van Meter (Keio University, Japan)</i>	
On Selecting Paths for End-to-End Entanglement Creation in Quantum Networks	1225
<i>Anoosha Fayyaz (University of Pittsburgh, USA), Prashant Krishnamurthy (University of Pittsburgh, USA), Kaushik P. Seshadreesan (University of Pittsburgh, USA), David Tipper (University of Pittsburgh, USA), and Amy Babay (University of Pittsburgh, USA)</i>	
Towards Optimal Orders for Entanglement Swapping in Path Graphs: A Greedy Approach	1237
<i>Van Sy Mai (NIST, USA), Abderrahim Amlou (NIST, USA), Amar Abane (NIST, USA), and Abdella Battou (NIST, USA)</i>	
Quantum Paths: a Quantum Walk Approach	1248
<i>Claudio Pellitteri (University of Naples Federico II, Italy), Marcello Caleffi (University of Naples Federico II, Italy), and Angela Sara Cacciapuoti (University of Naples Federica II, Italy)</i>	
The Proportional Fair Scheduler in Wavelength-Multiplexed Quantum Networks	1252
<i>Sanidhay Bhambay (Durham University Business School), Siddarth Koduru Joshi (Quantum Engineering Technology Labs, School of Electrical, Electronic and Mechanical Engineering, University of Bristol), Thirupathaiah Vasantam (Durham University), and Neil Walton (Durham University Business School)</i>	
Automatic Configuration Protocols for Optical Quantum Networks	1263
<i>Amin Taherkhani (Keio University Shonan Fujisawa Campus, Kanagawa, Japan), Andrew Todd (Keio University Shonan Fujisawa Campus, Kanagawa, Japan), Kentaro Teramoto (mercari R4D, Mercari, Inc., Tokyo, Japan), Rodney Van Meter (Quantum Computing Center, Keio University, Japan; Faculty of Environment and Information Studies, Keio University Shonan Fujisawa Campus, Kanagawa, Japan), and Shota Nagayama (Quantum Computing Center, Keio University, Japan; mercari R4D, Mercari, Inc., Tokyo, Japan)</i>	
Simulation of Quantum Transduction Strategies for Quantum Networks	1274
<i>Laura d'Avossa (University of Naples Federico II, Italy), Caitao Zhan (Argonne National Lab, USA), Joaquin Chung (Argonne National Lab, USA), Rajkumar Kettimuthu (Argonne National Lab, USA), Angela Sara Cacciapuoti (University of Naples Federico II, Italy), and Marcello Caleffi (University of Naples Federico II, Italy)</i>	

Accurate and Scalable Simulation of Cavity-Based Networks in Modular Quantum Architectures	1283
<i>Sahar Ben Rached (Universitat Politècnica de Catalunya, Spain), Zezhou Sun (Tsinghua University, China), Guilu Long (Tsinghua University, China), Santiago Rodrigo (Universitat Politècnica de Catalunya, Spain), Carmen G. Almudéver (Universitat Politècnica de València, Spain), Eduard Alarcón (Universitat Politècnica de Catalunya, Spain), and Sergi Abadal (Universitat Politècnica de Catalunya, Spain)</i>	
Flexible Superconducting Interconnects Realized by Electrodeposition of Rhenium on an Aerosol Jet Printed Seed Layer	1293
<i>Jacob Manzi (Sandia National Labs, USA), Lok-kun Tsui (University of New Mexico, USA), Yongkun Sui (Sandia National Labs, USA), Kamal Ahammed (University of Alabama, USA), Zhefan Ma (University of Alabama, USA), Qiang Huang (University of Alabama, USA), and Judith Lavin (Sandia National Labs, USA)</i>	
A Two-Level Control Framework for Quantum Networks	1302
<i>Se-young Yu (Lawrence Berkeley National Laboratory), Elia Perego (University of California, Berkeley), Justin Philips (University of California, Berkeley), You-Wei Cheah (Lawrence Berkeley National Laboratory), Prathwiraj Umesh (California Institute of Technology), Guangqi Gao (University of California, Berkeley), Jiarui Liu (University of California, Berkeley), Ezra Kissel (Lawrence Berkeley National Laboratory), Michael Bregar (California Institute of Technology), Ke Sun (University of California, Berkeley), Qiming Wu (University of California, Berkeley), Raju Valivarthi (California Institute of Technology), Erhan Saglamyurek (Lawrence Berkeley National Laboratory), Wenji Wu (Lawrence Berkeley National Laboratory), Maria Spiropulu (California Institute of Technology), Hartmut Häffner (University of California, Berkeley), and Inder Monga (Lawrence Berkeley National Laboratory)</i>	

QTEM

Optimizing Compilation for Distributed Quantum Computing via Clustering and Annealing	1312
<i>Ruilin Zhou (University of California, Santa Cruz), Jinglei Cheng (University of Pittsburgh), Yuhang Gan (University of California, Santa Cruz), Junyu Liu (University of Pittsburgh), and Chen Qian (University of California, Santa Cruz)</i>	
Towards Efficient Verification of Computation in Quantum Devices	1319
<i>Keren Li (Shenzhen University, China), Peng Yan (Nanjing University of Posts and Telecommunications, China), Hanru Jiang (Beijing Institute of Mathematical Sciences and Applications, China), and Nengkun Yu (Stony Brook University, US)</i>	
Optimized GKP State for Bosonic Channel Sensing	1331
<i>Thinh Le (North Carolina State University, USA), Jianqing Liu (North Carolina State University, USA), Jiapeng Zhao (Cisco Quantum Labs, CA), and Eneet Kaur (Cisco Quantum Labs, CA)</i>	

High Output SoC-Based ion Shuttling Waveform Generator Using Cubic Splines	1341
<i>Tiamike Dudley (The University of New Mexico, USA; Sandia National Laboratories, USA), Joshua Goldberg (Sandia National Laboratories, USA), Daniel Lobser, Daniel Stick (Sandia National Laboratories, USA), and Jim Plusquellic (The University of New Mexico, USA)</i>	
Multiplexed Control at Scale for Electrode Arrays in Trapped-Ion Quantum Processors	1351
<i>Ryutaro Ohira (QuEL, Inc., Japan), Shinichi Morisaka (QuEL, Inc., Japan; Osaka University, Japan), Ippei Nakamura (The University of Tokyo, Japan), Atsushi Noguchi (The University of Tokyo, Japan; RIKEN Center for Quantum Computing, Japan, Inamori Research Institute for Science, Japan), and Takefumi Miyoshi (QuEL, Inc., Japan; Osaka University, Japan; e-trees. Japan, Inc., Japan)</i>	
Real-Time DCZ Gate Control by Bayesian Optimization with Forgetting	1360
<i>Yudai Sato (Tokyo University of Science, Japan; National Institute of Advanced Industrial Science and Technology (AIST), Japan) and Takayuki Kawahara (Tokyo University of Science, Japan)</i>	
Iterative Linear Quadratic Regulator for Quantum Optimal Control	1372
<i>Dirk Heimann (University of Bremen, Germany), Felix Wiebe (German Research Center for Artificial Intelligence, Germany), Tahereh Abad (Chalmers University of Technology, Sweden), Elie Mounzer (German Research Center for Artificial Intelligence, Germany), Tangyou Huang (Chalmers University of Technology, Sweden), Frank Kirchner (University of Bremen, Germany; German Research Center for Artificial Intelligence, Germany), and Shivesh Kumar (Chalmers University of Technology, Sweden)</i>	
A Modular ATCA-Based Approach Towards Scalable Multi-Qubit Systems	1379
<i>Lukas Scheller (Karlsruhe Institute of Technology, Germany), Marvin Fuchs (Karlsruhe Institute of Technology, Germany), Robert Gartmann (Karlsruhe Institute of Technology, Germany), Timo Muscheid (Karlsruhe Institute of Technology, Germany), Roger Heil (Forschungszentrum Jülich GmbH, Germany), Christian Roth (Forschungszentrum Jülich GmbH, Germany), Oliver Sander (Karlsruhe Institute of Technology, Germany), Mario Schlösser (Forschungszentrum Jülich GmbH, Germany), and Luis Ardila-Perez (Karlsruhe Institute of Technology, Germany)</i>	
Cryo-CMOS Control Modeling for Fluxonium Qubits	1386
<i>Vladimir Pesic (EPFL, Switzerland), Oliver Smedt (EPFL, Switzerland), Andrew Wright (EPFL, Switzerland), Raymond Mencia (EPFL, Switzerland), Vladimir Manucharyan (EPFL, Switzerland), and Edoardo Charbon (EPFL, Switzerland)</i>	
Nonlinear co-Simulation for Designing Kinetic Inductance Parametric Amplifiers	1393
<i>Likai Yang (Keysight Technologies, USA), Yufeng Wu (Yale University, USA), Chaofan Wang (Yale University, USA), Mingrui Xu (Yale University, USA), Hong X. Tang (Yale University, USA), Mohamed A. Hassan (Keysight Technologies, USA), and Eric T. Holland (Keysight Technologies, USA)</i>	
Parametric Stability Analysis for Circuit Quantum Electrodynamical Hardwares	1400
<i>M. Gabriela Boada G. (University of Texas San Antonio, USA), Andrea Delgado (Oak Ridge National Laboratory, USA), and Jose Morales Escalante (University of Texas at San Antonio, USA)</i>	

Analysis of a 3D Integrated Superconducting Quantum Chip Structure	1410
<i>James Saslow (San Jose State University, USA) and Hiu Yung Wong (San Jose State University, USA)</i>	

QPHO

Sub-Nanosecond Time-Gated Superconducting Nanowire Single-Photon Detectors (SNSPDs)	1419
<i>Antonio Guardiani (Single Quantum B.V., Netherlands), Lieuwe Loch (Single Quantum B.V., Netherlands), Henri Vlot (Single Quantum B.V., Netherlands), Katyayani Seal (Single Quantum USA Inc., USA), Martin Caldarola (Single Quantum USA Inc., USA), and Andreas Fognigni (Single Quantum USA Inc., USA)</i>	
Quantum Integrated Photonic Network-on-Chip for Multicore Architectures	1423
<i>Zach Takacs (Ohio University, USA), Harsha Chenji (Ohio University, USA), and Avinash Karanth (Ohio University, USA)</i>	
Nonclassical Light Generation in Quantum Dot Microlasers: Toward Integrated Quantum Photonic Sources	1435
<i>Sahil D. Patel (University of California Santa Barbara, United States), Grillo Frédéric (Laval University, Canada; Institut Polytechnique de Paris, France; University of California Santa Barbara, United States), Chow Weng (Sandia National Laboratories, United States), Sean Doan (University of California Santa Barbara, United States), Chen Shang (University of California Santa Barbara, United States), John E. Bowers (University of California Santa Barbara, United States), and Galan Moody (University of California Santa Barbara, United States)</i>	
Infinite-Fold Asymptotic Quantum Advantage in Classical Optical Correlation Sensing	1439
<i>Janis Nötzel (Technical University of Munich, Germany) and Pere Munar-Vallespir (Technical University of Munich, Germany)</i>	
Gauging Practical Computational Advantage Using a Classical, Threshold-Based Gaussian Boson Sampler	1446
<i>Sarvesh Raghuraman Raghuraman (Applied Research Laboratories at The University of Texas at Austin), Aditya Patwardhan Patwardhan (The University of Texas at Austin), and Brian La Cour La Cour (Applied Research Laboratories at The University of Texas at Austin)</i>	
A Digital Twin for Multimode Quantum Entanglement Transmission in Noisy and Lossy Optical Channels	1455
<i>Alireza Alipour (University of Southern California, USA; Illinois Institute of Technology, USA) and Jonathan Habif (University of Southern California, USA)</i>	
On the Mitigability of Probabilistic Photonics CNOT Failures of Variational Quantum Classifiers	1466
<i>Muhammad Hosam (Nile University, Egypt), Muhammad Ahmed (Nile University, Egypt), Norhan Elsayed Amer (Nile University, Egypt), Tamer Abuelfadl (Nile University, Egypt), and Ahmed El-Mahdy (Nile University, Egypt)</i>	

Distributed Quantum Neural Networks on Distributed Photonic Quantum Computing	1477
<i>Kuan-Cheng Chen (Department of Electrical and Electronic Engineering, Imperial College London, UK; Centre for Quantum Engineering, Science and Technology (QuEST), Imperial College London, United Kingdom), Chen-Yu Liu (Graduate Institute of Applied Physics, National Taiwan University, Taiwan), Shang Yu (Centre for Quantum Engineering, Science and Technology, Imperial College London, United Kingdom; Department of Physics, Imperial College London, UK), Felix Burt (Department of Electrical and Electronic Engineering, Imperial College London, UK; Centre for Quantum Engineering, Science and Technology (QuEST), Imperial College London, United Kingdom), and Kin Leung (Centre for Quantum Engineering, Science and Technology (QuEST), Imperial College London, United Kingdom)</i>	
Towards Synalgebraic Photonic Quantum Computing	1489
<i>Anderson Beraldo de Araujo (University of Campinas, Brazil; University of Minho, Portugal)</i>	

QML

QSeer: A Quantum-Inspired Graph Neural Network for Parameter Initialization in Quantum Approximate Optimization Algorithm Circuits	1496
<i>Lei Jiang (Indiana University Bloomington), Chi Zhang (Indiana University Bloomington), and Fan Chen (Indiana University Bloomington)</i>	
QAOA-GPT: Efficient Generation of Adaptive and Regular Quantum Approximate Optimization Algorithm Circuits	1505
<i>Ilya Tyagin (University of Delaware, USA), Marwa H. Farag (NVIDIA Corporation, USA), Kyle Sherbert (Virginia Tech, USA), Karunya Shirali (Virginia Tech, USA), Yuri Alexeev (NVIDIA Corporation), and Ilya Safro (University of Delaware, USA)</i>	
Quantum Adiabatic Generation of Human-Like Passwords	1516
<i>Sascha Mücke (TU Dortmund University; Lamarr Institute), Raoul Heese (NTT Data), Thore Gerlach (University of Bonn; Lamarr Institute), David Biesner (Fraunhofer IAIS; Lamarr Institute), Loong Kuan Lee (Fraunhofer IAIS; Lamarr Institute), and Nico Piatkowski (Fraunhofer IAIS; Lamarr Institute)</i>	
Differentiable Quantum Architecture Search in Quantum-Enhanced Neural Network Parameter Generation	1525
<i>Samuel Yen-Chi Chen (Wells Fargo, USA), Chen-Yu Liu (National Taiwan University, Taiwan), Kuan-Cheng Chen (Imperial College London, UK), Wei-Jia Huang (Hon Hai (Foxconn) Research Institute, Taiwan), Yen-Jui Chang (Chung Yuan Christian University, Taiwan), and Wei-Hao Huang (Jij inc., Japan)</i>	
Trainable Quantum Neural Networks for Multiclass Image Classification with the Power of Pre-Trained Tree Tensor Networks	1536
<i>Keisuke Murota (The University of Tokyo, Japan) and Takumi Kobori (The University of Tokyo, Japan)</i>	

Learning to Learn with Quantum Optimization via Quantum Neural Networks	1547
<i>Kuan-Cheng Chen (Centre for Quantum Engineering, Science and Technology (QuEST), Imperial College London, United Kingdom; Imperial College London, UK), Hiromichi Matsuyama (Jij Inc, Japan), and Wei-Hao Huang (Jij Inc, Japan)</i>	
Differentially Private Federated Quantum Learning via Quantum Noise	1559
<i>Atit Pokharel (The University of Alabama in Huntsville, USA), Ratun Rahman (The University of Alabama in Huntsville, USA), Shaba Shaon (The University of Alabama in Huntsville, USA), Thomas Morris (The University of Alabama in Huntsville, USA), and Dinh C. Nguyen (The University of Alabama in Huntsville, USA)</i>	
Constructing Optimal Noise Channels for Enhanced Robustness in Quantum Machine Learning .	1566
<i>David Winderl (Fraunhofer Institute for Cognitive Systems IKS, Germany), Nicola Franco (Fraunhofer Institute for Cognitive Systems IKS, Germany), and Jeanette Miriam Lorenz (Fraunhofer Institute for Cognitive Systems IKS, Germany)</i>	
A Privacy-Preserving Federated Framework with Hybrid Quantum-Enhanced Learning for Financial Fraud Detection	1578
<i>Abhishek Sawaiika (University of Melbourne, Australia), Swetang Krishna (Trinity College Dublin, Ireland), Tushar Tomar (Indian Institute of Technology, India), Durga Pritam Suggiseti (Birla Institute of Technology And Science Pilani Dubai, UAE), Aditi Lal (South Asian University, India), Tanmaya Shrivastav (Indian Institute of Technology Bombay, India), Nouhaila Innan (New York University Abu Dhabi, UAE), and Muhammad Shafique (New York University Abu Dhabi, UAE)</i>	
Autoregressive Pairwise Graphical Models Efficiently find Ground State Representations of Stoquastic Hamiltonians	1589
<i>Yuchen Pang (University of Illinois at Urbana-Champaign, USA), Abhijith Jayakumar (Los Alamos National Laboratory, USA), Evan McKinney (University of Pittsburgh, USA), Carleton Coffrin (Los Alamos National Laboratory, USA), Marc Vuffray (Los Alamos National Laboratory, USA), and Andrey Y. Lokhov (Los Alamos National Laboratory, USA)</i>	
One, Two, Three! One Empirical Evaluation of a Two-Copy Shadow Tomography Scheme with Triple Efficie	1599
<i>Viet T. Tran (Department of Quantum Information and Computation at Kepler (QUICK), Johannes Kepler University Linz, Austria) and Richard Kueng (Department for Quantum Information and Computation at Kepler (QUICK), Johannes Kepler University Linz, Austria)</i>	
Solving Graph Problems Using Permutation-Invariant Quantum Machine Learning	1611
<i>Maximilian Balthasar Mansky (LMU Munich), Tobias Rohe (LMU Munich), Gerhard Stenzel (LMU Munich), Leo Sünkel (LMU Munich), Alejandro Bravo de la Serna (TUM Munich), Santiago Londoño Castillo (LMU Munich), Gautham Sathish (LMU Munich), Dimitra Nikolaidou (LMU Munich), Dmytro Bondarenko (LMU Munich), Linus Menzel (LMU Munich), and Claudia Linnhoff-Popien (LMU Munich)</i>	

Agent-Q: Fine-Tuning Large Language Models for Quantum Circuit Generation and Optimization.....	1621
<i>Linus Jern (Aalto University, Finland), Valter Uotila (Aalto University & University of Helsinki, Finland), Cong Yu (Aalto University, Finland), and Bo Zhao (Aalto University, Finland)</i>	
Leveraging Diffusion Models for Parameterized Quantum Circuit Generation	1633
<i>Daniel Barta (Technische Universität Berlin, Fraunhofer FOKUS, Germany), Darya Martyniuk (Technische Universität Berlin, Fraunhofer FOKUS, Germany), Johannes Jung (Technische Universität Berlin, Fraunhofer FOKUS, Germany), and Adrian Paschke (Technische Universität Berlin, Fraunhofer FOKUS, Germany)</i>	
CleanQRL: Lightweight Single-File Implementations of Quantum Reinforcement Learning Algorithms	1640
<i>Georg Kruse (Fraunhofer Institute for Integrated Systems and Device Technology, Germany), Rodrigo Coelho (Fraunhofer Institute for Integrated Systems and Device Technology, Germany), Andreas Roßkopf (Fraunhofer Institute for Integrated Systems and Device Technology, Germany), Robert Wille (Technical University Munich, Germany), and Jeanette Miriam Lorenz (Fraunhofer Institute for Cognitive Systems, Germany)</i>	
Feedback Connections in Quantum Reservoir Computing with Mid-Circuit Measurements	1646
<i>Jakob Murauer (University of the Bundeswehr Munich, Germany), Rajiv Krishnakumar (QuantumBasel, Switzerland; University of Basel, Switzerland), Sabine Tornow (University of the Bundeswehr Munich, Germany), and Michaela Geierhos (University of the Bundeswehr Munich, Germany)</i>	
Entangled Threats: A Unified Kill Chain Model for Quantum Machine Learning Security	1653
<i>Pascal Debus (Fraunhofer Institute for Applied and Integrated Security, Germany), Maximilian Wendlinger (Fraunhofer Institute for Applied and Integrated Security, Germany), Kilian Tschärke (Fraunhofer Institute for Applied and Integrated Security, Germany), Daniel Herr (d-fine GmbH, Germany), Cedric Brüggemann (d-fine GmbH, Germany), Daniel Ohl de Mello (d-fine GmbH, Germany), Juris Ulmanis (Alpine Quantum Technologies GmbH, Austria), Alexander Erhard (Alpine Quantum Technologies GmbH, Austria), Arthur Schmidt (Federal Office for Information Security, Germany), and Fabian Petsch (Federal Office for Information Security, Germany)</i>	
Quantum Machine Learning for Intrusion Detection on Noisy Quantum Computers	1665
<i>Franco Cirillo (University of Salerno, Italy) and Christian Esposito (University of Salerno, Italy)</i>	
Partitioned Hybrid Quantum Fourier Neural Operators for Scientific Quantum Machine Learning	1676
<i>Paolo Marcandelli (Politecnico di Milano, Italy), Yuanchun He (KTH Royal Institute of technology, Sweden), Stefano Mariani (Politecnico di Milano, Italy), Martina Siena (Politecnico di Milano, Italy), and Stefano Markidis (KTH Royal Institute of technology, Sweden)</i>	

Influence of Data Dimensionality Reduction Methods on the Effectiveness of Quantum Machine Learning Models	1688
<i>Aakash Ravindra Shinde (University of Helsinki, Finland) and Jukka K. Nurminen (University of Helsinki, Finland)</i>	
Generative Modeling of Measurement Data for Quantum Parameter Adaptation	1700
<i>Chen-Yu Liu (National Taiwan University, Taiwan), Samuel Yen-Chi Chen (Wells Fargo, United States), Kuan-Cheng Chen (Imperial College London, United Kingdom), Wei-Jia Huang (Foxconn, Taiwan), Wei-Hao Huang (Jij Inc., Japan), and Yen-Jui Chang (Chung Yuan Christian University, Taiwan)</i>	
Can Classical Initialization Help Variational Quantum Circuits Escape the Barren Plateau?	1708
<i>Yifeng Peng (Stevens Institute of Technology, USA), Xinyi Li (Stevens Institute of Technology, USA), Zhemin Zhang (Rensselaer Polytechnic Institute, USA), Samuel Yen-Chi Chen (Wells Fargo, USA), Zhiding Liang (Rensselaer Polytechnic Institute, USA), and Ying Wang (Stevens Institute of Technology, USA)</i>	
Breaking Through Barren Plateaus: Reinforcement Learning Initializations for Deep Variational Quantum Circuits	1715
<i>Yifeng Peng (Stevens Institute of Technology, USA), Xinyi Li (Stevens Institute of Technology, USA), Zhemin Zhang (Rensselaer Polytechnic Institute, USA), Samuel Yen-Chi Chen (Wells Fargo, USA), Zhiding Liang (Rensselaer Polytechnic Institute, USA), and Ying Wang (Stevens Institute of Technology, USA)</i>	
Variational Quantum Circuits in Offline Contextual Bandit Problems	1727
<i>Lukas Schulte (Technical University of Munich, Germany), Daniel Hein (Siemens AG, Germany), Steffen Udluft (Siemens AG, Germany), and Thomas A. Runkler (Siemens AG, Germany)</i>	
QAS-QTNs: Curriculum Reinforcement Learning-Driven Quantum Architecture Search for Quantum Tensor Networks	1739
<i>Siddhant Dutta (Nanyang Technological University, Singapore), Nouhaila Innan (New York University Abu Dhabi, UAE; NYUAD Research Institute, UAE), Sadok Ben Yahia (University of Southern Denmark, Denmark; Corvinus Institute for Advanced Studies, Hungary), and Muhammad Shafique (New York University Abu Dhabi, UAE; NYUAD Research Institute, UAE)</i>	
Neural Architecture Search for Quantum Autoencoders	1748
<i>Hibah Agha (College of Engineering and Computing Sciences, New York Institute of Technology, USA), Samuel Yen-Chi Chen (Wells Fargo, USA), Huan-Hsin Tseng (Brookhaven National Laboratory, USA), and Shinjae Yoo (Brookhaven National Laboratory, USA)</i>	
Q-RLONAS: Towards Efficient Quantum Neural Architecture Search	1756
<i>Seok Bin Son (Korea University, Republic of Korea) and Soohyun Park (Sookmyung Women's University, Republic of Korea)</i>	
Support Vector Classification and Regression Using an Adaptive Quantum-Classical Dual Kernel	1766
<i>Dhana Phassadawongse (Vidyasirimedhi Institute of Science and Technology, Thailand) and Stephen John Turner (Vidyasirimedhi Institute of Science and Technology, Thailand)</i>	

Quantum Kernel Anomaly Detection Using AR-Derived Features from Non-Contact Acoustic Monitoring for Smart Manufacturing	1776
<i>Takao Tomono (Keio University, Japan) and Kazuya Tsujimura (TOPPAN Holdings, Japan)</i>	
Fourier Analysis of Variational Quantum Circuits for Supervised Learning	1785
<i>Marco Wiedmann (Fraunhofer IIS, Fraunhofer Institute for Integrated Circuits IIS, Germany), Maniraman Periyasamy (Fraunhofer IIS, Fraunhofer Institute for Integrated Circuits IIS, Germany), and Daniel D. Scherer (Fraunhofer IIS, Fraunhofer Institute for Integrated Circuits IIS, Germany)</i>	
Quantum Machine Learning for Minimal Omics Datasets with Large Feature Space Using Embeddings and Feature Selection Techniques	1796
<i>M. Emre Sahin (The Hartree Centre - Sci-Tech Daresbury, United Kingdom), Matthew Madgwick (IBM Research Europe, United Kingdom), James Strudwick (IBM Research Europe, United Kingdom), Vivek Sehra (IBM Research Europe, United Kingdom), Oscar Wallis (The Hartree Centre - Sci-Tech Daresbury, United Kingdom), Hamed Javidi (Lerner Research Institute, US), Anna Paola Carrieri (IBM Research Europe, United Kingdom), Laxmi Parida (IBM Research, USA), Lara Jehi (Lerner Research Institute, USA), Stefano Mensa (The Hartree Centre - Sci-Tech Daresbury, United Kingdom), and Filippo Utro (IBM Research, USA)</i>	
Old Rules in a New Game: Mapping Uncertainty Quantification to Quantum Machine Learning .	1803
<i>Maximilian Wendlinger (Fraunhofer Institute for Applied and Integrated Security, Germany), Kilian Tscharke (Fraunhofer Institute for Applied and Integrated Security, Germany), and Pascal Debus (Fraunhofer Institute for Applied and Integrated Security, Germany)</i>	
Quantum Reupload Units: A Scalable and Expressive Approach for Time Series Learning	1815
<i>Léa Cassé (University of Waikato-Hamilton-New Zealand, France), Sabarikirishwaran Ponnambalam (Griffith University, Australia), Bernhard Pfahringer (University of Waikato, New Zealand), and Albert Bifet (University of Waikato, New Zealand)</i>	
Learning to Program Quantum Measurements for Machine Learning	1826
<i>Samuel Yen-Chi Chen (Wells Fargo, USA), Huan-Hsin Tseng (Brookhaven National Laboratory, USA), Hsin-Yi Lin (Seton Hall University, USA), and Shinjae Yoo (Brookhaven National Laboratory, USA)</i>	

QAPP

Scalable Quantum Circuits of Exponential of Pauli-Strings and its Applications to Hamiltonian Simulations	1837
<i>Rohit Sarma Sarkar (Indian Institute of Technology Kharagpur, India), Sabyasachi Chakraborty (Indian Institute of Technology Kharagpur, India), and Bibhas Adhikari (Fujitsu Research of America, Inc., USA)</i>	
Hamiltonian Simulation for Solving the Advection Equation with Arbitrary Velocity Field	1849
<i>Niladri Gomes (Ansys, Inc, CA), Gautam Sharma (Ansys Software Pvt. Ltd., India), and Jay Pathak (Ansys, Inc, CA)</i>	

Efficient Classical Processing of Constant-Depth Time Evolution Circuits in Control Hardware	1859
<i>Akhil Francis (Lawrence Berkeley National Laboratory, USA), Abhi D. Rajagopala (Lawrence Berkeley National Laboratory, USA), Norm M. Tubman (NASA Ames Research Center, USA), Katherine Klymko (NERSC, Lawrence Berkeley National Laboratory, USA), and Kasra Nowrouzi (Lawrence Berkeley National Laboratory, USA)</i>	
LEP-QNN: Loan Eligibility Prediction Using Quantum Neural Networks	1864
<i>Nouhaila Innan (New York University Abu Dhabi, UAE; NYUAD Research Institute, UAE), Alberto Marchisio (New York University Abu Dhabi, UAE; NYUAD Research Institute, UAE), Mohamed Bennai (Hassan II University of Casablanca, Morocco), and Muhammad Shafique (New York University Abu Dhabi, UAE; NYUAD Research Institute, UAE)</i>	
Introducing the Quantum Economic Advantage Online Calculator	1873
<i>Frederick Mejia (MIT, USA), Hans Gundlach (MIT, USA), Jayson Lynch (MIT, USA), Carl Dukatz (Accenture, USA), Andrew Lucas (MIT, USA), Eleanor Crane (MIT, USA), Prashant Shukla (Accenture, USA), and Neil Thompson (MIT, USA)</i>	
Adaptive Non-Local Observable on Quantum Neural Networks	1884
<i>Hsin-Yi Lin (Seton Hall University, USA), Huan-Hsin Tseng (Brookhaven National Laboratory, USA), Samuel Yen-Chi Chen (Wells Fargo, USA), and Shinjae Yoo (Brookhaven National Laboratory, USA)</i>	
Application-Driven Benchmarking of the Traveling Salesperson Problem: a Quantum Hardware Deep-Dive	1894
<i>Amine Bentellis (Fraunhofer Institute for Cognitive Systems IKS, Germany), Benedikt Poggel (Fraunhofer Institute for Cognitive Systems IKS, Germany), and Jeanette Miriam Lorenz (Fraunhofer Institute for Cognitive Systems IKS, Germany)</i>	
A New Hybrid Quantum-Classical Algorithm for Solving the Unit Commitment Problem	1905
<i>Willie Aboumrad (IonQ Inc., USA), Phani R V Marthi (Oak Ridge National Laboratory, USA), Suman Debnath (Oak Ridge National Laboratory, USA), Martin Roetteler (IonQ Inc., USA), and Evgeny Epifanovsky (IonQ, USA)</i>	
Solving a real-World Modular Logistic Scheduling Problem with a Quantum-Classical Metaheuristics	1916
<i>Florian Krellner (SAP SE, Germany), Abhishek Awasthi (BASF Digital Solutions GmbH, Germany), Nico Kraus (Aqarios GmbH, Germany), Sarah Braun (Siemens AG, Germany), Michael Poppel (Aqarios GmbH, Germany), and Daniel Porawski (Aqarios GmbH, Germany)</i>	
A Quantum-Inspired Algorithm for Wave Simulation Using Tensor Networks	1926
<i>Kevin Lively (Institute of Software Technology German Aerospace Center (DLR), Germany), Vittorio Pagni (University of Cologne, Germany), and Gonzalo Camacho (Institute of Software Technology German Aerospace Center (DLR), Germany)</i>	

Quantum Computing-Enabled Contingency Analysis for Power Systems	1938
<i>Yuqi Jiang (Pennsylvania State University, USA), Zhiding Liang (Rensselaer Polytechnic Institute, USA), Yan Li (Pennsylvania State University, USA), Qiang Guan (Kent State University, USA), and Ganesh Kumar Venayagamoorthy (Clemson University, USA; University of Pretoria, South Africa)</i>	
Noise-Aware Quantum Annealing for State Estimation in Power Systems	1945
<i>Quoc-Bao Tran (Virginia Commonwealth University, USA) and Thang N. Dinh (Virginia Commonwealth University, USA)</i>	
Solving Constrained Combinatorial Optimization Problems with Variational Quantum Imaginary Time Evolution	1955
<i>Xin Wei Lee (Singapore Management University, Singapore) and Hoong Chuin Lau (Singapore Management University, Singapore)</i>	
Accelerating Large-Scale Linear Algebra Using Variational Quantum Imaginary Time Evolution..	1965
<i>Willie Aboumrad (IonQ Inc., USA), Daiwei Zhu (IonQ Inc., USA), Claudio Girotto (IonQ Inc., USA), François-Henry Rouet (Ansys Inc., USA), Jezer Jojo (Ansys Inc., USA), Robert Lucas (Ansys Inc., USA), Jay Pathak (Ansys Inc., USA), Ananth Kaushik (IonQ Inc, USA), and Martin Roetteler (IonQ Inc, USA)</i>	
Avoiding Convergence Stagnation in a Quantum Circuit Evolutionary Framework Through an Adaptive Cost Function	1976
<i>Bruno O. Fernandez (SENAI CIMATEC, Brazil), Rodrigo Bloot (UNILA, Brazil), and Marcelo A. Moret (SENAI CIMATEC, Brazil)</i>	
Quantum Annealing Hyperparameter Analysis for Optimal Sensor Placement in Production Environments	1982
<i>Nico Kraus (Aqarios GmbH, Germany), Marvin Erdmann (BMW Group, Germany), Alexander Kuzmany (Aqarios GmbH, Germany), Daniel Porawski (Aqarios GmbH, Germany), and Jonas Stein (LMU Munich, Germany)</i>	
Vector Annealing, a Quantum-Inspired Technique: Benchmarking Performance Against Quantum and Simulated Annealing Within the BACQ Framework	1989
<i>Stéphane Louise (Université Paris-Saclay, CEA, LIST, France)</i>	
Towards Solving Large QUBO Problems Using Quantum Algorithms: Improving the LogQ Scheme ...	1997
<i>Yagnik Chatterjee (Totalenergies, France) and Jérémie Messud (Totalenergies, France)</i>	
Compilation of QCrank Encoding Algorithm for a Dynamically Programmable Qubit Array Processor	2004
<i>Jan Balewski (National Energy Research Scientific Computing Center, Lawrence Berkeley National Laboratory, Berkeley, CA, USA), Wan-Hsuan Lin (University of California, USA), Anupam Mitra (Applied Mathematics and Computational Research Division, Lawrence Berkeley National Laboratory, USA), Milan Kornjaca (QuEra Computing Inc., USA), Stefan Ostermann (QuEra Computing Inc., USA), Pedro L. S. Lopes (QuEra Computing Inc., USA), Daniel Bochen Tan (Department of Physics, Harvard University, USA), and Jason Cong (University of California, USA)</i>	

A Deep Dive into the Interplay of Structured Quantum Peaked Circuits and Infinite Temperature Correlation Functions	2011
<i>Myeongsu Kim (Purdue University, USA), Manas Sajjan (North Carolina State University, USA), and Sabre Kais (North Carolina State University, USA)</i>	
Stochastic Entanglement Configuration for Constructive Entanglement Topologies in Quantum Machine Learning with Application to Cardiac MRI	2021
<i>Mehri Mehrnia (Northwestern University, United States) and Mohammed S.M. Elbaz (Northwestern University, United States)</i>	
Variational Quantum Linear Solver for Simulating Quantum Transport in Nanoscale Semiconductor Devices	2031
<i>Qimao Yang (University of Florida, USA) and Jing Guo (University of Florida, USA)</i>	
Quantum Reservoir Computing for Corrosion Prediction in Aerospace: A Hybrid Approach for Enhanced Material Degradation Forecasting	2040
<i>Akshat Tandon (Airbus Central Research & Technology, Ottobrunn, Germany), James Brown (qBraid Co., Chicago, IL, USA), Kenny Heitritter (qBraid Co., Chicago, IL, USA), Tarini Hardikar (qBraid Co., Chicago, IL, USA), Kanav Setia (qBraid Co., Chicago, IL, USA), Rene Boettcher (Airbus Central Research & Technology, Ottobrunn, Germany), Klaus Schertler (Airbus Central Research & Technology, Ottobrunn, Germany), and Jasper Simon Krauser (Airbus Central Research & Technology, Ottobrunn, Germany)</i>	
Quantum-Enhanced Parameter-Efficient Learning for Typhoon Trajectory Forecasting	2046
<i>Chen-Yu Liu (National Taiwan University, Taiwan), Kuan-Cheng Chen (Imperial College London, United Kingdom), Yi-Chien Chen (Nagoya University, Japan), Samuel Yen-Chi Chen (Wells Fargo, United States), Wei-Hao Huang (Jij Inc., Japan), Wei-Jia Huang (Foxconn, Taiwan), and Yen-Jui Chang (Chung Yuan Christian University, Taiwan)</i>	
ABS-Q: An Effective Analysis-by-Synthesis Framework for Recovering Signals from Noisy Quantum Outputs	2057
<i>Phat Thanh Tran (Florida State University, USA), Ryan Carmichael (Florida State University, USA), Jake Scally (Florida State University, USA), Austin Myers (Florida State University, USA), Hyunjin Yi (Florida State University, USA), Xiuwen Liu (Florida State University, USA), and Bayaner Arigong (Florida State University, USA)</i>	
Enhancing Fidelity in NISQ Computers via Crosstalk-Optimized Gate Decomposition	2064
<i>Indu Palanisamy (Kennesaw State University, USA), Hieu Nguyen (Kennesaw State University, USA), Ethan Hunt (Kennesaw State University, USA), Dillon Horton (Kennesaw State University, USA), Dheeraj Tukkugudam (Kennesaw State University, USA), and Tu N. Nguyen (Kennesaw State University, USA)</i>	
Statistical Assertions for Debugging Quantum Circuits and States in CUDA-Q	2074
<i>Jocelyn Li (Princeton University, USA), Ella Rubinshtein (Princeton University, USA), and Margaret Martonosi (Princeton University, USA)</i>	

Optimizing Package Delivery With Quantum Annealers: Addressing Time-Windows and Simultaneous Pickup and Delivery	2082
<i>Eneko Osaba (TECNALIA, Basque Research and Technology Alliance (BRTA), Spain), Esther Villar-Rodriguez (TECNALIA, Basque Research and Technology Alliance (BRTA), Spain), Pablo Miranda-Rodriguez (TECNALIA, Basque Research and Technology Alliance (BRTA), Spain), and Anton Asla (Serikat - Consultoría y Servicios Tecnológicos, Spain)</i>	
QUADRO: A Hybrid Quantum Optimization Framework for Drone Delivery	2090
<i>James B. Holliday (University of Arkansas, USA), Darren Blount (University of Arkansas, United States), Hoang Quan Nguyen (University of Arkansas, United States), Samee U. Khan (Kansas State University, USA), and Khoa Luu (University of Arkansas, United States)</i>	
Path Matters: Industrial Data Meet Quantum Optimization	2101
<i>Lukas Schmidbauer (Technical University of Applied Sciences Regensburg, Germany), Carlos A. Riofrio (BMW AG, Germany), Florian Heinrich (BMW AG, Germany), Vanessa Junk (OptWare GmbH, Germany), Ulrich Schwenk (OptWare GmbH, Germany), Thomas Husslein (OptWare GmbH, Germany), and Wolfgang Maurer (Technical University of Applied Sciences Regensburg, Germany; Siemens AG, Germany)</i>	
Implementing Slack-Free Custom Penalty Function for QUBO on Gate-Based Quantum Computers	2112
<i>Xin Wei Lee (Singapore Management University, Singapore) and Hoong Chuin Lau (Singapore Management University, Singapore)</i>	
Solving Large-Scale QUBO with Transferred Parameters from Multilevel QAOA of low Depth	2120
<i>Bao Gia Bach (University of Delaware, USA), Filip B. Maciejewski (Research Institute for Advanced Computer Science, Universities Space Research Association, USA), and Ilya Safro (University of Delaware, USA)</i>	
Quantum Boltzmann Machines Using Parallel Annealing for Medical Image Classification	2127
<i>Daniëlle Schuman (LMU Munich, Germany), Mark V. Seebode (LMU Munich, Germany), Tobias Rohe (LMU Munich, Germany), Maximilian Balthasar Mansky (LMU Munich, Germany), Michael Schroedl-Baumann (SAP SE, Germany), Jonas Stein (Aqarios GmbH, Germany), Claudia Linnhoff-Popien (LMU Munich, Germany), and Florian Krellner (SAP SE, Germany)</i>	
Solving Large-Scale Vehicle Routing Problems with Hybrid Quantum-Classical Decomposition ..	2139
<i>Andrew Maciejunes (Old Dominion University, USA), John Stenger (Naval Research Laboratory, USA), Daniel Gunlycke (Naval Research Laboratory, USA), and Nikos Chrisochoides (Old Dominion University, USA)</i>	
QUEST: QUAntum-Enhanced Shared Transportation	2149
<i>Chinonso Onah (Volkswagen Group, Germany; RWTH Aachen University, Germany), Neel Misciasci (Volkswagen Group, Germany; Technical University of Munich, Germany), Carsten Othmer (Volkswagen Group, Germany), and Kristel Michielsen (RWTH Aachen University, Germany; Forschungszentrum Jülich, Germany)</i>	
Iterative Quantum Annealing for job shop Scheduling with a Directed Graph Representation	2161
<i>Rebecca Casati (University of Milan, Italy), Thomas Giudici (University of Milan, Italy), Pietro Torta (University of Milan, Italy), and Enrico Prati (University of Milan, Italy)</i>	

Modal Analysis on Quantum Computers via Qubitization	2170
<i>Yasunori Lee (QunaSys Inc., Japan) and Keita Kanno (QunaSys Inc., Japan)</i>	
RDQKL: Robust Decentralized Quantum Kernel Learning for Noisy and Adversarial Environment	2181
<i>Wenxuan Ma (Zhejiang University, China), Kuan-cheng Chen (Imperial College London, UK), Shang Yu (Imperial College London, UK), Mengxiang Liu (Imperial College London, UK), and Ruilong Deng (Zhejiang University, China)</i>	
Secure Quantum Circuit Compilation Methodology for Untrusted Compilers	2191
<i>Subrata Das (The Pennsylvania State University, USA) and Swaroop Ghosh (The Pennsylvania State University, USA)</i>	
Cross-Problem Parameter Transfer in Quantum Approximate Optimization Algorithm: A Machine Learning Approach	2202
<i>Kien X. Nguyen (University of Delaware, Delaware), Bao Bach (University of Delaware, Delaware), and Ilya Safro (University of Delaware, Delaware)</i>	
A Quantum Search Method for Quadratic and Multidimensional Knapsack Problems	2209
<i>Sören Wilkening (Leibniz Universität Hannover, Germany), Andreea-Iulia Lefterovici (Leibniz Universität Hannover, Germany), Lennart Binkowski (Leibniz Universität Hannover, Germany), Marlene Funck (Leibniz Universität Hannover, Germany), Michael Perk (Technische Universität Braunschweig, Germany), Robert Karimov (Leibniz Universität Hannover, Germany), Sándor Fekete (Technische Universität Braunschweig, Germany), and Tobias J. Osborne (Leibniz Universität Hannover, Germany)</i>	
Bayesian Quantum Orthogonal Neural Networks for Anomaly Detection	2216
<i>Natansh Mathur (IRIF, CNRS & QC Ware, France), Brian Coyle (QC Ware, Palo Alto, USA and Paris, France), Nishant Jain (QC Ware, Palo Alto, USA and Paris, France), Snehal Raj (LIP6, CNRS & QC Ware, France), Akshat Tandon (Central Research and Technology, Airbus Group, Germany), Jasper Simon Krauser (Central Research and Technology, Airbus Group, Germany), and Rainer Stoessel (Central Research and Technology, Airbus Group, Germany)</i>	
Implementing Credit Risk Analysis with Quantum Singular Value Transformation	2228
<i>Davide Veronelli (Intesa Sanpaolo, Italy), Francesca Cibrario (Intesa Sanpaolo, Italy), Emanuele Dri (Fondazione LINKS, Italy), Valeria Zaffaroni (Intesa Sanpaolo, Italy), Giacomo Ranieri (Intesa Sanpaolo, Italy), Davide Corbelleto (Intesa Sanpaolo, Italy), and Bartolomeo Montrucchio (Politecnico di Torino, Italy)</i>	
Higher-Order Portfolio Optimization with Quantum Approximate Optimization Algorithm	2238
<i>Valter Uotila (Aalto University & University of Helsinki, Finland), Julia Ripatti (Aalto University, Finland), and Bo Zhao (Aalto University, Finland)</i>	

Advancing Bi-Objective Weighted Portfolio Optimization Across International Markets via Quantum Annealing	2250
<i>Shu-Yu Kuo (National Taiwan University, Taiwan), Kun-Lin Lee (National Chi Nan University, Taiwan), Jyun-Yi Shen (National Chi Nan University, Taiwan), and Yao-Hsin Chou (National Chi Nan University, Taiwan)</i>	
A Quantum Approach for Optimal Transient Control in Network-Based Epidemic Models	2258
<i>Deborah Volpe (Istituto Nazionale di Geofisica e Vulcanologia, Italy), Giacomo Orlandi (Department of Electronics and Telecommunications, Politecnico di Torino, Italy), Mattia Boggio (Department of Electronics and Telecommunications, Politecnico di Torino, Italy), Carlo Novara (Department of Electronics and Telecommunications, Politecnico di Torino, Italy), Lorenzo Zino (Department of Electronics and Telecommunications, Politecnico di Torino, Italy), and Giovanna Turvani (Department of Electronics and Telecommunications, Politecnico di Torino, Italy)</i>	
Identifying Protein Co-Regulatory Network Logic by Solving B-SAT Problems Through Gate-Based Quantum Computing	2270
<i>Aspen Erlandsson Brisebois (University of Saskatchewan, Canada), Jason Broderick (University of Saskatchewan, Canada), Zahed Khatooni (University of Saskatchewan, Canada), Heather L. Wilson (University of Saskatchewan, Canada), Steven Rayan (University of Saskatchewan, Canada), and Gordon Broderick (University of Saskatchewan, Canada)</i>	
Determining Molecular Ground State with Quantum Imaginary Time Evolution Using Broken-Symmetry wave Function	2279
<i>Pawan Sharma Poudel (Keio University, Japan), Kenji Sugisaki (Keio University, Japan), Michal Hajdušek (Keio University, Japan), and Rodney Van Meter (Keio University, Japan)</i>	
Quantum Advantage in Computational Chemistry?	2289
<i>Hans Gundlach (MIT, USA), Keeper Sharkey (ODE, L3C, USA), Jayson Lynch (MIT, USA), Victoria Hazoglou (Accenture, USA), Kung-Chuan Hsu (Accenture, USA), Carl Dukatz (Accenture, USA), Eleanor Crane (MIT, USA), Karin Walczyk (Accenture, Germany), Marcin Bodziak (Accenture, Poland), Johannes Galatsanos-Dueck (MIT, USA), and Neil Thompson (MIT, USA)</i>	
Orbital-Rotated Fermi-Hubbard Model as a Benchmarking Problem for Quantum Chemistry with the Exact Solution	2300
<i>Ryota Kojima (QunaSys Inc., Japan), Masahiko Kamoshita (QunaSys Inc., Japan), and Ketia Kanno (QunaSys Inc., Japan)</i>	
QGENE: A Quantum Dynamic Programming Model for Pairwise Sequence Alignment	2309
<i>Shyam Sundar Sampangi Ramaiah (Shiv Nadar University, India), Hari Priya Narahari (Shiv Nadar University, India), Sadanand Venkataraman (Shiv Nadar University, India), P Madhankumar (Shiv Nadar University, India), and V Sharmila Devi (Shiv Nadar University, India)</i>	
A QAOA-Based Heuristic to Hide Sensitive Itemsets	2316
<i>Abhijeet Ghoshal (University of Illinois Urbana Champaign, USA), Yan Li (Pennsylvania State University, USA), Syam Menon (University of Texas Dallas, USA), and Sumit Sarkar (University of Texas Dallas, USA)</i>	

Sampling-Based Quantum Optimization Algorithm with Quantum Relaxation	2323
<i>Hiromichi Matsuyama (Jij Inc., Japan) and Yu Yamashiro (Jij Inc., Japan)</i>	
Towards Secondary Structure Prediction of Longer mRNA Sequences Using a Quantum-Centric Optimization Scheme	2334
<i>Vaibhaw Kumar (IBM Quantum, New York, USA), Dimitris Alevras (IBM Quantum, New York, USA), Mihir Metkar (Moderna, Cambridge, USA), Eline Welling (Fermioniq B.V., Amsterdam, NL), Chris Cade (Fermioniq B.V., Amsterdam, NL), Ido Niesen (Fermioniq B.V., Amsterdam, NL), Triet Friedhoff (IBM Quantum, New York, USA), Jae-Eun Park (IBM Quantum, New York, USA), Saurabh Shivpuje (Moderna, Cambridge, USA), Mariana LaDue (IBM Quantum, New York, USA), Wade Davis (Moderna, Cambridge, USA), and Alexey Galda (Moderna, Cambridge, USA)</i>	
Co-Optimization of Codon Usage and mRNA Secondary Structure Using Quantum Computing ..	2346
<i>Dimitris Alevras (IBM Quantum, USA), Mihir Metkar (Moderna, Cambridge, USA), Triet Friedhoff (IBM Quantum, USA), Jae-Eun Park (IBM Quantum, USA), Mariana LaDue (IBM Quantum, USA), Vaibhaw Kumar (IBM Quantum, USA), Wade Davis (Moderna, USA), and Alexey Galda (Moderna, USA)</i>	
Resting-State fMRI Analysis Using Quantum Time-Series Transformer	2352
<i>Junghoon Justin Park (Seoul National University, Korea), Jungwoo Seo (Seoul National University, Korea), Sangyoon Bae (Seoul National University, Korea), Samuel Yen-Chi Chen (Wells Fargo, USA), Huan-Hsin Tseng (Brookhaven National Laboratory, USA), Jiook Cha (Seoul National University, Korea), and Shinjae Yoo (Brookhaven National Laboratory, USA)</i>	
On the Potential of Quantum Computing in Classical Program Analysis	2364
<i>Yicheng Guang (University of Colorado Boulder, USA), Pietro Zanotta (University of Colorado Boulder, USA), Kai Zhou (University of Colorado Boulder, USA), Yueqi Chen (University of Colorado Boulder, USA), and Ramin Ayanzadeh (University of Colorado Boulder, USA)</i>	
Quantum Large Language Model Fine-Tuning	2375
<i>Sang Hyub Kim (IonQ Inc., USA), Jonathan Mei (IonQ Inc., USA), Claudio Girotto (IonQ Inc., USA), Masako Yamada (IonQ Inc., USA), and Martin Roetteler (IonQ Inc., USA)</i>	
SQL2Circuits: Estimating Cardinalities, Execution Times, and Costs for SQL Queries with Quantum Natural Language Processing	2387
<i>Valter Uotila (University of Helsinki, Finland)</i>	
k-Contextuality as a Heuristic for Memory Separations in Learning	2399
<i>Mariesa H Teo (University of Chicago), Willers Yang (University of Chicago), James Sud (University of Chicago), Teague Tomesh (Inflection), Frederic T Chong (University of Chicago), and Eric R Anschuetz (IQIM & Burke Institute, Caltech)</i>	
Towards Hybrid Spatial Structure Rendering Models Using Quantum Orthographic Ray Casting	2410
<i>Zirui Zhang (Purdue University, USA)</i>	

Quantum Integration of Spiking Leaky Integrate-and-Fire Neurons and Variational Circuits for Enhanced Multiclass Classification	2419
<i>Mandeep Kaur Saggi (Department of Electrical and Computer Engineering, North Carolina State University, Raleigh, USA), Amandeep Singh Bhatia (Department of Electrical and Computer Engineering, North Carolina State University, Raleigh, USA), and Sabre Kais (Department of Electrical and Computer Engineering, North Carolina State University, Raleigh, USA)</i>	
CHSH Violations Using Dynamic Circuits	2426
<i>Jean-Baptiste Waring (Concordia University, Québec), Christophe Pere (INTRIQ, Laval University, Québec), and Sébastien Le Beux (Concordia University, Québec)</i>	
A Game-Theoretic Quantum Algorithm for Solving Magic Squares	2433
<i>Sarah Chehade (Oak Ridge National Laboratory, USA), Andrea Delgado (Oak Ridge National Laboratory, USA), and Elaine Wong (Oak Ridge National Laboratory, USA)</i>	
Algorithmic Advances Towards a Realizable Quantum Lattice Boltzmann Method	2441
<i>Apurva Tiwari (Ansys Inc., U.S.A.), Jason Iaconis (IonQ Inc., USA), Jezer Jojo (Ansys Inc., U.S.A.), Sayonee Ray (IonQ Inc., USA), Martin Roetteler (IonQ Inc., USA), Chris Hill (Ansys Inc., U.S.A.), and Jay Pathak (Ansys Inc., U.S.A.)</i>	
Flowing Through Hilbert Space: Quantum-Enhanced Generative Models for Lattice Field Theory	2452
<i>Jehu Martinez (Texas A&M University, USA) and Andrea Delgado (Oak Ridge National Laboratory, USA)</i>	
Autocallable Options Pricing with Integration-Based Exponential Amplitude Loading	2459
<i>Francesca Cibrario (Intesa Sanpaolo, Italy), Ron Cohen (Classiq Technologies, Israel), Emanuele Dri (Fondazione LINKS, Italy), Christian Mattia (Intesa Sanpaolo, Italy), Or Samimi Golan (Classiq Technologies, Israel), Tamuz Danzig (Classiq Technologies, Israel), Giacomo Ranieri (Intesa Sanpaolo, Italy), Hanan Rosemarin (Classiq Technologies, Israel), Davide Corbelleto (Intesa Sanpaolo, Italy), Amir Naveh (Classiq Technologies, Israel), and Bartolomeo Montrucchio (Politecnico di Torino, Italy)</i>	
Quantum Autoencoder for Multivariate Time Series Anomaly Detection	2470
<i>Kilian Tscharke (Fraunhofer Institute for Applied and Integrated Security (AISEC), Germany), Maximilian Wendlinger (Fraunhofer Institute for Applied and Integrated Security (AISEC), Germany), Afrae Ahouzi (Fraunhofer Institute for Applied and Integrated Security (AISEC)), Pallavi Bhardwaj (SAP SE, Germany), Kaweh Amoi-Taleghani (SAP SE, Germany), Michael Schrödl-Baumann (SAP SE, Germany), and Pascal Debus (Fraunhofer Institute for Applied and Integrated Security (AISEC), Germany)</i>	
Distributed Realization of Color Codes for Quantum Error Correction	2482
<i>Nitish Kumar Chandra (University of Pittsburgh, Pittsburgh, PA 15260, USA), David Tipper (University of Pittsburgh, Pittsburgh, PA 15260, USA), Reza Nejabati (Cisco Quantum Lab, Los Angeles, CA 90404, USA), Eneet Kaur (Cisco Quantum Lab, Los Angeles, CA 90404, USA), and Kaushik P. Seshadreesan (University of Pittsburgh, Pittsburgh, PA 15260, USA)</i>	

Disparity Surface Code: Optimizing Error Correction in Quantum Networks	2493
<i>Tianjie Hu (William & Mary, USA), Jindi Wu (William & Mary, USA), and</i>	
<i>Qun Li (William & Mary, USA)</i>	
Fault Tolerant Decoding of QLDPC-GKP Codes with Circuit Level Soft Information	2505
<i>Shantom K. Borah (University of Arizona, USA), Asit K. Pradhan</i>	
<i>(University of Arizona, USA), Nithin Raveendran (University of</i>	
<i>Arizona, USA), Michele Pacenti (University of Arizona, USA), and Bane</i>	
<i>Vasic (University of Arizona, USA)</i>	

Author Index

2025 IEEE International Conference on Quantum Computing and Engineering (QCE 2025)

**Albuquerque, New Mexico, USA
30 August - 5 September 2025**

Volume II of III



**IEEE Catalog Number: CFP25W18-POD
ISBN: 979-8-3315-5737-9**

2025 IEEE International Conference on Quantum Computing and Engineering (QCE) **QCE 2025**

Table of Contents

Message from the QCE 2025 Chairs	xxx
QCE 2025 Committees	xxxiv
Workshops Program	xlvi
Posters Program	lxxxviii
Panels Program	xc
Tutorials Program	civ
Sponsors	cxlii

Workshop Papers

Fifth International Workshop on Integrating High-Performance Computing with Quantum Computing (WKS-WIHPQC25)

Qubit Health Analytics and Clustering for HPC-Integrated Quantum Processors	1
<i>Xiaolong Deng (Leibniz Supercomputing Centre, Germany), Laura Schulz (Argonne National Laboratory, United States), and Martin Schulz (Technical University of Munich, Germany)</i>	
HPCQCMark: a new Modular HPC-QC Benchmarking Framework	8
<i>Brice Chichereau (Université Paris-Saclay, Bruyères-le-Châtel, France), Stéphane Vialle (Université Paris-Saclay, France), Miwako Tsuji (RIKEN Center for Computational Science, Japan), Patrick Carribault (Université Paris-Saclay, France), and Mitsuhsa Sato (RIKEN Center for Computational Science, Japan)</i>	
Towards System-Level Quantum-Accelerator Integration	15
<i>Ralf Ramsauer (Technical University of Applied Sciences Regensburg, Germany) and Wolfgang Mauerer (Technical University of Applied Sciences Regensburg / Siemens Foundational Technologies)</i>	

Comparing Performance of Variational Quantum Algorithm Simulations on HPC Systems	21
<i>Marco De Pascale (Leibniz Supercomputing Centre of the Bavarian Academy of Sciences and Humanities (LRZ), Germany), Tobias Valentin Bauer (Leibniz Supercomputing Centre of the Bavarian Academy of Sciences and Humanities (LRZ), Germany), Yaknan John Gambo (Leibniz Supercomputing Centre of the Bavarian Academy of Sciences and Humanities (LRZ), Germany), Mario Hernández Vera (Leibniz Supercomputing Centre of the Bavarian Academy of Sciences and Humanities (LRZ), Germany), Stefan Huber (Leibniz Supercomputing Centre of the Bavarian Academy of Sciences and Humanities (LRZ), Germany), Burak Mete (Leibniz Supercomputing Centre of the Bavarian Academy of Sciences and Humanities (LRZ), Germany; Fraunhofer Institute for Cognitive Systems IKS, Germany), Amit Jamadagni (Leibniz Supercomputing Centre of the Bavarian Academy of Sciences and Humanities (LRZ), Germany), Amine Bentellis (Fraunhofer Institute for Cognitive Systems IKS, Germany), Marita Oliv (Fraunhofer Institute for Cognitive Systems IKS, Germany), Luigi Iapichino (Leibniz Supercomputing Centre of the Bavarian Academy of Sciences and Humanities (LRZ), Germany), and Jeanette Miriam Lorenz (Fraunhofer Institute for Cognitive Systems IKS, Germany)</i>	
Towards a Unified Multi-Target MLIR-Based Compiler: A Heterogeneous Compilation Framework for High-Performance and Quantum Computing Integration	28
<i>Martín Letras (Leibniz Supercomputing Centre (LRZ), Germany), Jorge Echavarria (Leibniz Supercomputing Centre (LRZ), Germany), Muhammad Nufail Farooqi (Leibniz Supercomputing Centre (LRZ), Germany), Marco De Pascale (Leibniz Supercomputing Centre (LRZ), Germany), Mario Hernández Vera (Leibniz Supercomputing Centre (LRZ), Germany), Nathaniel Tornow (Leibniz Supercomputing Centre (LRZ), Germany), Laura Schulz (Leibniz Supercomputing Centre (LRZ), Germany), and Martin Schulz (Leibniz Supercomputing Centre (LRZ), Germany)</i>	
Dynamic Solutions for Hybrid Quantum-HPC Resource Allocation	34
<i>Roberto Rocco (E4 computer Engineering, Italy), Simone Rizzo (E4 computer Engineering, Italy), Matteo Barbieri (E4 computer Engineering, Italy), Gabriella Bettonte (E4 computer Engineering, Italy), Elisabetta Boella (E4 computer Engineering, Italy), Fulvio Ganz (E4 computer Engineering, Italy), Sergio Iserte (Barcelona Supercomputing Center (BSC-CNS), Spain), Antonio J. Peña (Barcelona Supercomputing Center (BSC-CNS). Spain), Petter Sandås (Barcelona Supercomputing Center (BSC-CNS). Spain), Alberto Scionti (LINKS Foundation, Italy), Olivier Terzo (LINKS Foundation, Italy), Chiara Vercellino (LINKS Foundation, Italy; Politecnico di Torino, Italy), Giacomo Vitali (LINKS Foundation, Italy; Politecnico di Torino, Italy), Paolo Viviani (LINKS Foundation, Italy), Jonathan Frassinetti (CINECA, Italy), Sara Marzella (CINECA, Italy), Daniele Ottaviani (CINECA, Italy), Iacopo Colonnelli (Università di Torino, Italy), and Daniele Gregori (E4 Computer Engineering, Italy)</i>	
CONQUIRE: A Co-Execution Environment for Quantum and Classical Resources	41
<i>Atulya Mahesh (North Carolina State University) and Frank Mueller (North Carolina State University)</i>	

Quantum Computing Security, Privacy, and Resilience (WKS-SPR)

Quantum-Inspired Trust Scoring for Zero Trust Security: A Simulation-Based Approach	46
<i>Shengjie Xu (University of Arizona, USA) and Yi Qian (University of Tulsa, USA)</i>	
QubitVise: Double-Sided Crosstalk Attack in Superconducting Quantum Computers	50
<i>Adriana Aranguren Arellano (Northwestern University, USA), He Xie (Northwestern University, USA), and Jakub Szefer (Northwestern University, USA)</i>	
Federated Quantum Kernel-Based Long Short-Term Memory for Human Activity Recognition	54
<i>Yu-Chao Hsu (NARlabs, Taiwan; National Cheng Kung University, Taiwan), Jiun-Cheng Jiang (NARlabs, Taiwan; National Taiwan University, Taiwan), Chun-Hua Lin (National Taiwan University, Taiwan; NARlabs, Taiwan), Wei-Ting Chen (University of California San Diego, US), Kuo-Chung Peng (National Taiwan University, Taiwan; NARlabs, Taiwan), Prayag Tiwari (Halmstad University, Sweden), Samuel Yen-Chi Chen (Wells Fargo, USA), and En-Jui Kuo (National Yang Ming Chiao Tung University, Taiwan)</i>	
Power Side-Channel Vulnerabilities in Distributed Quantum Systems with Classical Communication	59
<i>Quanjiang Long (Fordham University, New York), Kyle Ponte (Stevens Institute of Technology, New Jersey), Ying Wang (Stevens Institute of Technology, New Jersey), and Juntao Chen (Fordham University, New York)</i>	
Residue Number System (RNS) Based Distributed Quantum Multiplication	64
<i>Bhaskar Gaur (University of Tennessee, USA) and Himanshu Thapliyal (University of Tennessee, USA)</i>	
Quantum Software Security Challenges Within Shared Quantum Computing Environments	68
<i>Samuel Ovaskainen (University of Jyväskylä, Finland), Majid Haghparsat (University of Jyväskylä, Finland), and Tommi Mikkonen (University of Jyväskylä, Finland)</i>	
QWBO: QAOA-Based High-Speed Weighted Black-box Hyperparameter Optimization for Secure UAV Fingerprinting	73
<i>Xinyi Li (Stevens Institute of Technology, USA), Yifeng Peng (Stevens Institute of Technology, USA), and Ying Wang (Stevens Institute of Technology, USA)</i>	
Trustworthy Natural Language Interfaces for Quantum Optimization: A Secure and Resilient Translation Framework	79
<i>Kensay Sato (Stevens Institute of Technology, NJ), Mehtaab Singh (Stevens Institute of Technology, NJ), Rishabh Dhadda (Stevens Institute of Technology, NJ), Anthony Rizzuto (Stevens Institute of Technology, NJ), Alan Atrach (Stevens Institute of Technology, NJ), Lu Xiao (Stevens Institute of Technology, NJ), and Ying Wang (Stevens Institute of Technology, NJ)</i>	
Schrödinger's Toolbox: Exploring the Quantum Rowhammer Attack	85
<i>Devon Campbell (Columbia University, USA)</i>	

Pulse-Level Simulation of Crosstalk Attacks on Superconducting Quantum Hardware	91
<i>Syed Emad Uddin Shubha (Division of Computer Science, Louisiana State University) and Tasnuva Farheen (Division of Computer Science, Louisiana State University)</i>	

Quantum Machine Learning: From Research to Practice (WKS-QML)

Clique Detection Using Symmetry-Restricted Quantum Circuits	95
<i>Maximilian Balthasar Mansky (LMU Munich, Germany), Tobias Rohe (LMU Munich, Germany), Jonas Stein (LMU Munich, Germany), Dmytro Bondarenko (LMU Munich, Germany), Linus Menzel (LMU Munich, Germany), and Claudia Linnhoff-Popien (LMU Munich, Germany)</i>	
CutReg: A Loss Regularizer for Enhancing the Scalability of QML via Adaptive Circuit Cutting	99
<i>Maniraman Periyasamy (Fraunhofer IIS, Fraunhofer Institute for Integrated Circuits IIS, Germany; Technical University of Applied Sciences, Germany), Christian Ufrecht (Fraunhofer IIS, Fraunhofer Institute for Integrated Circuits IIS, Germany), Daniel D. Scherer (Fraunhofer IIS, Fraunhofer Institute for Integrated Circuits IIS, Germany), and Wolfgang Mauere (Technical University of Applied Sciences, Germany; Siemens AG, Corporate Research, Germany)</i>	
LLM-Guided Ansatz Design for Quantum Circuit Born Machines in Financial Generative Modeling	104
<i>Yaswitha Gujju (University of Tokyo, Japan), Romain Harang (University of Tokyo, Japan), and Tetsuo Shibuya (University of Tokyo, Japan)</i>	
Enhancing the Trainability of Variational Quantum Circuits with Regularization Strategies	109
<i>Jun Zhuang (Boise State University, USA), Jack Cunningham (Boise State University, USA), and Chaowen Guan (University of Cincinnati, USA)</i>	
HCVS-Net: Hybrid Continuous-Variable Squeezing Network	115
<i>Xinyi Li (Stevens Institute of Technology, USA), Yifeng Peng (Stevens Institute of Technology, USA), Juntao Chen (Fordham University, USA), and Ying Wang (Stevens Institute of Technology, USA)</i>	
From Classical Data to Quantum Advantage – Quantum Policy Evaluation on Quantum Hardware	121
<i>Daniel Hein (Siemens AG), Simon Wiedemann (Technical University of Munich), Markus Baumann (LMU Munich), Patrik Felbinger (LMU Munich), Justin Klein (LMU Munich), Maximilian Schieder (LMU Munich), Jonas Stein (LMU Munich), Daniëlle Schuman (LMU Munich), Thomas Cope (IQM Germany, Germany), and Steffen Udluft (Siemens AG)</i>	
First Experience with Real-Time Control Using Simulated VQC-Based Quantum Policies	127
<i>Yize Sun (Siemens AG & LMU Munich & MCML, Germany), Mohamad Hagog (LMU Munich, Germany), Marc Weber (Siemens AG, Germany), Daniel Hein (Siemens AG, Germany), Steffen Udluft (Siemens AG, Germany), Yunpu Ma (LMU Munich, Germany), and Volker Tresp (LMU Munich, Germany)</i>	

Quantum Computing Opportunities in Energy Innovation (WKS-Energy)

- SDN-Based Entanglement Routing Strategy in Smart Power Grids Using Reinforcement Learning . 133
Nicholas Skjellum (Tennessee Technological University, USA), Mohamed Shaban (Tennessee Technological University, USA), and Muhammad Ismail (Tennessee Technological University, USA)
- Quantum Hamiltonian Descent Based Augmented Lagrangian Method for Constrained Nonconvex Nonlinear Optimization 139
Mingze Li (University of Houston, USA), Lei Fan (University of Houston, USA), and Zhu Han (University of Houston, USA)

5th International Workshop on Quantum Software Engineering and Technology (WKS-QSET25)

- DEQSE Quantum IDE Extension: Integrated Tool for Quantum Software Engineering 145
Majid Haghparsat (University of Jyväskylä, Finland), Ronja Heikkinen (University of Jyväskylä, Finland), Samuel Ovaskainen (University of Jyväskylä, Finland), Julian Fuchs (University of Jyväskylä and University of Potsdam, Finland), Jussi Jokinen (University of Jyväskylä, Finland), and Tommi Mikkonen (University of Jyväskylä, Finland)
- A Collaborative Tool for Quantum Circuit Programming 151
Jaime Alvarado-Valiente (Universidad de Extremadura, Cáceres, Spain), Javier Romero-Álvarez (Universidad de Extremadura, Cáceres, Spain), Enrique Moguel (Universidad de Extremadura, Cáceres, Spain), Jose Garcia-Alonso (Universidad de Extremadura, Cáceres, Spain), and Juan M. Murillo (Universidad de Extremadura, Cáceres, Spain)
- Dynamic Software Product Lines for Run-Time Adaptations in Quantum Software 156
Samuel Sepúlveda (Universidad de La Frontera, Chile), Ricardo Pérez-Castillo (Universidad de Castilla-La Mancha, Spain), and Mario Piattini (Universidad de Castilla-La Mancha, Spain)
- TWiDDle: Twirling and Dynamical Decoupling, and Crosstalk Noise Modeling 162
Hila Safi (Regensburg University of Applied Sciences, Germany), Christoph Niedermeier (Siemens Foundational Technologies, Germany), and Wolfgang Mauere (Regensburg University of Applied Sciences, Germany)
- On the Effectiveness of Combining Multiple Quantum Services for the Reliability of Outputs..... 169
Fuyuki Ishikawa (National Institute of Informatics, Japan) and Shinobu Saito (NTT, Inc. Computer & Data Science Laboratories, Japan)
- QSimBench: An Execution-Level Benchmark Suite for Quantum Software Engineering 175
Giuseppe Bisicchia (University of Pisa, Italy), Alessandro Bocci (University of Pisa, Italy), Jose Garcia-Alonso (University of Extremadura, Spain), Juan M. Murillo (University of Extremadura, Spain), and Antonio Brogi (University of Pisa, Italy)
- Quantum Program Linting with LLMs: Emerging Results from a Comparative Study 181
Seung Yeob Shin (University of Luxembourg, Luxembourg), Fabrizio Pastore (University of Luxembourg, Luxembourg), and Domenico Bianculli (University of Luxembourg, Luxembourg)

Toolchain for experiment tracking in iterative quantum software development	187
<i>Otso Kinanen (University of Jyväskylä, Finland), Mahee Gamage (University of Jyväskylä, Finland), and Vlad Stirbu (University of Jyväskylä, Finland)</i>	

International Workshop on Quantum Computing and Reinforcement Learning (WKS-QCRL25)

RELIC: Reinforcement Learning Based Ising Optimization via Graph Compression	193
<i>Duy Do Le (Independent Researcher, Vietnam), Truong-Son Hy (The University of Alabama at Birmingham, USA), and Thang N. Dinh (Virginia Commonwealth University, USA)</i>	
A Sample-Efficient Quantum-Classical Reinforcement Learning Framework for Transmission Switching	199
<i>Ding Lin (Southern Methodist University, US), Jianhui Wang (Southern Methodist University, US), Huan-Hsin Tseng (Brookhaven National Lab, US), Shinjae Yoo (Brookhaven National Lab, US), Tianqiao Zhao (Brookhaven National Lab, US), and Meng Yue (Brookhaven National Lab, US)</i>	
On Quantum BSDE Solver for High-Dimensional Parabolic PDEs	205
<i>Howard Su (Imperial College London, UK) and Huan-Hsin Tseng (Brookhaven National Laboratory, USA)</i>	
Towards Quantum Machine Learning for Malicious Code Analysis	211
<i>Jesus Lopez (University of Texas at El Paso, USA), Saeefa Rubaiyet Nowmi (University of Texas at El Paso, USA), Viviana Cadena (University of Texas at El Paso, USA), and Mohammad Saidur Rahman (University of Texas at El Paso, USA)</i>	
Quantum Reinforcement Learning Trading Agent for Sector Rotation in the Taiwan Stock Market	217
<i>Chi-Sheng Chen (Neuro Industry Research, USA), Xinyu Zhang (The University of Alabama, USA), and Ya-Chuan Chen (Industrial Technology Research Institute, Taiwan)</i>	
QMoE: A Quantum Mixture of Experts Framework for Scalable Quantum Neural Networks	223
<i>Hoang-Quan Nguyen (University of Arkansas, USA), Xuan-Bac Nguyen (University of Arkansas, USA), Sankalp Pandey (University of Arkansas, USA), Samee U. Khan (Kansas State University, USA), Ilya Safro (University of Delaware, USA), and Khoa Luu (University of Arkansas, USA)</i>	
PennyCoder: Efficient Domain-Specific LLMs for PennyLane-Based Quantum Code Generation ...	229
<i>Abdul Basit (New York University, UAE), Minghao Shao (New York University, UAE), Muhammad Haider Asif (New York University, UAE), Nouhaila Innan (New York University, UAE), Muhammad Kashif (New York University, UAE), Alberto Marchisio (New York University, UAE), and Muhammad Shafique (New York University, UAE)</i>	

Quantum-Enhanced Reinforcement Learning with LSTM Forecasting Signals for Optimizing Fintech Trading Decisions	235
<i>Yen-Ku Liu (Dept. of Technology Application and Human Resource Development, National Taiwan Normal University, Taiwan), Yun-Huei Pan (Dept. of Technology Application and Human Resource Development, National Taiwan Normal University, Taiwan), Pei-Fan Lu (Dept. of Technology Application and Human Resource Development, National Taiwan Normal University, Taiwan), Yun-Cheng Tsai (Dept. of Technology Application and Human Resource Development, National Taiwan Normal University, Taiwan), and Samuel Yen-Chi Chen (Wells Fargo, New York, USA)</i>	
Quantum Reinforcement Learning by Adaptive Non-Local Observables	241
<i>Hsin-Yi Lin (Seton Hall University, USA), Samuel Yen-Chi Chen (Wells Fargo, USA), Huan-Hsin Tseng (Brookhaven National Laboratory), and Shinjae Yoo (Brookhaven National Laboratory, USA)</i>	
Quantum Circuit Structure Optimization for Quantum Reinforcement Learning	247
<i>Seok Bin Son (Korea University, Korea) and Joongheon Kim (Korea University, Korea)</i>	

Q-CORE: Quantum-Classical Orchestration for Resilient Engineering (WKS-QCORE)

Quantum Circuit Caches and Compressors for Low Latency, High Throughput Computing	252
<i>Ioana Moflic (Aalto University, Finland), Alan Robertson (University of Technology, Australia), Simon J. Devitt (University of Technology, Australia), and Alexandru Paler (Aalto University, Finland)</i>	
Integrating Reconfigurable Accelerators with Quantum Computing	256
<i>FNU Pratibha (Florida Institute of Technology, USA), Parth Ganeriwala (Florida Institute of Technology, USA), and Naveed Mahmud (Florida Institute of Technology, USA)</i>	
Benchmarking Adaptive Genetic Pulse-Level Optimization on Standard Quantum Algorithms	260
<i>William Aguilar-Calvo (CENFOTEC University, Costa Rica) and Santiago Núñez-Corrales (University of Illinois Urbana-Champaign, USA)</i>	
GalaxyQ: A Platform for Reproducible and Provenance-Driven Hybrid Quantum-Classical Scientific Workflows	264
<i>Bryan Raubenolt (Cleveland Clinic, USA) and Daniel Blankenberg (Cleveland Clinic, USA)</i>	
Design of an Entanglement Purification Protocol Selection Module	268
<i>Yue Shi (Pacific Northwest National Laboratory, WA), Chenxu Liu (Pacific Northwest National Laboratory, WA), Samuel Stein (Pacific Northwest National Laboratory, WA), Meng Wang (The University of British Columbia, Canada), Muqing Zheng (Pacific Northwest National Laboratory, WA), and Ang Li (Pacific Northwest National Laboratory, WA)</i>	
Repositioning Quantum Cellular Automata for Dependable Quantum-Classical Systems	272
<i>Nicholas H. Stapleton (University of Tennessee, US) and Vicente Leyton-Ortega (Oak Ridge National Laboratory, US)</i>	

Analyzing Quantum Noise in Image Encodings: A Circuit-Based Hybrid Integration Approach	276
<i>Yayu Mo (Southern Methodist University, USA), Mitchell A. Thornton (Southern Methodist University, USA), and Sanjaya Lohani (Southern Methodist University, USA)</i>	
Evaluation of Noise and Crosstalk in Neutral Atom Quantum Computers	280
<i>Pranet Sharma (Yale University), Yizhuo Tan (Yale University), Konstantinos-Nikolaos Papadopoulos (Northwestern University), and Jakub Szefer (Northwestern University)</i>	
Single-Shot Decoding of Biased-Tailored Quantum LDPC Codes	284
<i>Devon Campbell (Columbia University, USA)</i>	
Scalable Hardware Maturity Probe for Quantum Accelerators via Harmonic Analysis of QAOA ...	288
<i>Chinonso Onah (RWTH Aachen University, Germany) and Kristel Michiels (RWTH Aachen University, Germany)</i>	
CVAE-Guided QAOA Parameter Initialization and Dynamic Injection	292
<i>Jai Nana (Case Western Reserve University, USA), Xinpeng Li (Case Western Reserve University, USA), Ning Xie (Florida International University, USA), Lauren Li (Troy High School, USA), Yifan Yu (University of Washington Seattle, USA), Qiang Guan (Kent State University, USA), Hailu Xu (California State University, USA), Shusen Pu (University of West Florida, USA), Shuai Xu (Case Western Reserve University), and Vipin Chaudhary (Case Western Reserve University, USA)</i>	

3rd Workshop on Quantum Algorithm Design Automation (WKS-QADA)

Graph Neural Network-Based Predictor for Optimal Quantum Hardware Selection	296
<i>Antonio Tudisco (Politecnico di Torino, Italy), Deborah Volpe (Istituto Nazionale di Geofisica e Vulcanologia, Italy), Giacomo Orlandi (Politecnico di Torino, Italy), and Giovanna Turvani (Politecnico di Torino, Italy)</i>	
Synalgebraic Reasoning for Automation of Photonic Quantum Learning	302
<i>Anderson Beraldo de Araujo (University of Campinas, Brazil; University of Minho, Portugal)</i>	

Quantum Artificial Intelligence (WKS-QAI)

Adiabatic Quantum Linear Optimal Control for Discrete Time Dynamical Systems	308
<i>Mayank-Shekhar Jha (Universite de Lorraine, France.) and Prasanna Date (Oak Ridge National Laboratory, USA)</i>	
Impact of Single Rotations and Entanglement Topologies in Quantum Neural Networks	314
<i>Marco Mordacci (University of Parma, Italy) and Michele Amoretti (University of Parma, Italy)</i>	
Direct Entanglement Ansatz Learning (DEAL) with ZNE on Error-Prone Superconducting Qubits	320
<i>Ziqing Guo (Texas Tech University, USA), Steven Rayan (University of Saskatchewan, Canada), Wenshuo Hu (Texas Tech University, USA), and Ziwen Pan (Texas Tech University, USA)</i>	

Quantum Portfolio Optimization with Expert Analysis Evaluation	326
<i>Nouhaila Innan (New York University Abu Dhabi, UAE), Ayesha Saleem (New York University Abu Dhabi, UAE), Alberto Marchisio (New York University Abu Dhabi, UAE), and Muhammad Shafique (New York University Abu Dhabi, UAE)</i>	
Statistical Time Series Modeling of Quantum Systems Using Rough Transformers	332
<i>Yuanhang Shao (Florida State University, USA), Chashi Mahiul Islam (Florida State University, USA), Samuel Jacob Chacko (Florida State University, USA), Ryan Carmichael (Florida State University, USA), Jake Scally (Florida State University, USA), Xiuwen Liu (Florida State University, USA), and Bayaner Arigong (Florida State University, USA)</i>	
Quantum PCA on Classical Datasets: Fidelity Benchmarks and Downstream Task Performance	338
<i>Zain Magdon-Ismael (Rensselaer Polytechnic Institute, USA) and Thilanka Munasinghe (Rensselaer Polytechnic Institute, USA)</i>	
Quantum Adaptive Excitation Network with Variational Quantum Circuits for Channel Attention	344
<i>Yu-Chao Hsu (National Cheng Kung University, Taiwan), Kuan-Cheng Chen (Imperial College London, United Kingdom), Tai-Yue Li (National Center for High-Performance Computing, Taiwan), and Nan-Yow Chen (National Center for High-Performance Computing, Taiwan)</i>	
Probabilistic Representation of Commutative Quantum Circuit Models	350
<i>Richard Yu (Georgia Institute of Technology), Jorge Ramirez Osorio (Oak Ridge National Laboratory), and Elaine Wong (Oak Ridge National Laboratory)</i>	

Workshop on Distributed Quantum Computing: Algorithms, Networks, Software, and Applications (WKS-DQC25)

Multi-Tenant Job Scheduling in Quantum Data Centers	356
<i>Eneet Kaur (Cisco Systems, Inc, USA), Ramana Kompella (Cisco Systems, Inc.), and Reza Nejābati (Cisco Systems, Inc., USA)</i>	
Testbed Protocol for Adaptive Superdense Coding in Distributed Quantum Networks	362
<i>Syed Emad Uddin Shubha (Division of Computer Science, Louisiana State University) and Tasnuva Farheen (Division of Computer Science, Louisiana State University)</i>	
Analyzing Common Electronic Structure Theory Algorithms for Distributed Quantum Computing	368
<i>Grier M. Jones (University of Toronto, Canada) and Hans-Arno Jacobsen (University of Toronto, Canada)</i>	

Poster Papers

Noise-Resilient, Explainable Classifications of High-Resolution Images Using Quanvolution-Pooling	374
<i>Philipp Moser (RISC Software GmbH, Austria) and Dominik Freinberger (RISC Software GmbH, Austria)</i>	

An ML-Based Quantum Advantage Calculator	376
<i>Miguel Paredes Quinones (Dell Research, Brazil), Italo Gomes Santana (Dell Research, Brazil), and Diego Vrague Noble (Dell Research, Brazil)</i>	
Quantum Annealing for Residential Electric Vehicle Charging Management	378
<i>Zhipeng Deng (University of Central Florida, US), Yuewei Li (Syracuse University, US), Xuezheng Wang (Syracuse University, US), Zixin Jiang (Syracuse University, US), and Bing Dong (Syracuse University, US)</i>	
Generation of Long-Range Entanglement Enhanced by Error Detection	380
<i>Haoran Liao (Q-CTRL), Gavin Hartnett (Q-CTRL), Ashish Kakkar (Q-CTRL), Michael Hush (Q-CTRL), Pranav Mundada (Q-CTRL), Michael Biercuk (Q-CTRL), and Yuval Baum (Q-CTRL)</i>	
Search Space Partition Using an Ising Machine for Capacitated Vehicle Routing Problem	381
<i>Eiji Kawase (Oki Electric Industry Co., Ltd., Japan), Shuta Kikuchi (Keio University, Japan), Hideaki Tamai (Oki Electric Industry Co., Ltd., Japan), and Shu Tanaka (Keio University, Japan)</i>	
Topology- and Locality-Guided pre-Processing for Measurement Error Mitigation with Crosstalk Effects	383
<i>Tatsuhiko Shirai (Waseda University, Japan)</i>	
Monte Carlo Qudit Stabilizer Sampling with Pauli Frames	385
<i>Adeeb Kabir (Rutgers University) and Yipeng Huang (Rutgers University)</i>	
Quantum-Assisted Automatic Path-Planning for Robotic Quality Inspection in Industry 4.0	388
<i>Eneko Osaba (TECNALIA, Basque Research and Technology Alliance (BRTA), Spain), Estibaliz Garrote (TECNALIA, Basque Research and Technology Alliance (BRTA), Spain; Univ. of the Basque Country (UPV/EHU), Spain), Pablo Miranda-Rodriguez (TECNALIA, Basque Research and Technology Alliance (BRTA), Spain), Alessia Ciacco (University of Calabria, Italy), Itziar Cabanes (University of the Basque Country, Spain), and Aitziber Mancisidor (University of the Basque Country, Spain)</i>	
Dynamic Circuit Compilation for Sparse Qubit Connectivity	390
<i>Sumeet Shirgure (University of Central Florida, USA) and Siyuan Niu (University of Central Florida, USA)</i>	
Enhancing Quantum Software Development Process with Experiment Tracking	392
<i>Mahee Gamage (University of Jyväskylä, Finland), Otso Kinanen (University of Jyväskylä, Finland), Jake Muff (VTT Technical Research Centre of Finland, Finland), and Vlad Stirbu (University of Jyväskylä, Finland)</i>	
Connectivity-Aware Synthesis of Quantum Algorithms	394
<i>Christoph Fleckenstein (Parity Quantum Computing GmbH, Austria), Florian Dreier (Parity Quantum Computing GmbH, Austria), Gregor Aigner (Parity Quantum Computing GmbH, Austria), Michael Fellner (Parity Quantum Computing GmbH, Austria), Reinhard Stahn (Parity Quantum Computing GmbH, Germany), Martin Lanthaler (Parity Quantum Computing GmbH, Austria), and Wolfgang Lechner (Parity Quantum Computing GmbH and University of Innsbruck, Austria)</i>	

Evaluating pVSQA for Large-Sized Constrained Optimization on Quantum Simulator	396
<i>Takeru Ota (Waseda University, Japan), Tatsuhiko Shirai (Waseda University, Japan), Mikio Morita (Quantum Laboratory, Fujitsu Ltd., Japan), Koichi Kimura (Quantum Laboratory, Fujitsu Ltd., Japan), Yutaka Takita (Quantum Laboratory, Fujitsu Ltd., Japan), and Nozomu Togawa (Waseda University, Japan)</i>	
Hybrid Quantum-Classical Latent Diffusion Models for Medical Image Generation	398
<i>Nora Bauer (The MITRE Corporation, USA), Kubra Yeter-Aydeniz (The MITRE Corporation, USA), and Max Masnick (The MITRE Corporation, USA)</i>	
Multi-Stage Quantum Walk for Constrained Combinatorial Optimization with Equality Constraints	400
<i>Tomohiro Hattori (Keio University, Japan), Paul A. Warburton (University College London, United Kingdom), and Shu Tanaka (Keio University, Japan)</i>	
QBMR: A Novel and Efficient Scheme for Quantum Image Representation	402
<i>C.A. Jothishwaran (Indian Institute of Technology Roorkee, India), Manashree Kalode (Indian Institute of Technology Roorkee, India), Neha Gujar (Indian Institute of Technology Roorkee, India), Bhoomi Bonal (Indian Institute of Technology Roorkee, India), and Sugata Gangopadhyay (Indian Institute of Technology Roorkee, India)</i>	
QUBO Formulation for Task Offloading in Mobile Cloud Computing	404
<i>Annika Daspal (University of Toronto, Canada) and Olivia Das (Toronto Metropolitan University, Canada)</i>	
Applying Quantum Compressed Sensing Tomographic Reconstruction Algorithm to X-ray Data ..	406
<i>Arim Ryou (Chungbuk National University, South Korea), Kiwoong Kim (Chungbuk National University, South Korea), and Kyungtaek Jun (Chungbuk National University, South Korea)</i>	
Measurement-Based Variational Quantum Imaginary Time Evolution	408
<i>Kübra Yeter-Aydeniz (The MITRE Corporation, USA), Nora Bauer (The University of Tennessee, USA), and George Siopsis (The University of Tennessee, USA)</i>	
LLM-Powered Quantum Code Transpilation	410
<i>Nazanin Siavash (University of Colorado Colorado Springs (UCCS), United States) and Armin Moin (University of Colorado Colorado Springs (UCCS), United States)</i>	
Towards Sub-Diffraction Mapping of NV Center Positions via Electrostatic Raster Scanning	412
<i>Kimy S. Jaimes (University of New Brunswick, Canada), Joe A. Smith (The University of Sheffield, England), and Zahra Khatami (University of New Brunswick, Canada)</i>	
Cascade QAOA: Cost Hamiltonian Decomposition with Intermediate Mixing	414
<i>Yunpyo Hong (Korea Electronics Technology Institute, Korea), Seokhun Jeon (Korea Electronics Technology Institute, Korea), and Byung-Soo Kim (Korea Electronics Technology Institute, Korea)</i>	
Approximating Degenerate Quantum Maximum Likelihood Decoding Using the Chase Algorithm	416
<i>Takeshi Kakizaki (National Institute of Advanced Industrial Science and Technology, Japan)</i>	

Hybrid Quantum-Classical Transfer Learning Model for Credit Risk Assessment with Reduced Quantum Overhead and Enhanced Minority Class Prediction	418
<i>Parvathy Gopakumar (Indian Institute of Information Technology Kottayam, India), Rubell Marion Lincy G (Indian Institute of Information Technology Kottayam, India), Salvatore Sinno (Unisys, UK), Shruthi Thuravakkath (Unisys, India), and Bhavika Bhalgamiya (Unisys, US)</i>	
Advantages of Quantum Circuit Learning for the Development of High Entropy Materials	420
<i>Sota Osaki (Waseda University, Japan), Kasuki Hoshitani (Waseda University, Japan), Makoto Nakamura (Fujitsu Ltd., Japan), Koichi Kimura (Fujitsu Ltd., Japan), and Tomoyuki Yamamoto (Waseda University, Japan)</i>	
Evaluating the Performance of Quantum Annealers and Classical Optimizers in the Aircraft Container Loading Problem: A Feasibility Study	422
<i>Salvatore Sinno (Unisys, UK), Manav Babel (NQCC, UK), Nicholas Chancellor (Newcastle University, UK), Thomas Groß (Newcastle University, UK), David Headley (Newcastle University, UK), Alan Mott (Unisys, UK), Konstantinos Georgopoulos (UK National Quantum Computing Centre), and Markus Bertl (Unisys)</i>	
Detailed Implementation of Quantum Toom-Cook Multiplication Circuits and Resource Estimation	424
<i>Yudong Cao (Boston Consulting Group, USA), Manuela Rivas (Sumz, Colombia), Shangjie Guo (FinQ Tech Inc., USA), Aleyana Küçükçolak (Self affiliated), and Annan Ma (Self affiliated)</i>	
OrQstrator: An AI-Powered Framework for Advanced Quantum Circuit Optimization	426
<i>Laura Baird (University of Colorado Colorado Springs (UCCS), USA) and Armin Moin (University of Colorado Colorado Springs (UCCS), USA)</i>	
Variational Decision Trees with Structured Ansatzes	428
<i>Alessandro Poggiali (University of Pisa, Italy), Giacomo Antonioli (University of Pisa, Italy), Alessandro Berti (University of Pisa, Italy), Gianna M. Del Corso (University of Pisa, Italy), and Riccardo Guidotti (University of Pisa, Italy)</i>	
Architecture of a Modular Operating System for High-Level Quantum Computation	430
<i>Minwoo Kim (Seoul National University, South Korea), Kyoung Keun Park (Seoul National University, South Korea), Beomgeun Cho (Seoul National University, South Korea), and Taehyun Kim (Seoul National University, South Korea)</i>	
Quantum Circuit Compilation for Small Scale Trapped Ion Quantum Computer	432
<i>Kyoung Keun Park (Seoul National University, South Korea), Beomgeun Cho (Seoul National University, South Korea), Minwoo Kim (Seoul National University, South Korea), and Taehyun Kim (Seoul National University, South Korea)</i>	
Silicon Fin Capacitor for Superconducting Quantum Circuits	434
<i>Patrick S. Finnegan (Sandia National Laboratories, USA), Sueli Skinner-Ramos (Sandia National Laboratories, USA), Robert B. Reyna (Sandia National Laboratories, USA), Scott E. Weatherred (Sandia National Laboratories, USA), and Stephan M. Carr (Sandia National Laboratories, USA)</i>	

Hybrid Quantum-Classical Framework for Multi-Objective Weighted Portfolio Optimization	436
<i>Yao-Hsin Chou (National Chi Nan University, Taiwan), Kun-Lin Lee (National Chi Nan University, Taiwan), Ping-I Lin (National Chi Nan University, Taiwan), Yen-Yu Hung (National Chi Nan University, Taiwan), and Shu-Yu Kuo (National Taiwan University, Taiwan)</i>	
QAL: System-Level Integration of Quantum Accelerators	438
<i>Ralf Ramsauer (Technical University of Applied Sciences Regensburg) and Wolfgang Mauerer (Technical University of Applied Sciences Regensburg / Siemens Foundational Technologies, Germany)</i>	
An Efficient Hybrid Classical Quantum Algorithm for Mixed-Integer Constrained Optimization....	440
<i>Amit Surana (RTX Technology Research Center)</i>	
Parity-Based Quantum Error Mitigation	442
<i>Todd Hodges (American Express Co., United States), Dagen Wang (American Express Co., United States), Sutapa Samanta (American Express Co., United States), and Andras Ferenczi (American Express Co., United States)</i>	
Scaling Up Trapped-Ion Quantum Processors with Integrated Photonics	444
<i>Molly Andersen (Quantinuum, USA), Bryan DeBono (Quantinuum, USA), Sara Campbell (Quantinuum, USA), Kirk Cook (Quantinuum, USA), David Gaudiosi (Quantinuum, USA), Christopher Ertsgaard (Quantinuum, USA), Azure Hansen (Quantinuum, USA), Todd Klein (Quantinuum, USA), Molly Krogstad (Quantinuum, USA), Elliot Lehman (Quantinuum, USA), Gregory MacCabe (Quantinuum, USA), Duc Nguyen (Quantinuum, USA), Nhung Nguyen (Quantinuum, USA), Adam Ollanik (Quantinuum, USA), Daniel Ouellette (Quantinuum, USA), Brendan Paver (Quantinuum, USA), Michael Plascak (Quantinuum, USA), Justin T. Schultz (Quantinuum, USA), and Johanna Zultak (Quantinuum, USA)</i>	
Metriq-gym: Unified Benchmarking Framework for Quantum Computers	446
<i>Alessandro Cosentino (Unitary Foundation, United States), Changhao Li (Unitary Foundation, United States), Vincent Russo (Unitary Foundation, United States), Daniel Strano (Unitary Foundation, United States), Nathan Shammah (Unitary Foundation, United States), and William J. Zeng (Unitary Foundation, United States)</i>	
Think Small: Quantum Autoencoders for Leaner Molecular Simulations	448
<i>Ankit Khandelwal (Tata Consultancy Services, India), Nirmal M R (Tata Consultancy Services, India), and M Girish Chandra (Tata Consultancy Services, India)</i>	
Quantum Bayesian Inference for Rail Infrastructure Condition Assessment	450
<i>Dengimowei D. Alabintei (University of Maryland, USA) and Nii Attoh-Okine (University of Maryland, USA)</i>	
Generative Graph Modeling on NISQ Computers	452
<i>Oriol Balló-Gimbernat (Eurecat, Spain; Centre de Visió per Computador, Spain; Universitat Autònoma de Barcelona, Spain) and Marcos Arroyo-Sanchez (Eurecat, Spain)</i>	

Effective Scheduling for Quantum Data Centers	454
<i>Zebo Yang (Florida Atlantic University, USA), Chenliang Tian (Washington University in St. Louis, USA), Raj Jain (Washington University in St. Louis, USA), Ramana Kompella (Cisco Research, USA), Reza Nejabati (Cisco Research, USA), Mounir Hamdi (Hamad Bin Khalifa University, Qatar), Aiman Erbad (Qatar University, Qatar), and Hassan Shapourian (Zyphra Technologies, USA)</i>	
Variational Quantum Error Correction	456
<i>Nico Meyer (Fraunhofer Institute for Integrated Circuits IIS, Germany; Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany), Christopher Mutschler (Fraunhofer Institute for Integrated Circuits IIS, Germany), Andreas Maier (Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany), and Daniel D. Scherer (Fraunhofer Institute for Integrated Circuits IIS, Germany)</i>	
Long-Range Entangling Operations via Josephson Junction Metasurfaces	458
<i>Mustafa Bakr (University of Oxford, UK)</i>	
Shallow Circuits for Quantum Simulation of Molecular Vibrations	460
<i>M. R. Nirmal (Tata Consultancy Services, India), Ankit Khandelwal (Tata Consultancy Services, India), and Manoj Nambiar (Tata Consultancy Services, India)</i>	
Quantum Parrondo's Game with Single Qubit Quantum Walk	462
<i>Yun-Hsuan Chen (Concordia International School Shanghai, China), Ran-Yu Chang (National Yang Ming Chiao Tung University, Taiwan), and Tsung-Wei Huang (Chung Yuan Christian University, Taiwan)</i>	
Classically Enhanced CV-MDI-QKD	464
<i>Anjali Dhiman (University of New South Wales, Australia), Ryan Aguinaldo (Northrop Grumman Corporation, USA), and Robert Malaney (University of New South Wales, Australia)</i>	
A Quantum Annealing Approach to k-NN	466
<i>Sutapa Samanta (American Express Co), Dagen Wang (American Express Co), Todd Hodges (American Express Co), and Andras Ferenczi (American Express Co)</i>	
Quantum-Based Random Numbers: Entropy, Efficiency, and Practicality	468
<i>Abu Kaisar Mohammad Masum (University of Louisiana at Lafayette. USA), Mehran Shoushtari Moghadam (Case Western Reserve University, USA), Lida Kouhalvandi (Dogus University, Turkiye), M. Hassan Najafi (Case Western Reserve University, USA), Arman Roohi (University of Illinois, Chicago, USA), and Sercan Aygun (University of Louisiana at Lafayette. USA)</i>	
Quantum and Classical Calculations of the Entanglement Distance of Multi-Qubit One-Layer Variational Quantum States	470
<i>Khrystyna Gnatenko (SoftServe Inc., Ukraine; Ivan Franko National University of Lviv, Ukraine)</i>	
Impact of Multi-Photon States on the Calibration of Single-Photon Detectors Using a Portable bi-Photon Source	472
<i>Sujeet Pani (University of New Mexico, USA), Duncan Earl (Qubitekk, USA), and Francisco Elohim Becerra (University of New Mexico, USA)</i>	

Towards Spin Squeezing in a High Optical Depth Ensemble of Cold Cs Atoms	474
<i>Hariprasad Madathil (University of New Mexico, USA), Shengzhi Wang (University of New Mexico, USA), and Francisco Elohim Becerra (University of New Mexico, USA)</i>	
Distributed Quantum Computation for General Quantum Operations	476
<i>Thales Gottardello Marrafon (The Graduate University for Advanced Studies, Japan) and Akihito Soeda (The University of Tokyo, Japan)</i>	
Towards ZZ-Based Global Control in a Superconducting Quantum Computer	478
<i>Marco Riccardi (Planckian srl, Italy), Riccardo Aiudi (Planckian srl, Italy), Aviv Glezer Moshe (Planckian srl, Italy), Daniel Szombati (Planckian srl, Italy), Marco Polini (Università di Pisa, Planckian srl, Italy), and Vittorio Giovannetti (Planckian srl, Italy)</i>	
Grover's Algorithm for Image edge Detection	480
<i>Pulak Ranjan Giri (KDDI Research, Inc., Japan) and Kazuhiro Saito (KDDI Research, Inc., Japan)</i>	
Preparing High-Fidelity Magic States on IBM Quantum Processors	482
<i>Younghun Kim (The University of Melbourne, Australia; CSIRO, Australia), Martin Seviar (The University of Melbourne, Australia), and Muhammad Usman (The University of Melbourne, Australia; CSIRO, Australia)</i>	
Assessing VQLS for Fluid Dynamics on a Hybrid Quantum-HPC Stack	484
<i>Muralikrishnan Gopalakrishnan Meena (Oak Ridge National Laboratory, USA), Chao Lu (Oak Ridge National Laboratory, USA), Eduardo Antonio Coello Pérez (Oak Ridge National Laboratory, USA), Amir Shehata (Oak Ridge National Laboratory, USA), Seongmin Kim (Oak Ridge National Laboratory, USA), Kalyana Chakravarthi Gottiparthi (Oak Ridge National Laboratory, USA), and In-Saeng Suh (Oak Ridge National Laboratory, USA)</i>	
SubQUBO Construction Based on Grid Reduction Method Using an Ising Machine	486
<i>Koki Mita (Waseda University, Japan), Takeru Ota (Waseda University, Japan), and Nozomu Togawa (Waseda University, Japan)</i>	
Qubit-Width-Aware Grover Adaptive Search for Combinatorial Optimization Problems	488
<i>Takuto Moriya (Quanmatic Inc.), Masashi Tawada (Waseda University, Japan), and Nozomu Togawa (Waseda University, Japan)</i>	
Enhancing Factorization Machine with Annealing via Transformer-Based Surrogate Calibration for RAN Function Placement	490
<i>Shun Furusawa (KDDI Research, Inc., Japan), Chihiro Dogo (KDDI Research, Inc., Japan), Kazuhiro Saito (KDDI Research, Inc., Japan), Yuya Seki (Keio University, Japan), Shuta Kikuchi (Keio University, Japan), and Shu Tanaka (Keio University, Japan)</i>	
QUBO Simplification Method for Improving Solution Convergence Speed Using an Ising Machine	492
<i>Shinnosuke Inaba (University of Waseda, Japan), Takeru Ota (University of Waseda, Japan), Chihiro Dogo (KDDI Research Inc., Japan), Kazuhiro Saito (KDDI Research Inc., Japan), and Nozomu Togawa (University of Waseda, Japan)</i>	

Quantum ansätze for Green's Functions of Single-Impurity Anderson Models at Half-Filling	494
<i>Eduardo Antonio Coello Perez (National Center for Computational Sciences, USA), Dmytro Bykov (National Center for Computational Sciences, USA), Markus Eisenbach (National Center for Computational Sciences, USA), Swarnava Ghosh (National Center for Computational Sciences, USA), Murali Gopalakrishnan Meena (National Center for Computational Sciences, USA), Seongmin Kim (National Center for Computational Sciences, USA), Mariia Karabin (Middle Tennessee State University, USA), David Rogers (National Center for Computational Sciences, USA), Amir Shehata (National Center for Computational Sciences, USA), Tanvir Sohail (National Center for Computational Sciences, USA), In-Saeng Suh (National Center for Computational Sciences, USA), and Hanna Terletska (Middle Tennessee State University, USA)</i>	
Multi-Penalty Sample Persistence Variable Reduction for Constrained Combinatorial Optimization Problems	496
<i>Shunta Ide (Keio University, Japan), Shuta Kikuchi (Keio University, Japan), and Shu Tanaka (Keio University, Japan)</i>	
Evaluating the Impact of Retaining Higher-Order Terms in Combinatorial Optimization Problems	498
<i>Kazuki Ikeuchi (Keio University, Japan), Yoshiki Matsuda (Fixstars Corporation, Japan), and Shu Tanaka (Keio University, Japan)</i>	
Quantum Memory Development for the Quantum-Accelerated Internet Testbed	500
<i>Ashlyn D. Burch (Oak Ridge National Laboratory, USA), Yisheng Lei (Northwestern University, USA), Joseph C. Chapman (Oak Ridge National Laboratory, USA), Zongfeng Li (Northwestern University, USA), Mahdi Hosseini (Northwestern University, USA), and Nicholas Peters (Oak Ridge National Laboratory, USA)</i>	
A Network Design Framework for Classical-to-Quantum Evolution	502
<i>Haitham H. Esmat (University of Massachusetts Amherst, USA), Beatriz Lorenzo (University of Massachusetts Amherst, USA), and Savo Glisic (Worcester Polytechnic Institute, USA)</i>	
Stability of Entanglement States in (a)symmetric InAs/GaAs Double Quantum Dots	504
<i>Patrick Flanigan (North Carolina Central University, USA), Igor Filikhin (North Carolina Central University, USA), and Branislav Vlahovic (North Carolina Central University, USA)</i>	
Adaptive and Bayesian Inverse Temperature Schedules for Quantum Metropolis Protein Folding..	506
<i>Yejin Kim (Yonsei University, Republic of Korea), Suhui Jeong (Yonsei University, Republic of Korea), and Jiwon Seo (Yonsei University, Republic of Korea)</i>	
The Future of Quantum Computing for Energy Geosciences	508
<i>Divakar Vashisth (Stanford University, USA), Rohan Sharma (Indian Institute of Technology, India), Tapan Mukerji (Stanford University, USA), and Mrinal K. Sen (The University of Texas at Austin, USA)</i>	

Relative Wavefront Errors in Continuous-Variable Quantum Communication	510
<i>Nathan K Long (University of New South Wales, Australia; Effectors Division of Defence Science and Technology Group, Australia), John Wallis (International Centre for Radio Astronomy Research, University of Western Australia, Australia), Alex Frost (International Centre for Radio Astronomy Research, University of Western Australia, Australia), Benjamin P Dix-Matthews (International Centre for Radio Astronomy Research, University of Western Australia, Australia), Sascha W Schediwy (International Centre for Radio Astronomy Research, University of Western Australia, Australia), Kenneth J Grant (University of New South Wales, Australia), and Robert Malaney (University of New South Wales, Australia)</i>	
Carleman Linearization Application for Chemical Reaction and Reacting flow Toward Quantum Computing	512
<i>Takaki Akiba (The University of Tokyo, Japan), Youhi Morii (Tohoku University, Japan), Minhyeok Lee (The University of Tokyo, Japan), Kaoru Maruta (Tohoku University, Japan), and Yuji Suzuki (The University of Tokyo, Japan)</i>	
Remote Operation Aware Logical Qubit Allocation in the Fault Tolerant Distributed Quantum Computing	514
<i>Daisuke Sakuma (Keio University, Japan), Yuta Imahoko (Keio University, Japan), Michal Hajdušek (Keio University, Japan), Rodney Van Meter (Keio University, Japan), and Shota Nagayama (Keio University, Japan; Mercari, Inc, Japan)</i>	
Qamomile: A Cross-SDK Bridge for Quantum Optimization	516
<i>Wei-Hao Huang (Jij Inc., Japan), Hiromichi Matsuyama (Jij Inc., Japan), Wai-Hong Tam (Jij Inc., Japan), Keisuke Sato (Jij Inc., Japan), and Yu Yamashiro (Jij Inc., Japan)</i>	
Visible Photonic Component Development for Trapped-Ion Quantum Computing	518
<i>Elliot Lehman (Quantinuum, USA), Molly Krogstad (Quantinuum, USA), Molly P. Andersen (Quantinuum, USA), Sara Campbell (Quantinuum, USA), Kirk Cook (Quantinuum, USA), Bryan DeBono (Quantinuum, USA), Christopher Ertsgaardchris (Quantinuum, USA), Azure Hansen (Quantinuum, USA), Duc Nguyen (Quantinuum, USA), Adam Ollanik (Quantinuum, USA), Daniel Ouellette (Quantinuum, USA), Michael Plascak (Quantinuum, USA), Justin T. Schultz (Quantinuum, USA), Johanna Zultak (Quantinuum, USA), Nicholas Boynton (Sandia National Laboratory, USA), Christopher DeRose (Sandia National Laboratory, USA), Michael Gehl (Quantinuum, USA), and Nicholas Karl (Sandia National Laboratory, USA)</i>	
Analog Quantum Simulation via Rydberg Dressing	520
<i>Arinjoy De (QuEra Computing Inc.), Majd Hamdan (QuEra Computing Inc.), Milan Kornjaca (QuEra Computing Inc.), and Alexei Bylinskii (QuEra Computing Inc.)</i>	
Quantum Simulators and Applications on Quantum Framework	522
<i>Srikar Chundury (North Carolina State University, USA), Zhihao Xu (University of Notre Dame, USA), Amir Shehata (Oak Ridge National Laboratory, USA), Seongmin Kim (Oak Ridge National Laboratory, USA), Frank Mueller (North Carolina State University, USA), and In-Saeng Suh (Oak Ridge National Laboratory, USA)</i>	

Distributing Polarization Entanglement Through a High-Speed Fiber-Optic Switch	524
<i>Atiyya A. Davis (University of Illinois Chicago, Chicago), Brian T. Kirby (DEVCOM Army Research Laboratory, Adelphi; Tulane University, New Orleans), Thomas A. Searles (University of Illinois Chicago, Chicago), and Daniel E. Jones (DEVCOM Army Research Laboratory, Adelphi)</i>	
QubiCML: ML-Powered Real-Time Quantum State Discrimination Enabling Mid-Circuit Measurements	526
<i>Neel R Vora (Lawrence Berkeley National Laboratory, USA), Yilun Xu (Lawrence Berkeley National Laboratory, USA), Akel Hasim (Lawrence Berkeley National Laboratory, USA), Neelay Fruitwala (Lawrence Berkeley National Laboratory, USA), Nam Nguyen (University of California, USA), Haoran Liao (University of California, USA), Jan Balewski (Lawrence Berkeley National Laboratory, USA), Abhi Rajagopala (Lawrence Berkeley National Lab), Kasra Nowrouzi (Lawrence Berkeley National Laboratory, USA), Qing Ji (Lawrence Berkeley National Laboratory, USA), K. Brigitta Whaley (University of California, USA), Irfan Siddiqi (Lawrence Berkeley National Laboratory, USA; University of Massachusetts Amherst, USA), Phuc Nguyen (University of Massachusetts Amherst, USA), and Gang Huang (Lawrence Berkeley National Laboratory, USA)</i>	
Detection of Surface Spins Causing flux Noise in Quantum Devices Using Electron Spin Resonance	528
<i>Dustin T. Hassenmayer (Pennsylvania State University, USA), Patrick M. Lenahan (Pennsylvania State University, USA), Jason T. Ryan (National Institute of Standards and Technology, USA), and Stephen J. Moxim (National Institute of Standards and Technology, USA)</i>	
Quantum Computing in Next-Generation Transportation Optimization	530
<i>Tyler Christeson (National Renewable Energy Lab, USA), Qichao Wang (National Renewable Energy Lab, USA), Matthew Reynolds (National Renewable Energy Lab, USA), Wesley Jones (National Renewable Energy Lab, USA), Jason Lustbader (National Renewable Energy Lab, USA), and Juliette Ugirumurera (National Renewable Energy Lab, USA)</i>	
Error Reduction via Inter-Replica Interactions for Ising Machines	532
<i>Tetsuro Abe (Keio University, Japan), Kanta Hino (Keio University, Japan), and Shu Tanaka (Keio University, Japan)</i>	
LCU-Based Synthesis of Rotation Gates for Fault-Tolerant Quantum Computing	534
<i>Soshun Naito (The University of Tokyo, Japan), Yasunari Suzuki (RIKEN, Japan), and Yuuki Tokunaga (NTT, Inc., Japan)</i>	
Covert Entanglement Generation over Bosonic Channels	536
<i>Evan J. D. Anderson (University Of Arizona, USA), Michael S. Bullock (University Of Arizona), Ohad Kimelfeld (Technion – Israel Institute of Technology, Israel), Christopher K. Eyre (Brigham Young University, USA), Filip Rozpedek (University of Massachusetts Amherst, USA), Uzi Pereg (Technion – Israel Institute of Technology, Israel), and Boulat A. Bash (University of Arizona)</i>	
A Piece of QAICCC: Towards a Countermeasure Against Crosstalk Attacks in Quantum Servers ..	538
<i>Yoann Marquer (University of Luxembourg, Luxembourg) and Domenico Bianculli (University of Luxembourg, Luxembourg)</i>	

Constraint Coefficient Tuning of Spin-Variable Reduction for QAP	540
<i>Raio Aoki (Waseda University, Japan), Tatsuhiko Shirai (Waseda University, Japan), and Nozomu Togawa (Waseda University, Japan)</i>	
Quantum Approximate Optimization Algorithm on Different Qubit Systems	542
<i>Seongmin Kim (Oak Ridge National Laboratory, USA), In-Saeng Suh (Oak Ridge National Laboratory, USA), Eduardo Antonio Coello Perez (Oak Ridge National Laboratory, USA), Ryan Landfield (Oak Ridge National Laboratory, USA), Michael Sandoval (Oak Ridge National Laboratory, USA), Josh Cunningham (Oak Ridge National Laboratory, USA), Thomas Beck (Oak Ridge National Laboratory, USA), Heidi Nelson-Quillin (IonQ Inc, USA), and Erica Stump (IonQ Inc, USA)</i>	
A Measure-and-Prepare Framework for Arbitrary Quantum Gate Excision and Its Applications	544
<i>Tian-Fu Chen (National Taiwan University, Taiwan; National Center for Theoretical Sciences, Taiwan), Yu-Hung Pan (National Taiwan University, Taiwan; National Center for Theoretical Sciences, Taiwan), Ting-Hsun Chi (National Taiwan University, Taiwan), Po-Hung Chen (National Taiwan University, Taiwan), Dah-Wei Chiou (National Taiwan University, Taiwan), and Jie-Hong R. Jiang (National Taiwan University, Taiwan; National Center for Theoretical Sciences, Taiwan)</i>	
Training Variational Quantum Circuits Using Particle Swarm Optimization	546
<i>Marco Mordacci (University of Parma, Italy) and Michele Amoretti (University of Parma, Italy)</i>	
Quantum Control of Spin-Qubits with Spintronic Devices	548
<i>Fahim F. Chowdhury (Virginia Commonwealth University, USA), Mohamad Niknam (University of California Los Angeles, USA), Louis-S. Bouchard (University of California Los Angeles, USA), and Jayasimha Atulasimha (Virginia Commonwealth University, USA)</i>	
A Qutrit $[[6, 2, 2]]_3$ Quantum Error-Correcting Code with a Transversal Binary AND Gate	550
<i>Christine Li (Columbia University, United States) and Lia Yeh (University of Oxford, United Kingdom)</i>	
Quantum Graph Transformer for NLP Sentiment Classification	552
<i>Shamminuj Aktar (Los Alamos National Laboratory, USA), Andreas Bärtschi (Los Alamos National Laboratory, USA), Abdel-Hameed A. Badawy (New Mexico State University, USA), and Stephan Eidenbenz (Los Alamos National Laboratory, USA)</i>	
Graph Matching Trotterization for CTQW Circuit Simulation	554
<i>Mostafa Atallah (The University of Tennessee, USA), Daniel Dilley (Argonne National Laboratory, USA), Igor Gaidai (The University of Tennessee, USA), Alvin Gonzales (Argonne National Laboratory, USA), Zain H. Saleem (Argonne National Laboratory, USA), and Rebekah Herrman (The University of Tennessee, USA)</i>	
QSynViz: An Interactive Visualization Tool for Quantum Circuit Synthesis, Optimization, and Education	556
<i>Cheng-Yen Hua (National Chi Nan University, Taiwan), Shu-Yu Kuo (National Taiwan University, Taiwan), Yu-Chi Jiang (National University of Tainan, Taiwan), Ching-Hsuan Wu (National Chi Nan University, Taiwan), and Yao-Hsin Chou (National Taiwan University, Taiwan)</i>	

Quantum-Inspired Optimization for Smart Aluminum Extrusion in Industry 4.0	558
<i>Yun-Ting Lai (National Chi Nan University, Taiwan), Chien-Ming Chen (National Chi Nan University, Taiwan), Shu-Yu Kuo (National Taiwan University, Taiwan), and Yao-Hsin Chou (National Chi Nan University, Taiwan)</i>	
An Application of Quantum Computing to Modeling Human Decision-Making	560
<i>Joseph Fluegemann (Princeton University, USA), Jiaqi Huang (Indiana University, USA), Raghavendra Pradyumna Pothukuchi (University of North Carolina at Chapel Hill, USA), Margaret Martonosi (Princeton University, USA), Jerome Busemeyer (Indiana University, USA), and Jonathan D. Cohen (Princeton University, USA)</i>	
GridGenQ: Hardware Design Utility for Distributed Quantum Decoders	562
<i>Abbas B. Ziad (Riverlane Inc., United Kingdom), Ankit Zalawadiya (Riverlane Inc., United Kingdom), and Cai Rees-Manuel (Riverlane Inc., United Kingdom)</i>	
Sharp Error-Rate Transitions in Quantum QC-LDPC Codes Under Joint BP Decoding	564
<i>Daiki Komoto (Institute of Science Tokyo) and Kenta Kasai (Institute of Science Tokyo)</i>	
Quantum-Inspired and Quantum-Assisted Genetic Algorithms for Plasmonic Nanostructure Optimization with Active Learning	566
<i>Jargalsaikhan Artag (Tokyo University of Agriculture and Technology, Japan), Koki Awaya (Tokyo University of Agriculture and Technology, Japan), Takumi Kanezashi (Tokyo University of Agriculture and Technology, Japan), Daisuke Tsukayama (Tokyo University of Agriculture and Technology, Japan), Moe Shimada (Tokyo University of Agriculture and Technology, Japan), and Jun-ichi Shirakashi (Tokyo University of Agriculture and Technology, Japan)</i>	
Quantum-Inspired Optimization and QAOA Validation for Cost-Effective Fertilizer Allocation in Precision Agriculture	568
<i>Chia-Ho Ou (National Pingtung University, Taiwan), You-Wei Kan (National Pingtung University, Taiwan), Masayuki Ohzeki (Tohoku University, Japan; Institute of Science Tokyo, Japan; Sigma-i Co., Ltd, Japan), and Chih-Yu Chen (Chung Yuan Christian University, Taiwan)</i>	
Visual Analytics of Crosstalk in Quantum Hardware	570
<i>Junghoon Chae (Oak Ridge National Laboratory, US), Vicente Leyton-Ortega (Oak Ridge National Laboratory, US), and Travis S. Humble (Oak Ridge National Laboratory, US)</i>	
On-Chip Optical Pulse Modulation for Scalable Superconducting Quantum Computers	572
<i>Ryosuke Matsuo (The University of Tokyo, Japan), Hidehisa Shiomi (The University of Osaka, Japan), and Jun Shiomi (The University of Osaka, Japan)</i>	
Harnessing Quantum Inspired Extreme Learning for Molecular Property Prediction	574
<i>Payal D. Solanki (Deloitte Consulting India Private Limited, India) and Anh Pham (Deloitte Consulting LLP, India)</i>	

Learning-Based Quantum Compilation: Translating QASM to QIR with CodeBERT	576
<i>Sharmin Afrose (Oak Ridge National Laboratory, United States), Vicente Leyton-Ortega (Oak Ridge National Laboratory, United States), and Travis Humble (Oak Ridge National Laboratory, United States)</i>	
A Real-Time Low-Latency Quantum Error Correction Stack: Deltaflow and Deltakit	578
<i>Nick Johnson (Riverlane Ltd, UK), Abe Asfaw (Riverlane Research Inc, USA), Guen Prawiroatmodjo (Riverlane Research Inc, USA), Tom Hartley (Riverlane Ltd, UK), Stas Protasov (Riverlane, UK), Chidi Nnadi (Riverlane Ltd, UK), Amirreza Safehian (Riverlane Ltd, UK), Jatin Lal (Riverlane Ltd, UK), Charn Sangvirojkul (Riverlane Ltd, UK), Gianluca Aiello (Riverlane Ltd, UK), Matthew Ruzala (Riverlane Ltd, UK), and Liz Durst (Riverlane Research Inc, USA)</i>	
Variational Quantum Sensing for Structured Linear Estimation Function	580
<i>Priyam Srivastava (University of Pittsburgh, USA), Vivek Kumar (University of Pittsburgh, USA), Gurudev Dutt (University of Pittsburgh, USA), and Kaushik P. Seshadreesan (University of Pittsburgh, USA)</i>	
Harnessing Environment-Mediated Crosstalk: Mutual Performance Enhancement in Parallel Quantum Annealing	582
<i>Jargalsaikhan Artag (Tokyo University of Agriculture and Technology, Japan), Koki Awaya (Tokyo University of Agriculture and Technology, Japan), Takumi Kanezashi (Tokyo University of Agriculture and Technology, Japan), Daisuke Tsukayama (Tokyo University of Agriculture and Technology, Japan), Moe Shimada (Tokyo University of Agriculture and Technology, Japan), and Jun-ichi Shirakashi (Tokyo University of Agriculture and Technology, Japan)</i>	
Sparse DoA Estimation on Discretized Grids Using Hamming-Weight-Constrained Quantum Approximate Optimization Algorithm	584
<i>Bidisha Dhara (Indian Institute of Technology Delhi, India), Monika Agrawal (Indian Institute of Technology Delhi, India), and Sumantra Dutta Roy (Indian Institute of Technology Delhi, India)</i>	
MAQAN: India's Quantum Network Testbed	586
<i>Vaibhav Pratap Singh (IIT Madras, India; Quantum Technology Group, C-DAC Bangalore, India), Anurag Dutt (Quantum Technology Group, C-DAC Bangalore, India), Ashutosh Kumar Singh (IIT Madras, India), Foram Shingala (SETS Chennai, India), Sajimon P. C. (Cyber Security Group, C-DAC Thiruvananthapuram, India), Yashwant Reddy (ERNET India, India), Abhishek Singh Rao (IIT Madras, India), Mohd. Razin Ashfaq (IIT Madras, India), Natarajan Venkatachalam (SETS Chennai, India), Aneesh Kumar K.B. (Cyber Security Group, C-DAC Thiruvananthapuram, India), Haribabu P (Quantum Technology Group, C-DAC Bangalore, India), Sudarsan S D (Quantum Technology Group, C-DAC Bangalore, India), and Anil Prabhakar (IIT Madras, India)</i>	
Learning Control with Simulated Variational Quantum Policies in a Surrogate Cart-Pole Environment	588
<i>Yize Sun (Siemens AG & MCML & LMU Munich, Germany), Mohamad Hagog (LMU Munich, Germany), Marc Weber (Siemens AG, Germany), Daniel Hein (Siemens AG, Germany), Steffen Udluft (Siemens AG, Germany), Yunpu Ma (LMU Munich, Germany), and Volker Tresp (LMU Munich, Germany)</i>	

Graph Dilution for Decoding Surface Codes	590
<i>Boqing Zhang (Duke University, United States) and Siyuan Niu (University of Central Florida, USA)</i>	
Quantum Dark Magic: Efficiency of Intermediate Non-Stabiliserness	592
<i>Tom Krüger (Technical University of Applied Sciences Regensburg, Germany) and Wolfgang Mauere (Technical University of Applied Sciences Regensburg, Germany)</i>	
Entanglement Benchmarking in Quantum Simulations of Spin Systems	594
<i>Anshumitra Baul (Oak Ridge National Laboratory, USA) and Phillip C. Lotshaw (Oak Ridge National Laboratory, USA)</i>	
Performance Characterization of Quantum Simulation in CUDA-Q	596
<i>Ella Rubinshtein (Princeton University), Jocelyn Li (Princeton University), and Margaret Martonosi (Princeton University)</i>	
Quantum-Assisted Learning of Time-Dependent Parabolic PDEs	598
<i>Nahid Binandeh Dehaghani (Aalborg University, Denmark), Ban Tran (Texas Tech University, USA), A. Pedro Aguiar (University of Porto, Portugal), Rafal Wisniewski (Aalborg University, Denmark), and Susan Mengel (Texas Tech University, USA)</i>	
Quantum Top Arms Identification in Multi-Armed Bandits	600
<i>Xuchuang Wang (University of Massachusetts Amherst, USA), Yu-Zhen Janice Chen (University of Massachusetts Amherst, USA), Matheus Guedes de Andrade (University of Massachusetts Amherst, USA), Mohammad Hajiesmaili (University of Massachusetts Amherst, USA), John C.S. Lui (Chinese University of Hong Kong, China), and Don Towsley (University of Massachusetts Amherst, USA)</i>	
Evaluating the Role of Noise Mitigation in QAOA: a Study of Zero-Noise Extrapolation and CVaR	602
<i>Adriano Lusso (Universidad Nacional del Comahue, Argentina), Marco Venere (Politecnico di Milano, Italy), Victor Onofre (Quantum Open Source Foundation), Alberto Maldonado-Romo (Quantum Open Source Foundation), Alejandro Montanez-Barrera (Forschungszentrum Julich), and Marco D. Santambrogio (Politecnico di Milano)</i>	
Towards Quaternionic Description of Semiconductor Quantum Dots Based Electronics	604
<i>Wojciech Nowakowski (Lodz University of Technology, Poland), Krzysztof Pomorski (University of New Mexico, USA), and Eryk Hatubek (Lodz University of Technology, Poland)</i>	
How Many Qubits does a Machine Learning Problem Require?	606
<i>Sydney Leither (Coherent Computing Inc, USA), Michael Kubal (Coherent Computing Inc, USA), and Sonika Johri (Coherent Computing Inc, USA)</i>	
Potential of Distributed Circuits for Mitigating Quantum Image Noise	608
<i>Yayu Mo (Southern Methodist University (SMU), USA), Mitchell A. Thornton (Southern Methodist University (SMU), USA), and Sanjaya Lohani (Southern Methodist University (SMU), USA)</i>	

Syndrilla: Simulating Decoders for Quantum Error Correction Using PyTorch	610
<i>Yanzhang Zhu (University of Central Florida, USA), Chen-Yu Peng (National Tsing Hua University, China), Yun Hao Chen (National Tsing Hua University, China), Siyuan Niu (University of Central Florida, USA), Yeong-Luh Ueng (National Tsing Hua University, China), and Di Wu (University of Central Florida, USA)</i>	
Time Crystals for Quantum Memories: A Tensor-Network Approach	612
<i>Connor Casey (University of Massachusetts Amherst, USA)</i>	
Room-Temperature Emulation of Single-Electron Devices	614
<i>Artur Michalak (Lodz University of Technology, Poland), Eryk Halubek (Lodz University of Technology, Poland), Krzysztof Pomorski (University of New Mexico, Poland), Maciej Dolecki (Lodz University of Technology, Poland), Wojciech Nowakowski (Lodz University of Technology, Poland), and Aleksander Zak (Quantum Hardware Systems & PEMSSA, Poland)</i>	
Post-Variational Ground State Estimation via QPE-Based Quantum Imaginary Time Evolution	616
<i>Nora Bauer (The University of Tennessee, USA) and George Siopsis (University of Tennessee, USA)</i>	
Robust Adaptive Quantum Feedback Under Practical Uncertainties- A Lightweight Approach	618
<i>Anusha Krishna Murthy (Wichita State University), John Watkins (Wichita State University, USA), Elizabeth Behrman (Wichita State University, USA), James Steck (Wichita State University, USA), and Edwin Sawan (Wichita State University, USA)</i>	
Entanglement Percolation in Quantum Hypergraphs	620
<i>Mohadeseh Azari (University of Pittsburgh), Anoosha Fayyaz (University of Pittsburgh, USA), and Kaushik Seshadreesan (University of Pittsburgh, USA)</i>	
QSANN-ViQ: A Lightweight Quantum Self-Attention Vision Model for Explainable and Secure Edge Image Classification	622
<i>Dhanya Boyapally (University of Missouri Columbia, USA), Srikar Alla (University of Missouri Columbia, USA), Ali Shiri Sichani (University of Missouri Columbia, USA), Sk Md Abidar Rahaman (Burdwan University, India), and Hadi Ali Akbarpour (Saint Louis University, USA)</i>	
Superconducting Diamond for Quantum Applications: CVD Diamond Doping Control and Characterization	624
<i>Charush Sai Minna (Blue Wave Semiconductors, Inc., Maryland) and R.D. Vispute (Blue Wave Semiconductors, Inc., Maryland)</i>	
Quantum Optimization for Solving Coordinated Truck–Drone Routing Problem	626
<i>Ahmad Bassaleh (Wichita State University, USA), Syed Farhan Ahmad (North Carolina State University, USA), Ramkumar Harikrishnakumar (Wichita State University, USA), Gregory T. Byrd (North Carolina State University, USA), and Bayram Yildirim (Wichita State University, USA)</i>	
RuleSet Generation Framework for Application Layer Integration in Quantum Internet	628
<i>Rei Kawano (Keio University, Japan), Shota Nagayama (Keio University, Japan), and Takahiko Satoh (Keio University, Japan)</i>	

Exploiting Block Sparsity for Quantum Circuit Simulation	630
<i>Innocenzo Fulginiti (Technical University of Munich, Germany) and Christian B. Mendl (Technical University of Munich, Germany)</i>	
Towards Robust Quantum Machine Learning	632
<i>Saeefa Rubaiyet Nowmi (University of Texas at El Paso, USA), Jesus Lopez (University of Texas at El Paso, USA), Md Mahmudul Alam Imon (University of Texas at El Paso, USA), Viviana Cadena (University of Texas at El Paso, USA), Shahrooz Pouryousef (University of Massachusetts Amherst, USA), and Mohammad Saidur Rahman (University of Texas at El Paso, USA)</i>	
Quantum Convolutional Codes Constructed from Classical Self-Orthogonal Convolutional Codes.	634
<i>Vahid Nourozi (New Mexico State University, USA) and David G. M. Mitchell (New Mexico State University, USA)</i>	
Access Improvements to Densely Packed Quantum Memory	636
<i>Kabir Dubey (Northwestern University, USA) and Kaitlin N. Smith (Northwestern University, USA)</i>	
Leveraging Phase Polynomials for Quantum Circuits Optimization	638
<i>Zihan Chen (Rutgers University, USA), Henry Chen (Rutgers University, USA), Xiangyu Gao (University of Washington, USA), Yuwei Jin (JPMorgan Chase, USA), Minghao Guo (Rutgers University, USA), Enhyeok Jang (Yonsei University, South Korea), Jiakang Li (Rutgers University, USA), Caitlin Chan (Rutgers University, USA), Won Woo Ro (Yonsei University, South Korea), and Eddy Z. Zhang (Rutgers University, USA)</i>	
Hybrid Classical Quantum Embeddings for NLP and AI Using Hamiltonians	640
<i>Damir Cavar (Indiana University Bloomington, USA), James Bryan Graves (Indiana University Bloomington, USA), Shane A. Sparks (Indiana University Bloomington, USA), and Koushik Reddy Parukola (Indiana University Bloomington, USA)</i>	
Quantum Recognition Heuristics: A Tutorial Example of Quantum Heuristics	642
<i>Jiaqi Huang (Indiana University Bloomington, United States), Timothy Pleskac (Indiana University Bloomington, United States), and Jerome Busemeyer (Indiana University Bloomington, United States)</i>	
Hybrid Quantum-Classical Multi-Party Computation	644
<i>Videet Acharya (BITS Pilani, India), Prateek Talwar (BITS Pilani, India), and Kunal Korgoankar (BITS Pilani, India)</i>	
Quantifying the Gap Between FPGA and ASIC Implementations of a Surface Code Decoder	646
<i>Junichiro Kadomoto (The University of Tokyo, Japan), Werner Florian Samayoa (RIKEN Center for Computational Science, Japan), Prasoon Ambalathankandy (RIKEN Center for Computational Science, Japan), JanErikR. Wichmann (RIKEN Center for Computational Science, Japan), and Kentaro Sano (RIKEN Center for Computational Science, Japan)</i>	
Surface Code Entanglement Ejection	648
<i>Kento Samuel Soon (Keio University, Japan), Fumiyoshi Kobayashi (Mercari, Inc., Japan), Naphan Benchasattabuse (Keio University, Japan), and Shota Nagayama (Keio University, Japan)</i>	

A Troubleshooting Framework for Trapping Ions	650
<i>Monet Tokuyama Friedrich (Keio University, Japan), Alto Osada (Osaka University, Japan), Rodney Van Meter (Keio University, Japan), and Shota Nagayama (Keio University, Japan)</i>	
Benchmarking Highly Precise Quantum Linear Systems Algorithms	652
<i>Adrian Harkness (Lehigh University, USA), Kate Saltovets (Lehigh University, USA), Mohammadhossein Mohammadisiahroudi (Lehigh University, USA), and Tamás Terlaky (Lehigh University, USA)</i>	
Evaluating Post-Quantum Cryptographic Algorithms on Resource-Constrained Devices	655
<i>Jesus Lopez (University of Texas at El Paso), Viviana Cadena (University of Texas at El Paso), and Mohammad Saidur Rahman (University of Texas at El Paso)</i>	
Towards a Measurement-Based Quantum Computing Architecture Using Continuous-Variable Optical Qubits	657
<i>Ryosuke Matsuo (The University of Tokyo, Japan) and Junichiro Kadomoto (The University of Tokyo, Japan)</i>	
Towards Efficient Hybrid Quantum-Classical Learning Models	659
<i>Aaron McCollum (Ulster University, UK), Sharatchandra Varma Bogaraju (Ulster University, UK), James McLaughlin (Ulster University, UK), Abdelkerim Amari (Nokia, Germany), and Sunish Kumar Orappanpara Soman (Ulster University, UK)</i>	
Quantifying the Breakdown of Approximate Models in Four-Wave Mixing: A Case for Nonperturbative, Time-Independent Master Equations	661
<i>Aleksy Rodriguez (Texas A&M University, USA), Maria Gabriela Boada (University of Texas at San Antonio), Jose Morales Escalante (University of Texas at San Antonio), and Andrea Delgado (Oak Ridge National Laboratory)</i>	
Author Index	663

2025 IEEE International Conference on Quantum Computing and Engineering (QCE 2025)

**Albuquerque, New Mexico, USA
30 August - 5 September 2025**

Volume III of III



**IEEE Catalog Number: CFP25W18-POD
ISBN: 979-8-3315-5737-9**

2025 IEEE International Conference on Quantum Computing and Engineering (QCE) **QCE 2025**

Table of Contents

Message from the QCE 2025 Chairs	xiii
Message from the QSEEC 2025 Chairs	xvii
QSEEC 2025 Committees	xviii
QSEEC Technical Program	xx
QSEEC Posters Program	xxxviii
QSEEC Tutorials Program	liii

QSEEC 2025 - Quantum Science and Engineering Education

Outcomes from an International Year of Quantum K-12 Educational Leadership Conference	1
<i>Angela M. Kelly (Stony Brook University, USA), Dominik Schneble (Stony Brook University, USA), and Tzu-Chieh Wei (Stony Brook University, USA)</i>	
Advancing Quantum Information Science Pre-College Education: The Case for Learning Sciences Collaboration	11
<i>Raquel Coelho (University of Pittsburgh, United States), Roy Pea (Stanford University, United States), Christian Schunn (University of Pittsburgh, United States), Jinglei Cheng (University of Pittsburgh, United States), and Junyu Liu (University of Pittsburgh, United States)</i>	
Pathways to Quantum: Fostering High School Student Interest in Quantum Information Science.....	23
<i>Jennifer R. Simons (George Mason University, Virginia), Nancy Holincheck (George Mason University, Virginia), Jessica L. Rosenberg (George Mason University, Virginia), and Laura M. Akesson (George Mason University, Virginia)</i>	

QCaMP: A 4-Week Summer Camp Introducing High School Students to Quantum Information Science and Technology	29
<i>Megan Ivory (Photonic Microsystems Technology, USA), Jan Balewski (National Energy Research Scientific Computing Center, USA), Alisa Bettale (Lawrence Berkeley National Laboratory, USA), Jaden Brewer (Northern Arizona University, USA), Rachel Boren (New Mexico State University, USA), Daan Camps (Lawrence Berkeley National Laboratory, USA), Lisa Hackett (Photonic Microsystems Technology, USA), Martin Juarez (University of California Riverside, USA), Alina Kononov (Sandia National Laboratories, USA), Kan-Heng Lee (Lawrence Berkeley National Laboratory, USA), Maryanne Long (New Mexico State University, USA), Andy Mounce (Center for Integrated Nanotechnology, USA), Susan Mniszewski (Information Sciences, USA), Ravi K. Naik (Applied Mathematics and Computational Research Division, USA), Scott Pakin (Applied Computer Science, USA), and Ernesto Sanchez (Office of Government and Community Relations, USA)</i>	
Project-Based Learning in Introductory Quantum Computing Courses: A Case Study on Quantum Algorithms for Medical Imaging	39
<i>Nischal Binod Gautam (Baylor University, USA), Keith Evan Schubert (Baylor University, USA), and Enrique P. Blair (Baylor University, USA)</i>	
Quantum Programming in Depth: Project-Based Approach to Learning Quantum Computing	51
<i>Mariia Mykhailova (PsiQuantum, USA)</i>	
Entangled Dice: Project-Based Learning for QISE Education	52
<i>Bennett J Brown (Iowa City Community School District, USA)</i>	
University-Based Strategies for Precollege Quantum Information Science and Technology Outreach in the International Year of Quantum	53
<i>Angela M. Kelly (Stony Brook University, USA), Dominik Schneble (Stony Brook University, USA), Tzu-Chieh Wei (Stony Brook University, USA), and Sarah Cocuzza (Stony Brook University, USA)</i>	
Advancing Mentorship Through Authentic Research Experiences in High School Quantum Computing and Engineering	54
<i>Jennifer Wang (Massachusetts Institute of Technology), Matthew Yeh (Harvard University), and James Newland (University of Texas at Austin)</i>	
Fortifying Castles Quantum Leap: From Medieval to Modern Defenses	55
<i>Julianne Webb (Independent K12 STEM Education Specialist)</i>	
A Lesson Integrating Quantum Encryption Concepts to Enhance Statistics Education	N/A
<i>Tanya Jimenez (Bandera High School) and Jimmy Newland (UT Austin)</i>	
A Game-Inspired Educational Platform for Quantum Boolean Circuit Synthesis via Multi-Edge Swapping	57
<i>Yao-Hsin Chou (National Chi Nan University, Taiwan), Ming-Ho Chang (National Chi Nan University, Taiwan), Yu-Chi Jiang (National University of Tainan, Taiwan), and Shu-Yu Kuo (National Taiwan University, Taiwan)</i>	

Developing an Accessible, Mathematically Rigorous Quantum Information Science Program for High School Students	59
<i>Krish Butani (Khan Lab School) and Daniel Serrano (University of Maryland)</i>	
The NQCC's UK Quantum Hackathon : Developing the UK Quantum Computing Workforce and user Community	60
<i>Daisy Shearer (National Quantum Computing Centre, United Kingdom)</i>	
Cognitively-Informed Personalized Metaphor Generation for Conceptual Learning in Quantum Science	61
<i>Krish Butani (Khan Lab School) and Daniel Serrano (University of Maryland)</i>	
Enabling High-Impact Quantum Public Engagement Through a UK-wide Collaboration	62
<i>Daisy Shearer (National Quantum Computing Centre, United Kingdom)</i>	
Quantum Education in Africa: Innovative Models, Collaborative Frameworks, and the Path Forward	63
<i>Farai Mazhandu (Department of Physics, Colorado School of Mines, Golden, United States of America) and Mhlambululi Mafu (Case Western Reserve University, USA)</i>	
Mapping the Landscape of Education and Outreach in Quantum Information Science and Engineering Research Centers and Institutes: Insights from Over 130 Research Centers and Institutes Across the United States	70
<i>Brianna Benedict McIntyre (NACME, USA) and Carmen Sidbury (NACME, USA)</i>	
Quantum Computer Engineering Education in the Philippines: A Readiness and Recommendation Analysis of the Prescribed Computer Engineering Curriculum	71
<i>Dylan Josh Domingo Lopez (Quantum Computing Society of the Philippines, Philippines), Maria Cecilia A. Venal (National University, Philippines), Darwin Jone Jupiter (University of Science and Technology of Southern Philippines, Philippines), Sammy V. Militante (University of Antique, Philippines), and Ana Antoniette C. Illahi (De La Salle University, Philippines)</i>	
Experiential Approaches to Quantum Education: Teaching Quantum Key Distribution at QCaMP (Quantum, Computing, Mathematics, and Physics)	81
<i>Jaden Brewer (Northern Arizona University), Megan Ivory (Sandia National Laboratories), Alisa Bettale (Lawrence Berkeley National Laboratory), and Ernesto Sanchez (Lawrence Berkeley National Laboratory)</i>	
Building Student Understanding of Quantum Information Science and Engineering Through Projects on Applications to Medical Technologies	82
<i>Jessica L. Rosenberg (George Mason University, USA) and Nancy Holincheck (George Mason University, USA)</i>	
Learning and Teaching Quantum Computing	86
<i>Daniel Sierra-Sosa (Catholic University, USA), Sharon Kerrick (University of Louisville, USA), Juan G. Lalinde-Pulido (Universidad EAFIT, Colombia), Ibrahim Imam (University of Louisville, USA), and Adel Elmaghraby (University of Louisville, USA)</i>	
Quantum Time Capsules	87
<i>Qasim Bedford (University College London) and Shashvat Shukla (University College London)</i>	

Q-BEAST: A Practical Course on Experimental Evaluation and Characterization of Quantum Computing Systems	96
<i>Minh Chung (Leibniz Supercomputing Centre (LRZ), Germany; MNM-Team, Ludwig-Maximilians-Universität München (LMU), Germany), Yaknan Gambo (Leibniz Supercomputing Centre (LRZ), Germany; Chair for Computer Architecture and Parallel Systems, Technical University of Munich (TUM), Germany), Burak Mete (Leibniz Supercomputing Centre (LRZ), Germany), Xiao-Ting Michelle To (MNM-Team, Ludwig-Maximilians-Universität München (LMU), Germany), Florian Krötz (MNM-Team, Ludwig-Maximilians-Universität München (LMU), Germany), Korbinian Staudacher (MNM-Team, Ludwig-Maximilians-Universität München (LMU), Germany), Martin Letras (Leibniz Supercomputing Centre (LRZ), Germany), Xiaolong Deng (Leibniz Supercomputing Centre (LRZ), Germany), Mounika Vavilala (Leibniz Supercomputing Centre (LRZ), Germany), Amir Raoofy (Leibniz Supercomputing Centre (LRZ), Germany), Jorge Echavarria (Leibniz Supercomputing Centre (LRZ), Germany), Luigi Iapichino (Leibniz Supercomputing Centre (LRZ), Germany), Laura Schulz (Argonne National Laboratory, USA), Josef Weidendorfer (Leibniz Supercomputing Centre (LRZ), Germany), and Martin Schulz (Leibniz Supercomputing Centre (LRZ), Germany; Chair for Computer Architecture and Parallel Systems, Technical University of Munich (TUM), Germany)</i>	
Teaching Quantum Computing to Computer Science Students: Review of a Hands-on Quantum Circuit Simulation Practical	106
<i>Florian Krötz (Ludwig-Maximilians Universität, Germany), Xiao-Ting Michelle To (Ludwig-Maximilians Universität, Germany), Korbinian Staudacher (Ludwig-Maximilians Universität, Germany), and Dieter Kranzlmüller (Ludwig-Maximilians Universität, Germany)</i>	
An Undergraduate-Level Hands-on Course on Quantum Error Correction	112
<i>Abraham Asfaw (Riverlane Research Inc)</i>	
An Adversarial Quantum Key Distribution Project	113
<i>Brian La Cour (The University of Texas at Austin, United States) and Noah Davis (The University of Texas at Austin, United States)</i>	
Quantum Babel: Breaching the Notational and Conceptual Divide of Physics and Mathematics to Build Quantum Intuition in Computer Science Students	119
<i>Anila Mjeda (Munster Technological University, Ireland) and Hazel Murray (Munster Technological University, Ireland)</i>	
A Good First Impression for Quantum Algorithms	129
<i>Shashvat Shukla (University College London)</i>	
Mapping out the Quantum Channel zoo	134
<i>Ben Booker (University of Illinois Urbana-Champaign, USA), Tianshun Gao (University of Illinois Urbana-Champaign, USA), Anne Que (University of Illinois Urbana-Champaign, USA), Yuxuan Wan (University of Illinois Urbana-Champaign, USA), Lumi Xu (University of Illinois Urbana-Champaign, USA), Sujeet Bhalerao (University of Illinois Urbana-Champaign, USA), and Felix Leditzky (University of Illinois Urbana-Champaign, USA)</i>	

Hadamard Eigenvectors with Misty States	135
<i>Lia Yeh (University of Oxford, UK), Mary Ganey (Indiana University Bloomington, USA), Prabhav Gudapati (Indiana University Bloomington, USA), Ginger Jia (Indiana University Bloomington, USA), SeungHwan Jung (Indiana University Bloomington, USA), Yisakor Melke (Indiana University Bloomington, USA), Sudha Swain (Indiana University Bloomington, USA), Christina Naylor (Indiana University Bloomington, USA), Ethan Parr (Indiana University Bloomington, USA), Amy Pezzoni (Enochs High-School, Modesto, USA), Carla Gehlhausen (Indiana University Bloomington, USA), Daphne John (Forsyth Central High School, USA), Greg Beutler (Hawaii Technology Academy, USA), John Phillips (Indiana University Bloomington, USA), Kevin Moist (Concord High School, USA), Rachel Zhao (Hardin Valley Academy, Knoxville, TN, USA), Rebekah Randall (Canterbury Schools, USA), Vickie Houlihan (Heartland Career Center, USA), Colleen Rock (Kahler Middle School, USA), Scout Winchester (Indiana University Bloomington, USA), and Adrian German (Indiana University Bloomington, USA)</i>	
Entanglement Swapping with Misty States	136
<i>Lia Yeh (University of Oxford, UK), Mary Ganey (Indiana University Bloomington, USA), Prabhav Gudapati (Indiana University Bloomington, USA), Ginger Jia (Indiana University Bloomington, USA), SeungHwan Jung (Indiana University Bloomington, USA), Yisakor Melke (Indiana University Bloomington, USA), Sudha Swain (Indiana University Bloomington, USA), Christina Naylor (Indiana University Bloomington, USA), Ethan Parr (Indiana University Bloomington, USA), Amy Pezzoni (Indiana University Bloomington, USA), Carla Gehlhausen (Hoosier College and Career Academy, USA), Daphne John (Forsyth Central High School, Cumming, GA, USA), Greg Beutler (Hawaii Technology Academy, Waimea, HI, USA), John Phillips (Indiana University Bloomington, USA), Kevin Moist (Concord High School, Elkhart, IN, USA), Rachel Zhao (Hardin Valley Academy, Knoxville, TN, USA), Rebekah Randall (Canterbury High School, Fort Wayne, IN, USA), Vickie Houlihan (Heartland Career Center, Wabash, IN, USA), Colleen Rock (Kahler Middle School, Hammond, IN, USA), Scout Winchester (Indiana University Bloomington, USA), and Adrian German (Indiana University Bloomington, USA)</i>	

Entanglement Swapping with ZX Calculus	137
<i>Lia Yeh (University of Oxford, UK), Mary Ganey (Indiana University Bloomington, USA), Prabhav Gudapati (Indiana University Bloomington, USA), Ginger Jia (Indiana University Bloomington, USA), SeungHwan Jung (Indiana University Bloomington, USA), Yisakor Melke (Indiana University Bloomington, USA), Sudha Swain (Indiana University Bloomington, USA), Christina Naylor (Indiana University Bloomington, USA), Ethan Parr (Indiana University Bloomington, USA), Amy Pezzoni (Indiana University Bloomington, USA), Carla Gehlhausen (Hoosier College and Career Academy, USA), Daphne John (Forsyth Central High School, Cumming, GA, USA), Greg Beutler (Hawaii Technology Academy, Waimea, HI, USA), John Phillips (Indiana University Bloomington, USA), Kevin Moist (Concord High School, Elkhart, IN, USA), Rachel Zhao (Hardin Valley Academy, Knoxville, TN, USA), Rebekah Randall (Canterbury High School, Fort Wayne, IN, USA), Vickie Houlihan (Heartland Career Center, Wabash, IN, USA), Colleen Rock (Kahler Middle School, Hammond, IN, USA), Scout Winchester (Indiana University Bloomington, USA), and Adrian German (Indiana University Bloomington, USA)</i>	
Quantum Computing Training for Science and Engineering Students	138
<i>PJ Daeger (Rose-Hulman Institute of Technology, USA), Joel Meyer (Rose-Hulman Institute of Technology, USA), Azad Siahmakoun (Rose-Hulman Institute of Technology, USA), and Maarij Syed (Rose-Hulman Institute of Technology, USA)</i>	
Preparing Quantum-Ready Engineers & Scientists	139
<i>Maarij Syed (Rose-Hulman Institute of Technology) and Azad Siahmakoun (Rose-Hulman Institute of Technology)</i>	
Shaping a User-Centric Quantum Computing Experience	140
<i>Muhammad Shahzaib (Leibniz Supercomputing Centre, Germany), Luigi Iapichino (Leibniz Supercomputing Centre, Germany), Mounika Vavilala (Leibniz Supercomputing Centre, Germany), Hai Nguyen (Leibniz Supercomputing Centre, Germany), and Marco De Pascale (Leibniz Supercomputing Centre, Germany)</i>	
Using Hybrid Quantum-Classical Policy Optimization to Explore Parameter and Sample Efficiency	143
<i>Elahe Javadi (Illinois State University, USA), Jenna Mohammed (Illinois State University), and Neer Jain (Illinois State University, USA)</i>	
A QCaMP-Inspired Introductory Quantum Computing Module for Undergraduate Hardware and Software Course	144
<i>Elahe Javadi (Illinois State University, USA)</i>	
QubitLens: An Interactive Learning Tool for Quantum State Tomography	145
<i>Mohammad Aamir Sohail (University of Michigan, USA), Ranga Sudharshan (University of Michigan, USA), S. Sandeep Pradhan (University of Michigan, USA), and Arvind Rao (University of Michigan, USA)</i>	

Rose of Lonely Planet: A Game-based Approach to Learning Quantum Reversible Circuits through Crowd Intelligence	152
<i>Yu-Chi Jiang (National University of Tainan, Taiwan), Shu-Yu Kuo (National Taiwan University, Taiwan), Yao-Hsin Chou (National Chi Nan University, Taiwan), and Sy-Yen Kuo (Chang Gung University, Taiwan)</i>	
“Quantum Quest”: A Card Game for Responsible Quantum Governance	161
<i>Sho Morishita (Osaka University, Japan), Yusuke Nagato (Osaka University, Japan), Konomi Higo (Mercari R4D, Japan), and Shota Nagayama (Keio University, Japan)</i>	
No Physics Required! A Visual-Based Introduction to GKP Qubits for Computer Scientists	166
<i>Richard A. Wolf (Irish Center For High-End Computing, Ireland) and Pavithran Iyer (Institute for Quantum Computing, Ireland)</i>	
Toward Personalizing Quantum Computing Education: An Evolutionary LLM-Powered Approach	174
<i>Iizalaarab Elhaimour (Old Dominion University) and Nikos Chrisochoides (Old Dominion University)</i>	
Quantum Entrepreneurship Lab: Training a Future Workforce for the Quantum Industry	185
<i>Aaron Sander (Munich Center for Quantum Science and Technology (MCQST); Technical University of Munich, Germany), Rosaria Cercola (Technical University of Munich, Germany; TUM Venture Labs Quantum / Semicon, Germany), Andrea Capogrosso (Technical University of Munich, Germany), Stefan Filipp (Munich Center for Quantum Science and Technology (MCQST); Technical University of Munich, Germany; Walther-Meißner-Institut, Germany), Bernhard Jobst (Munich Center for Quantum Science and Technology (MCQST); Technical University of Munich, Germany), Christian Mendl (Munich Center for Quantum Science and Technology (MCQST); Technical University of Munich, Germany), Frank Pollmann (Munich Center for Quantum Science and Technology (MCQST); Technical University of Munich, Germany), Christopher Trummer (TUM Venture Labs Quantum / Semicon, Germany), Isabell Welp (Technical University of Munich, Germany), Max Werninghaus (Munich Center for Quantum Science and Technology (MCQST); Technical University of Munich, Germany; Walther-Meißner-Institut, Germany), Rbert Wille (Munich Center for Quantum Science and Technology (MCQST); Munich Quantum Software Company; Software Competence Center Hagenberg; Technical University of Munich, Germany), and Christian Wimmer (Technical University of Munich, Germany)</i>	
Applied Physics MS in Quantum and Nanotechnology Program at University of Oregon: Hands-on Training for the Future Quantum Engineers	194
<i>Nikolay Zhelev (University of Oregon), Benjamin Aleman (University of Oregon), David Allcock (University of Oregon), Brian Smith (University of Oregon), and Hailin Wang (University of Oregon)</i>	
Building a Professional Master's Program in Quantum Computing: Bridging Academic Training and Industry Needs	195
<i>Shahpoor Moradi (University of Calgary, Canada)</i>	

Bridging Worlds: Preparing Students for Hybrid Quantum-Classical Computing Through Industry-Academic Collaboration	196
<i>Monica VanDieren (NVIDIA, USA), Daniel Justice (Carnegie Mellon University, USA), and Ramin Ayanzadeh (University of Colorado Boulder, USA)</i>	
Insider's Guide to Advocating for K-12 Quantum Science	197
<i>Mark Newburn (Former Vice President of the Nevada State Board of Education, USA)</i>	
Hands-On Calibration of Transmon Qubits Using Real Quantum Hardware: A Collaborative Academic Lab with Tel Aviv University	198
<i>Gilad Sivan (Tel Aviv University, Israeli Quantum Computing Center) and Elisha Svetitsky (Quantum Machines)</i>	
Exploring QIS with the Virtual Quantum Optics Laboratory	199
<i>Brian La Cour (The University of Texas at Austin, United States)</i>	
Exploring Analogies in Quantum Education: A Collaborative Tutorial for Interdisciplinary Educators	200
<i>Anila Mjeda (Munster Technological University, Ireland) and Hazel Murray (Munster Technological University, Ireland)</i>	
Author Index	203