

## Publications in Quantum technology

### Quantum Hardware

#### [On-chip alumina photonic waveguide platform for diamond-spin-based quantum computing](#)

Ryota Kitagawa, Takuto Yamaguchi, Naoki Fushimi, Masaharu Hida, Tetsuya Miyatake, Toshiyuki Miyazawa, Kenichi Kawaguchi, Ryoichi Ishihara, and Shintaro Sato  
2025 International Conference on Solid State Devices and Materials (2025)

#### [High-fidelity remote entanglement between superconducting fixed-frequency qubits](#)

Mari Ohfuchi, and Shintaro Sato  
New Journal of Physics 26, 103043 (2024)

#### [Josephson traveling-wave parametric amplifier based on a low-intrinsic-loss lumped-element coplanar waveguide](#)

C.W. Sandbo Chang, Arjan F. Van Loo, Chih-Chiao Hung, Yu Zhou, Christian Gnaandt, Shuhei Tamate, and Yasunobu Nakamura  
Phys. Rev. Applied 24, 044081 (2025)

#### [Fabrication and Demonstration of Optical Waveguides and Beam Splitters Using Aluminum Oxide with Low Loss at Visible Wavelength](#)

Takuto Yamaguchi, Naoki Fushimi, Manabu Ohtomo, Tetsuya Miyatake, Shoichi Miyahara, Hirokazu Hosoi, Toshiyuki Miyazawa, Kenichi Kawaguchi, Ryoichi Ishihara, and Shintaro Sato  
2024 International Conference on Solid State Devices and Materials (2024)

#### [Material Parameter Extraction Method at Low Temperature With Simple Measurement and 3D Electromagnetic Analysis](#)

Taiga Fukumori, Norinao Kouma, Yoshiyasu Doi, and Shintaro Sato  
2024 International Conference on Solid State Devices and Materials (2024)

#### [Microwave-to-optical quantum transduction utilizing the topological Faraday effect of topological-insulator heterostructures](#)

Akihiko Sekine, Mari Ohfuchi, and Yoshiyasu Doi  
Physical Review Applied 22, 024071 (2024)

#### [Remote cross-resonance gate between superconducting fixed-frequency qubits](#)

Mari Ohfuchi, and Shintaro Sato  
Quantum Science and Technology 9, 035014 (2024)

## Publications in Quantum technology

### Emergent one-dimensional helical channel in higher-order topological insulators with step edges

Akihiko Sekine, Manabu Ohtomo, Kenichi Kawaguchi, and Mari Ohfuchi

Journal of Applied Physics 134 (16), 165707 (2023)

### Surface-activated direct bonding of diamond (100) and c-plane sapphire with high transparency for quantum applications

Tetsuya Miyatake, Kenichi Kawaguchi, Manabu Ohtomo, Toshiki Iwai, Tetsuro Ishiguro, Yoshiyasu Doi, Jeffrel Hermias, Salahuddin Nur, Ryoichi Ishihara, and Shintaro Sato

Japanese Journal of Applied Physics 62 (9), 096503 (2023)

### Quantum Spin Hall States in 2D Monolayer $WTe_2$ /MoTe<sub>2</sub> Lateral Heterojunctions for Topological Quantum Computation

Mari Ohfuchi, and Akihiko Sekine

ACS Applied Nano Materials 6 (3), 2020 (2023)

### Gate-Defined Josephson Weak-Links in Monolayer $WTe_2$

Michael D. Randle, Masayuki Hosoda, Russell S. Deacon, Manabu Ohtomo, Patrick Zellekens, Kenji Watanabe, Takashi Taniguchi, Shota Okazaki, Takao Sasagawa, Kenichi Kawaguchi, Shintaro Sato, and Koji Ishibashi

Advanced Materials 35 (35), 2301683 (2023)

### Uniformity improvement of Josephson-junction resistance by considering sidewall deposition during shadow evaporation for large-scale integration of qubits

Tsuyoshi Takahashi, Norinao Kouma, Yoshiyasu Doi, Shintaro Sato, Shuhei Tamate, and Yasunobu Nakamura

Japanese Journal of Applied Physics 62 (SC), SC1002 (2023)

### Josephson junctions of Weyl semimetal $WTe_2$ induced by spontaneous nucleation of PdTe superconductor

Manabu Ohtomo, Russell S. Deacon, Masayuki Hosoda, Naoki Fushimi, Hirokazu Hosoi, Michael D. Randle, Mari Ohfuchi, Kenichi Kawaguchi, Koji Ishibashi, and Shintaro Sato

Applied Physics Express 15 (7), 075003 (2022)

### Electronic properties of the steps in bilayer Td- $WTe_2$

Mari Ohfuchi, Akihiko Sekine, Manabu Ohtomo, and Kenichi Kawaguchi

Applied Physics Express 15 (6), 065004 (2022)

## Publications in Quantum technology

### Energetics and magnetism of topological graphene nanoribbons

Mari Ohfuchi, and Shintaro Sato

Journal of Applied Physics 129 (6), 064305 (2021)

## Quantum Software

### Even More Efficient Soft-Output Decoding with Extra-Cluster Growth and Early Stopping

Kaito Kishi, Riki Toshio, Jun Fujisaki, Hirotaka Oshima, Shintaro Sato, and Keisuke Fujii

arXiv:2602.03336 (2026)

### Universality of Many-body Projected Ensemble for Learning Quantum Data Distribution cost

Quoc Hoan Tran, Koki Chinzei, Yasuhiro Endo, and Hirotaka Oshima

arXiv:2601.18637 (2026)

### Evaluating pVSQA for Large-Sized Constrained Optimization on Quantum Simulator

Takeru Ota, Tatsuhiko Shirai, Mikio Morita, Koichi Kimura, Yutaka Takita, and Nozomu Togawa

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

volume 3, IEEE Xplore (2025)

### Mirror subspace diagonalization: a quantum Krylov algorithm with near-optimal sampling cost

Riki Toshio, Kaito Kishi, Jun Fujisaki, Hirotaka Oshima, Shintaro Sato, and Keisuke Fujii

arXiv:2510.25222 (2025)

### Decoder Switching: Breaking the Speed-Accuracy Tradeoff in Real-Time Quantum Error Correction

Riki Toshio, Kaito Kishi, Jun Fujisaki, Hirotaka Oshima, Shintaro Sato, and Keisuke Fujii

arXiv:2510.25222 (2025)

### Compilation of Trotter-Based Time Evolution for Partially Fault-Tolerant Quantum Computing Architecture

Yutaro Akahoshi, Riki Toshio, Jun Fujisaki, Hirotaka Oshima, Shintaro Sato, and Keisuke Fujii

PRX Quantum 6, 040319 (2025)

### Efficient magic state cultivation with lattice surgery

Yutaka Hirano, Riki Toshio, Tomohiro Itogawa, and Keisuke Fujii

arXiv:2510.24615 (2025)

## Publications in Quantum technology

### [Runtime reduction in lattice surgery utilizing time-like soft information](#)

Yutaro Akahoshi, Riki Toshio, Jun Fujisaki, Hirotaka Oshima, Shintaro Sato, and Keisuke Fujii  
arXiv:2510.21149 (2025)

### [Signed network models for portfolio optimization](#)

Bibhas Adhikari  
arXiv:2510.05377 (2025)

### [Quantum curriculum learning](#)

Quoc Hoan Tran, Yasuhiro Endo, and Hirotaka Oshima  
Phys. Rev. A 112, 032431 (2025)

### [Quantum Generative Adversarial Autoencoders: Learning latent representations for quantum data generation](#)

Naipunnya Raj, Rajiv Sangle, Avinash Singh, and Krishna Kumar Sabapathy  
arXiv:2509.16186 (2025)

### [Learning quantum many-body data locally: A provably scalable framework](#)

Koki Chinzei, Quoc Hoan Tran, Norifumi Matsumoto, Yasuhiro Endo, and Hirotaka Oshima  
arXiv:2509.13705 (2025)

### [Large-Sized VQE Performance Profiling in Quantum Chemistry Using a Multi-Node Quantum Simulator](#)

Keisuke Fukada, Tatsuhiko Shirai, Mikio Morita, Yoshinori Tomita, Koichi Kimura, and Nozomu Togawa  
2024 IEEE International Conference on Quantum Computing and Engineering (QCE)  
IEEE Xplore (2024)

### [Quantum computation for robot posture optimization](#)

Takuya Otani, Atsuo Takanishi, Nobuyuki Hara, Yutaka Takita, and Koichi Kimura  
Scientific Reports volume 15, Article number: 28508 (2025)

### [Meta-learning of Gibbs states for many-body Hamiltonians with applications to Quantum Boltzmann Machines](#)

Ruchira V Bhat, Rahul Bhowmick, Avinash Singh, and Krishna Kumar Sabapathy  
arXiv:2507.16373 (2025)

## Publications in Quantum technology

### Random Sampling of Permutations Using Quantum Circuits

Bibhas Adhikari

IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems Early Access (2025)

### Time-series forecasting for nonlinear high-dimensional system using hybrid method combining autoencoder and multi-parallelized quantum long short-term memory and gated recurrent unit

Makoto Takagi, Ryuji Kokubo, Misato Kurosawa, Tsubasa Ikami, Yasuhiro Egami, Hiroki Nagai, Takahiro Kashikawa, Koichi Kimura, Yutaka Takita, and Yu Matsuda

arXiv:2507.10876 (2025)

### Quasi-twisted codes: decoding and applications in code-based cryptography

Bhagyalekshmy S and Rutuja Kshirsagar

arXiv:2507.01118 (2025)

### Iterative Quantum Feature Maps

Nasa Matsumoto, Quoc Hoan Tran, Koki Chinzei, Yasuhiro Endo, and Hiroataka Oshima

arXiv: 2506.19461 (2025)

### Canonical Partition Function on a Quantum Computer through Trotter Interpolation

Taozhi Guo, Gumaro Rendon, and Rutuja Kshirsagar

arXiv:2506.09318 (2025)

### The Lie Algebra of XY-mixer Topologies and Warm Starting QAOA for Constrained Optimization

Steven Kordonowy, and Hannes Leipold

arXiv:2505.18396 (2025)

### Analysis of Parameterized Quantum Circuits: on The Connection Between Expressibility and Types of Quantum Gates

Yu Liu, Kazuya Kaneko, Kentaro Baba, Junpei Koyama, Koichi Kimura, and Naoyuki Takeda

IEEE Transactions on Quantum Engineering, 1-12 (2025)

### Simulation of Shor algorithm for discrete logarithm problems with comprehensive pairs of modulo $p$ and order $q$

Kaito Kishi, Junpei Yamaguchi, Tetsuya Izu, and Noboru Kunihiro

arXiv:2503.23939 (2025)

## Publications in Quantum technology

### Multidimensional quantum Fourier transform for nanosheet material evaluation by electron microscopy: a case of 2D pattern processing

Hiroshi Sampei, Tetsuya Mizuguchi, Koki Saegusa, Makoto Nakamura, Koichi Kimura, and Yasushi Sekine  
Physical Chemistry Chemical Physics, Open Access (2025)

### Molecular Quantum Transformer

Yuichi Kamata, Quoc Hoan Tran, Yasuhiro Endo, and Hirotaka Oshima  
arXiv:2503.21686 (2025)

Presented at the main track of the Fortieth AAAI Conference on Artificial Intelligence (AAAI-26)  
(Singapore, January 20-27, 2026)

### Enhancing variational quantum algorithms by balancing training on classical and quantum hardware

Rahul Bhowmick, Harsh Wadhwa, Avinash Singh, Tania Sidana, Quoc Hoan Tran, and Krishna Kumar Sabapathy  
arXiv:2503.16361 (2025)

### Quantum many-body simulation of finite-temperature systems with sampling a series expansion of a quantum imaginary-time evolution

Norifumi Matsumoto, Shoichiro Tsutsui, Yuya O. Nakagawa, Yuichiro Hidaka, Shota Kanasugi, Kazunori Maruyama, Hirotaka Oshima, and Shintaro Sato  
Physical Review Research 7, 013254 (2025)

### Implementation and verification of coherent error suppression using randomized compiling for Grover's algorithm on a trapped-ion device

Masatoshi Ishii, Hammam Qassim, Tomochika Kurita, Joseph Emerson, Kazunori Maruyama, Hirotaka Oshima, and Shintaro Sato  
arXiv:2503.05344 (2025)

### Contextual Quantum Neural Networks for Stock Price Prediction

Sharan Mourya, Hannes Leipold, and Bibhas Adhikari  
arXiv:2503.01884 (2025)

### Fast-forwardability of Jordan-Wigner-transformed Fermion models based on Cartan decomposition

Yuichiro Hidaka, Shoichiro Tsutsui, Shota Kanasugi, Norifumi Matsumoto, Kazunori Maruyama, and Hirotaka Oshima  
arXiv:2502.04620 (2025)

## Publications in Quantum technology

### General-Purpose Quantum Circuit Generator for Partially Fault-Tolerant Quantum Computing Architecture

Yutaro Akahoshi, Jun Fujisaki, Hirotaka Oshima, Shintaro Sato, and Keisuke Fujii

2024 IEEE International Conference on Quantum Computing and Engineering (QCE), Montreal, QC, Canada, pp. 420-421 (2024)

### Resource-efficient equivariant quantum convolutional neural networks

Koki Chinzei, Quoc Hoan Tran, Yasuhiro Endo, and Hirotaka Oshima

arXiv:2410.01252 (2024)

### Quantum many-body simulation of finite-temperature systems with sampling a series expansion of a quantum imaginary-time evolution

Norifumi Matsumoto, Shoichiro Tsutsui, Yuya O. Nakagawa, Yuichiro Hidaka, Shota Kanasugi, Kazunori Maruyama, Hirotaka Oshima, and Shintaro Sato

arXiv:2409.07070 (2024)

### Practical quantum advantage on partially fault-tolerant quantum computer

Riki Toshio, Yutaro Akahoshi, Jun Fujisaki, Hirotaka Oshima, Shintaro Sato, and Keisuke Fujii

Physical Review X 15, 021057 (2025)

### Subspace-Based Local Compilation of Variational Quantum Circuits for Large-Scale Quantum Many-Body Simulation

Shota Kanasugi, Yuichiro Hidaka, Yuya O. Nakagawa, Shoichiro Tsutsui, Norifumi Matsumoto, Kazunori Maruyama, Hirotaka Oshima, and Shintaro Sato

Phys. Rev. Research 7, 023298 (2025)

### Simulator Demonstration of Large Scale Variational Quantum Algorithm on HPC Cluster

Mikio Morita, Yoshinori Tomita, Junpei Koyama, and Koichi Kimura

IEEE Access 12, 85219 (2024)

### Trade-off between Gradient Measurement Efficiency and Expressivity in Deep Quantum Neural Networks

Koki Chinzei, Shinichiro Yamano, Quoc Hoan Tran, Yasuhiro Endo, and Hirotaka Oshima

npj Quantum Information 11, 79 (2025)

### Variational denoising for variational quantum eigensolver

Quoc Hoan Tran, Shinji Kikuchi, and Hirotaka Oshima

Physical Review Research 6, 023181 (2024)

## Publications in Quantum technology

### Splitting and Parallelizing of Quantum Convolutional Neural Networks for Learning Translationally Symmetric Data

Koki Chinzei, Quoc Hoan Tran, Kazunori Maruyama, Hirotaka Oshima, and Shintaro Sato

Physical Review Research 6, 023042 (2024)

### Partially Fault-Tolerant Quantum Computing Architecture with Error-Corrected Clifford Gates and Space-Time Efficient Analog Rotations

Yutaro Akahoshi, Kazunori Maruyama, Hirotaka Oshima, Shintaro Sato, and Keisuke Fujii

PRX Quantum 5, 010337 (2024)

### Quantum error correction with an Ising machine under circuit-level noise

Jun Fujisaki, Kazunori Maruyama, Hirotaka Oshima, Shintaro Sato, Tatsuya Sakashita, Yusaku Takeuchi, and Keisuke Fujii

Physical Review Research 5 (4), 043261 (2023)

### Synergetic quantum error mitigation by randomized compiling and zero-noise extrapolation for the variational quantum eigensolver

Tomochika Kurita, Hammam Qassim, Masatoshi Ishii, Hirotaka Oshima, Shintaro Sato, and Joseph Emerson

Quantum 7, 1184 (2023)

### Comparative study of decoding the surface code using simulated annealing under depolarizing noise

Yusaku Takeuchi, Yugo Takada, Tatsuya Sakashita, Jun Fujisaki, Hirotaka Oshima, Shintaro Sato, and Keisuke Fujii

arXiv:2311.07973 (2023)

### Parallelizing quantum simulation with decision diagrams

Shaowen Li, Yusuke Kimura, Hiroyuki Sato, Junwei Yu, and Masahiro Fujita

IEEE International Conference on Quantum Software (2023)

### Computation of Green's function by local variational quantum compilation

Shota Kanasugi, Shoichiro Tsutsui, Yuya O. Nakagawa, Kazunori Maruyama, Hirotaka Oshima, and Shintaro Sato

Physical Review Research 5 (3), 033070 (2023)

## Publications in Quantum technology

### [Design by Contract Framework for Quantum Software](#)

Masaomi Yamaguchi, and Nobukazu Yoshioka

4th International Workshop on Quantum Software Engineering (2023)

### [Estimation of Shor's Circuit for 2048-bit Integers based on Quantum Simulator](#)

Junpei Yamaguchi, Masafumi Yamazaki, Akihiro Tabuchi, Takumi Honda, Tetsuya Izu, and Noboru Kunihiro

Cryptology ePrint Archive, 092 (2023)

### [Pauli String Partitioning Algorithm with the Ising Model for Simultaneous Measurements](#)

Tomochika Kurita, Mikio Morita, Hirotaka Oshima, and Shintaro Sato

The Journal of Physical Chemistry A 127 (4), 1068 (2023)

### [A Practical and Scalable Decoder for Topological Quantum Error Correction with Digital Annealer](#)

Jun Fujisaki, Hirotaka Oshima, Shintaro Sato, and Keisuke Fujii

Physical Review Research 4 (4), 043086 (2022)

### [Quantum circuit learning to predict experimental chemical properties](#)

Kan Hatakeyama-Sato, Yasuhiko Igarashi, Takahiro Kashikawa, Koichi Kimura, and Kenichi Oyaizu

Digital Discovery 2 (1), 165 (2022)

## Quantum-Inspired Technology

### [Problem Definition and Optimization Method for Bipartite Graph Scheduling](#)

Hiroshi Ikeda, and Tatsuya Takanaga

IEEE Access 12, 83675 (2024)

### [Multi-Objective Optimization Technique Based on QUBO and an Ising Machine](#)

Hiroshi Ikeda, and Takashi Yamazaki

IEEE Access 12, 8957 (2024)

### [Clustering Method for Periodic Time-Series Images Using Quantum-Inspired Computing Technology](#)

Tomoki Inoue, Koyo Kubota, Tsubasa Ikami, Yasuhiro Egami, Hiroki Nagai, Takahiro Kashikawa, Koichi Kimura, and Yu Matsuda

Communications Engineering 3, 10 (2024)

## Publications in Quantum technology

### [Digital Annealing Engine for High-speed Solving of Constrained Binary Quadratic Problems on Multiple GPUs](#)

Kentaro Katayama, Noburu Yoneoka, Hirotaka Tamura, Koichi Kanda, Hiroshi Nakayama, and Yasuhiro Watanabe

2024 IEEE International Conference on Consumer Electronics (ICCE)

### [Quantum-inspired rate adaptation approach for DASH video streaming](#)

Bo Wei, Hang Song, Makoto Nakamura, Koichi Kimura, Nozomu Togawa, and Jiro Katto

IEEE Access 11, 118462 (2023)

### [Sampling via Rejection-Free Partial Neighbor Search](#)

Sigeng Chen, Jeffrey S. Rosenthal, Aki Dote, Hirotaka Tamura, and Ali Sheikholeslam

Communications in Statistics-Simulation and Computation

### [Optimization via Rejection-Free Partial Neighbor Search](#)

Sigeng Chen, Jeffrey S. Rosenthal, Aki Dote, Hirotaka Tamura, and Ali Sheikholeslami

Statistics and Computing 33, 131 (2023)

### [Energy Efficient Path and Trajectory Optimization of Manipulators with Task Deadline Constraints](#)

Takuya Otani, Makoto Nakamura, Koichi Kimura, and Atsuo Takanishi

IEEE Access 11, 107441 (2023)

### [Quadratic Unconstrained Binary optimization for the Automotive Paint Shop Problem](#)

Pieter Debevere, Masahiko Sugimura, and Matthieu Parizy

IEEE Access 11, 97769 (2023)

### [AutoQUBO v2: Towards Efficient and Effective QUBO Formulations for Ising Machines](#)

Justin Pauckert, Mayowa Ayodele, Marcos Diez García, Serban Georgescu, and Matthieu Parizy

The Genetic and Evolutionary Computation Conference(GECCO) '23 Companion: Proceedings of the Companion Conference on Genetic and Evolutionary Computation, 227 (2023)

### [Applying Ising Machines to Multi-objective QUBOs](#)

Mayowa Ayodele, Richard Allmendinger, Manuel López-Ibáñez, Arnaud Liefooghe, and Matthieu Parizy

The Genetic and Evolutionary Computation Conference(GECCO) '23 Companion: Proceedings of the Companion Conference on Genetic and Evolutionary Computation, 2126 (2023)

## Publications in Quantum technology

### Comparing Solution Combination Techniques in Scatter Search for Quadratic Unconstrained Binary Optimization

Justin Pauckert, Pieter Debevere, Matthieu Parizy, and Mayowa Ayodele

The Genetic and Evolutionary Computation Conference(GECCO) '23 Companion: Proceedings of the Companion Conference on Genetic and Evolutionary Computation, 2241 (2023)

### Multi-objective topology design optimization combined with robust optimization

Akito Maruo, Norihiko Itani, Ayano Hasome, Takashi Yamazaki, and Hajime Igarashi

Journal of Advanced Mechanical Design, Systems, and Manufacturing (JAMDSM) 17 (3), JAMDSM0038 (2023)

### Extracting higher conductivity design of solid polymer electrolytes by quantum-inspired annealing

Kan Hatakeyama-Sato, Yasuei Uchima, Takahiro Kashikawa, Koichi Kimura, and Kenichi Oyaizu

Royal Society of Chemistry(RSC) Advances 13 (21), 14651 (2023)

### Phylogenetic tree reconstruction via graph cut presented using a quantum-inspired computer

Wataru Onodera, Nobuyuki Hara, Shiho Aoki, Toru Asahi, and Naoya Sawamura

Data in Brief 47, 108970 (2023)

### Data-Driven Optimal Sensor Placement for High-Dimensional System Using Annealing Machine

Tomoki Inoue, Tsubasa Ikami, Yasuhiro Egami, Hiroki Nagai, Yasuo Naganuma, Koichi Kimura, and Yu Matsuda

Mechanical Systems and Signal Processing 188, 109957 (2023)

### Quantum annealing boosts prediction of multi-molecule adsorption on solid surface avoiding combinatorial explosion

Hiroshi Sampei, Koki Saegusa, Kenshin Chishima, Takuma Higo, Shu Tanaka, Yoshihiro Yayama, Makoto Nakamura, Koichi Kimura, and Yasushi Sekine

Journal of the American Chemical Society (JACS) Au 3 (4), 991 (2023)

### Efficient Correlation-based Discretization of Continuous Variables for Annealing Machines

Yuki Furue, Makiko Konoshima, Hirotaka Tamura, and Jun Ohkubo

Journal of the Physical Society of Japan 92 (4), 044802 (2023)

## Publications in Quantum technology

### Speedy and Cost-efficient Optical Network Modernization through Quantum-inspired Computing

Masahiko Sugimura, Mohammad Javad-Kalbasi, Hidetoshi Matsumura, Xi Wang, Paparao Palacharla, and Shahrokh Valaee

2023 Optical Fiber Communications Conference and Exhibition (OFC)

### Fast Hyperparameter Tuning for Ising Machines

Matthieu Parizy, Norihiro Kakuko, and Nozomu Togawa

2023 IEEE International Conference on Consumer Electronics (ICCE)

### A phylogenetic tree reconstruction method using graph cut presented by quantum-inspired computer

Wataru Onodera, Nobuyuki Hara, Shiho Aoki, Toru Asahi, and Naoya Sawamura

Molecular Phylogenetics and Evolution 178, 107636 (2023)

### Accelerated chemical space search using a quantum-inspired cluster expansion approach

Hitarth Choubisa, Jehad Abed, Douglas Mendoz, Hidetoshi Matsumura, Masahiko Sugimura, Zhenpeng Yao, Ziyun Wang, Brandon R. Sutherland, Alán Aspuru-Guzik, and Edward H. Sargent

Matter 6 (2), 605 (2023)

### On the Average Cost and Latency of Migration to the Next Generation of Networks

Mohammad Javad-Kalbasi, Mikinori Kobayashi, Hidetoshi Matsumura, Masahiko Sugimura, Xi Wang, Paparao Palacharla, and Shahrokh Valaee

GLOBECOM 2022 - 2022 IEEE Global Communications Conference

### QUBO Model Formulation for Flow-shop Scheduling Problems with Changeover based on Timed Colored Petri Nets

Takuya Shinjo, Morikazu Nakamura, and Norihiko Itani

2022 Tenth International Symposium on Computing and Networking Workshops (CANDARW)

### Formulation of mindfulness states as a network optimization problem and an attempt to identify key brain pathways using Digital Annealer

Haruka Nakamura, Yoshimasa Tawatsuji, Tatsunori Matsui, Makoto Nakamura, Koichi Kimura, and Hisanori Fujisawa

Institute of Electronics, Information and Communication Engineers Transactions (IEICE TRANS.) E105.D (11), 1969 (2022)

## Publications in Quantum technology

### Replicated Simulated Annealing with a Global-Best Reference for Efficient Hardware Implementation

Makiko Konoshima, Hirotaka Tamura, and Yoshiyuki Kabashima

Journal of the Physical Society of Japan 91 (11), 113001 (2022)

### Accelerate Optical Network Modernization through Quantum-inspired Digital Annealing

Masahiko Sugimura, Mikinori Kobayashi, Hidetoshi Matsumura, Xi Wang, and Paparao Palacharla

2022 European Conference on Optical Communication (ECOC)

### Cardinality constrained portfolio optimization on an ising machine

Matthieu Parizy, Przemyslaw Sadowski, and Nozomu Togawa

2022 IEEE 35th International System-on-Chip Conference (SOCC)

### Automated design of Li<sup>+</sup>-conducting polymer by quantum-inspired annealing

Kan Hatakeyama-Sato, Hiroki Adachi, Momoka Umeki, Takahiro Kashikawa, Koichi Kimura, and Kenichi Oyaizu

Macromolecular rapid communications 43 (20), (2022)

### Multi-objective QUBO Solver: Bi-objective Quadratic Assignment Problem

Mayowa Ayodele, Richard Allmendinger, Manuel López-Ibáñez, and Matthieu Parizy

The Genetic and Evolutionary Computation Conference (GECCO) '22: Proceedings of the Genetic and Evolutionary Computation Conference

### Exact and Sequential Penalty Weights in Quadratic Unconstrained Binary Optimisation with a Digital Annealer

Marcos Diez García, Mayowa Ayodele, and Alberto Moraglio

The Genetic and Evolutionary Computation Conference (GECCO) '22: Proceedings of the Genetic and Evolutionary Computation

### Improved efficiency of warehouse picking by co-optimization of order batching and storage location assignment

Kazunori Maruyama, and Takashi Yamazaki

Journal of Advanced Mechanical Design, Systems, and Manufacturing (JAMDSM) 16 (5), JAMDSM0052 (2022)

## Publications in Quantum technology

### Benchmarking Various Types of Ising Machines

Keisuke Fukada, Matthieu Parizy, Yoshinori Tomita, and Nozomu Togawa

ICTP Conference on Adiabatic Quantum Computation / Quantum Annealing (hosting AQC2022)

### MAQO: A Scalable Many-Core Annealer for Quadratic Optimization

Mohammad Bagherbeik, Wentao Xu, Seyed Farzad Mousavi, Kouichi Kanda, Hirotaka Tamura, and Ali Sheikholeslami

2022 IEEE Symposium on VLSI Technology and Circuits (VLSI Technology and Circuits)

### 第三世代デジタルアニーラ —ハイブリッドソルバ技術とその性能—

宮澤 俊之, 小山 純平, Matthieu Parizy

Operations Research Society of Japan 67 (6), 312 (2022)

※Japanese

### デジタルアニーラのアーキテクチャと将来展望

宮澤 俊之, 小山 純平, Matthieu Parizy

Operations Research Society of Japan 67 (6), 320 (2022)

※Japanese

### Study on sequence problem optimization using variation-robust multi-objective optimization genetic algorithm

Takashi Yamazaki, Akito Maruo, Ayano Hasome, Jun Taniguchi, and Hajime Igarashi

Journal of Advanced Mechanical Design, Systems, and Manufacturing (JAMDSM) 16 (5), JAMDSM0049 (2022)

### Analysis and Acceleration of Combinatorial Optimization Problems Including Inequality Constraints on Ising Machines

Matthieu Parizy, and Nozomu Togawa

Adiabatic Quantum Computing Conference 2021 (AQC 2021)

### Integer Boltzmann Machines for Future Generation Digital Annealing Units

Mohammad Bagherbeik, Kouichi Kanda, Hirotaka Tamura, and Ali Sheikholeslami

Adiabatic Quantum Computing Conference 2021 (AQC 2021)

### Rejection-free MCMC for QUBO Optimization and Boltzmann Sampling

Aki Dote, Jeffrey S. Rosenthal, Keivan Dabiri, Hirotaka Tamura, Sigeng Chen, and Ali Sheikholeslam

Adiabatic Quantum Computing Conference 2021 (AQC 2021)

## Publications in Quantum technology

### Extended Ising Machine for Future-Generation DAUs

Hiroataka Tamura

Adiabatic Quantum Computing Conference 2021 (AQC 2021)

### Hybridization of quantum and thermal effect in Ising machines

Kotaro Takahashi, Aki Dote, Hiroataka Tamura, and Shu Tanaka

Adiabatic Quantum Computing Conference 2021 (AQC 2021)

### Solving slot placement problems using an Ising machine with the initial process and its evaluation

Sho Kanamaru, Kazushi Kawamura, Shu Tanaka, Yoshinori Tomita, and Nozomu Togawa

IEICE TRANSACTIONS on Information and Systems E104-D (2), 226 (2021)

### Digital Annealer for High-Speed Solving of Combinatorial Optimization Problems and Its Applications

Satoshi Matsubara, Motomu Takatsu, Toshiyuki Miyazawa, Takayuki Shibasaki, Yasuhiro Watanabe, Kazuya Takemoto, and Hiroataka Tamura

2020 25th Asia and South Pacific Design Automation Conference (ASP-DAC)