# ImPACT "Advanced Information Society Infrastructure Linking Quantum Artificial Brains in Quantum Network"
# Quantum Information Technology Workshop (Annual Review Meeting 2018)
# March 27 - 29, 2018 / JST Tokyo Headquarters (K's Gobancho), 1F Hall

## March 27 (tue) - Quantum Artificial Brain

| Time | | Speaker | Title |
|------|------|---------|-------|
| 9:30 - 10:30 | (60) | Yoshihisa Yamamoto (ImPACT PM) | Physics of quantum-to-classical crossover and quantum neural network |
| 10:30 - 11:10 | (40) | Hiroki Takesue (NTT Basic Research Laboratories) | Progress of coherent Ising machine experiments |
| 11:10 - 11:30 | | break | |
| 11:30 - 12:00 | (30) | Peter McMahon/Martin Fejer (Stanford University) | Coherent Ising machines at Stanford: an overview and progress report |
| 12:00 - 12:30 | (30) | Kyo Inoue (Osaka University) | Quantum measurement feedback circuit |
| 12:30 - 14:00 | | lunch break | |
| 14:00 - 14:30 | (30) | Kazuyuki Aihara (The University of Tokyo) | CIMs and neural networks |
| 14:30 - 15:00 | (30) | Ken-ichi Kawarabayashi (National Institute of Informatics) | Theoretical and practical graph algorithms |
| 15:00 - 15:20 | | break | |
| 15:20 - 15:50 | (30) | Hidetoshi Nishimori (Tokyo Institute of Technology) | Performance enhancement of quantum annealing without using non-stoquastic Hamiltonians |
| 15:50 - 16:20 | (30) | Masayuki Ohzeki (Tohoku University) | Theoretical approach for understanding physics in coherent Ising machine |
| 16:20 - 16:40 | | break | |
| 16:40 - 17:10 | (30) | Toru Aonishi (Tokyo Institute of Technology) | Statistical mechanics of coherent Ising machine 〜The analysis of frustrated systems〜 |
| 17:10 - 17:40 | (30) | Tetsuo Ogawa (Osaka University) | Modelling and numerical analysis of coherent Ising machine |
| 18:00 - 20:00 | | Networking Reception | |

## March 28 (wed) - Quantum Simulation

| Time | | Speaker | Title |
|------|------|---------|-------|
| 9:30 - 10:00 | (30) | Seigo Tarucha (Riken) | Progress in quantum simulation with quantum dots |
| 10:00 - 10:30 | (30) | Hideo Aoki (The University of Tokyo) | New algorithms for high-temperature superconductivity --- SU(2) slave-boson and DΓA formalisms |
| 10:30 - 11:00 | (30) | Yoshiro Takahashi (Kyoto University) | Cold atom quantum simulation |
| 11:00 - 11:20 | | break | |
| 11:20 - 11:50 | (30) | Takeshi Fukuhara (Riken) | Quantum simulation of spin dynamics with optical lattice systems |
| 11:50 - 12:20 | (30) | Yasunobu Nakamura (Riken) | Quantum simulation using superconducting circuits |
| 12:20 - 13:30 | | lunch break | |
| 13:30 - 14:30 | (60) | Special Lecture: Masahito Ueda (The University of Tokyo) | Quantum dynamics under continuous observation |
| 14:30 - 15:00 | (30) | Franco Nori (Riken) | Qutip study example: Ground-state physics of light-matter systems in the ultra-strong coupling regime |
| 15:00 - 15:20 | | break | |
| 15:20 - 15:50 | (30) | Naoto Nagaosa (Riken) | Quantum simulation of strongly correlated systems |
| 15:50 - 16:20 | (30) | Sven Höfling (The University of Würzburg) | Exciton-Polaritons-Lattices: Towards a scalable simulation platform |
| 16:20 - 16:50 | (30) | Jaw Shen Tsai (Riken) | Boson sampling based quantum simulation with superconducting circuits |
| 17:00 - 19:00 | | Poster Session: Quantum Simulation and Quantum Artificial Brain | |

## March 29 (thu) - Quantum Secure Network

| Time | | Speaker | Title |
|------|------|---------|-------|
| 9:30 - 10:00 | (30) | Masahide Sasaki (NICT) | Quantum secure network : current status and field experiment |
| 10:00 - 10:30 | (30) | Soichi Tsumura (NEC Corporation) | (tentative) R&D on quantum key distribution platform |
| 10:30 - 11:00 | (30) | Akira Suzuki/Hideyuki Inoue (Toshiba Infrastructure Systems & Solutions Corp.) | The development of a QKD system for the quantum secure network |
| 11:00 - 11:20 | | break | |
| 11:20 - 11:50 | (30) | Toyohiro Tsurumaru/Mitsuru Matsui (Mitsubishi Electric Corporation) | R&D toward integration of quantum and modern cryptographies |
| 11:50 - 12:20 | (30) | Takuya Hirano (Gakushuin University) | Quantum key distribution using quadrature amplitude modulation technology |
| 12:20 - 13:30 | | lunch break | |
| 13:30 - 14:30 | (60) | Special Lecture: T. Iwata, R. Matsumoto (Nagoya University) | Recent topics on quantum algorithms and symmetric key cryptography |
| 14:30 - 15:00 | (30) | Masato Koashi (The University of Tokyo) | Security of QKD under the presence of interpulse correlations |
| 15:00 - 15:20 | | break | |
| 15:20 - 15:50 | (30) | Akihisa Tomita (Hokkaido University) | Characterization and security certification on the light source in QKD apparatus |
| 15:50 - 16:20 | (30) | Kenta Kasai (Tokyo Institute of Technology ) | Performance analysis of spatially coupled codes for channels with memory |
| 16:20 - 16:50 | (30) | Kiyoshi Tamaki (Toyama University) | Implementation security of QKD |
| 17:00 - 19:00 | | Poster Session: Quantum Secure Network and Quantum Artificial Brain | |