

November 19, Tuesday

ISNTT2019 Symposium

14:00 - 14:20 Opening Remarks

Session 1 : Opening Keynote

14:20 - 15:20

Tu-01 : **Nanoscale Transport and our New International System of Units**

(Keynote) K. von Klitzing

Max Planck Institute

15:20 - 15:40 ISNTT2019 Symposium Photo

15:40 - 16:10 Coffee Break

Session 2 : Novel Superconducting Systems

16:10 - 16:40

Tu-03 : **Nonlinear Optics in the Ultra-strong Coupling Regime of Cavity Quantum Electrostatics**

(Invited) F. Nori

RIKEN / University of Michigan

16:40 - 17:00

Tu-04 : **π -phase-shift Flux Qubit with a Ferromagnetic Josephson Junction**

T. Yamashita, K. Zuo, Y. Urade, Q. Wei, H. Terai, A. Fujimaki, Y. Nakamura

Nagoya University / JST PRESTO

17:00 - 17:20

Tu-05 : **NbN-based Superconducting Qubit on Si Substrate**

S. Kim, T. Fuse, F. Yoshihara, W. Qiu, T. Yamashita, Z. Ao, K. Semba, H. Terai

National Institute of Information and Communications Technology

17:20 - 17:40 Coffee Break

17:40 - 19:30

Poster Session I

November 20, Wednesday

Session 3 : Quantum Hall and Quantum Anomalous Hall Systems

9:00 - 9:30

We-01 : **Aharonov-Bohm Interference of Fractional Quantum Hall Edge Modes**
(Invited) J. Nakamura
 Purdue University

9:30 - 9:50

We-02 : **Charge Equilibration Between Counter-propagating Edge Channels at a Fractional-integer Quantum Hall Junction**
M. Hashisaka, T. Akiho, S. Sasaki, K. Muraki
NTT Basic Research Laboratories / JST PRESTO

9:50 - 10:10

We-03 : **Unusual Filling Factor Dependence of Stripe Phase Anisotropy**
M. A. Zudov, X. Fu, Q. Shi, G. C. Gardner, J. D. Watson, M. J. Manfra, K. W. Baldwin, L. N. Pfeiffer, K. W. West
University of Minnesota

10:10 - 10:30

We-04 : **Metal-insulator Transition in Magnetic Topological Insulator Driven by Magnetization Angle Rotation**
M. Kawamura, M. Mogi, R. Yoshimi, A. Tsukazaki, Y. Kozuka, K. S. Takahashi, M. Kawasaki, Y. Tokura
RIKEN

10:30 - 11:00

Coffee Break

Session 4 : Semiconductor Quantum Dots and Qubits

11:00 - 11:30

We-05 : **Quantum Horizon for Silicon Nanoelectronics**
(Invited) S. De Franceschi
 CEA-INAC

11:30 - 12:00

We-06 : **Solitary Electrons in Semiconductor Circuits**
(Invited) V. Kashcheyevs
 University of Latvia

12:00 - 12:20

We-07 : **Effective Time-resolved Detection of Picosecond Coherent Dynamics in a Si Dynamic Quantum Dot**

G. Yamahata, S. Ryu, N. Johnson, H.-S. Sim, A. Fujiwara, M. Kataoka
NTT Basic Research Laboratories

12:20 - 12:40

We-08 : **Silicon Quantum Processor Unit Cell Operation Above One Kelvin**

R. C. C. Leon, C. H. Yang, J. C. C. Hwang, J. C. Lemyre, T. Tanttu, W. Huang, K. W. Chan, K. Y. Tan, F. E. Hudson, K. M. Itoh, A. Morello, A. Laucht, M. Pioro-Ladrière, A. Saraiva, A. S. Dzurak
UNSW Sydney

12:40 - 13:00

We-09 : **Electrical Read-out of Magnetization Reversal Using Kondo Correlation in Hybrid Mesoscopic Quantum Dots**

S. Datta, I. Weymann, L. Marty, W. Wernsdorfer
*Indian Association for the Cultivation of Science /
Institut Néel, CNRS & Université Joseph Fourier*

13:00 - 14:00

Lunch Time

Session 5 : New Insights into Transport Phenomena

14:00 - 14:30

We-10 : **Imaging of Work and Dissipation in the Quantum Hall State in Graphene**

(Invited) E. Zeldov
Weizmann Institute of Science

14:30 - 15:00

We-11 : **Imaging Interacting Electrons – From Wigner Crystals to Electron Hydrodynamics**

(Invited) S. Ilani
Weizmann Institute of Science

15:00 - 15:30

We-12 : **Imaging Hot-electron Distribution in Nanoscale Electronic Devices**

(Invited) Q. Weng, Z. An, W. Lu, S. Komiyama
RIKEN

15:30 - 16:10

Coffee Break

Session 6 : Thermodynamics and Fluctuations in Nano Systems

16:10 - 16:40

We-14 : **Photothermoelectric Energy Conversion in Nanowires**

(Invited)

H. Linke

Lund University

16:40 - 17:00

We-15 : **Observation of Cooling in a Dynamic Quantum Dot**

N. Johnson, G. Yamahata, A. Fujiwara

NTT Basic Research Laboratories

17:00 - 17:20

We-16 : **A Single Spin-1/2 as a “Heat Engine” Exhibiting Quantum Interferometry**

S. N. Shevchenko, K. Ono, T. Mori, S. Moriyama, F. Nori

B. Verkin Institute for Low Temperature Physics and Engineering /

V. N. Karazin Kharkov National University / RIKEN

17:20 - 17:40

We-17 : **A Random Walk Benchmark for Deterministic Electron Transfer**

N. Ubbelohde, D. Reifert, M. Kokainis, A. Ambainis, V. Kashcheyevs

Physikalisch-Technische Bundesanstalt

17:40 - 19:30

Poster Session II

November 21, Thursday

Session 7 : Hybrid Quantum Systems

9:00 - 9:30

Th-01 : **Electron Spin Resonance (ESR) with Superconducting Circuits**

(Invited)

D. Vion

CEA Saclay

9:30 - 9:50

Th-02 : **Electron Spin Resonance Spectroscopy with 20 Spins/ $\sqrt{\text{Hz}}$ Sensitivity using a Superconducting Flux Qubit**

R. P. Budoyo, K. Kakuyanagi, H. Toida, Y. Matsuzaki, S. Saito

NTT Basic Research Laboratories

9:50 - 10:10

Th-03 : **Quantum Sensing of Magnons with a Superconducting Qubit**

S. P. Wolski, D. Lachance-Quirion, Y. Tabuchi, S. Kono, K. Usami, Y. Nakamura

The University of Tokyo

10:10 - 10:30

Th-04 : **Statistics of Coherent States in Wave Mixing on a Two-level System**

A. Yu. Dmitriev, R. Shaikhaidarov, T. Hönigl-Decrinis, S. E. de Graaf, V. N. Antonov,

O. V. Astafiev

Skolkovo Institute of Science and Technology /

University of London

10:30 - 11:00

Coffee Break

Session 8 : Opto / Nano-mechanics

11:00 - 11:30

Th-05 : **What limits the Coherence of (Quantum) Nanomechanical Devices ?**

(Invited)

I. Favero

CNRS

11:30 - 12:00

Th-06 : **Ultralow Dissipation Phononics and Phononics Sensing**

(Invited)

E. Romero

The University of Queensland

12:00 - 12:20

Th-07 : **There is a Crack in Everything, That's How the Light Gets in: Nano-optomechanical Systems for Sensing**
W. K. Hiebert, S. K. Roy, J. N. Westwood-Bachman, M. P. Maksymowych, T. Firdous, M. Belov, N. Elhamel, A. Venkatasubramanian, V. T. K. Sauer
National Research Council of Canada / University of Alberta

12:20 - 12:40

Th-08 : **Nonlinear Measurement - feedback Thermomechanical Squeezing with Schwinger Angular Momentum**
M. Asano, T. Aihara, T. Tsuchizawa, H. Yamaguchi
NTT Basic Research Laboratories

12:40 - 13:00

Th-09 : **Photon and Phonon Blockade in Coupled Optomechanical Systems**
B. Sarma
OIST Graduate University

13:00 - 14:00

Lunch Time

Session 9 : Quantum and Nonlinear Optics

14:00 - 14:30

Th-10 : **Microwave to Optical Conversion Using Rare Earth Ions in the Solid State**
(Invited) J. J. Longdell
University of Otago

14:30 - 14:50

Th-11 : **Optical Coherent Transient of $^{167}\text{Er}^{3+}$ in Y_2SiO_5 at Telecom-band Wavelength**
M. Hiraishi, M. IJspeert, T. Tawara, S. Adachi, R. Kaji, H. Omi, H. Gotoh
NTT Basic Research Laboratories / Tokyo University of Science

14:50 - 15:10

Th-12 : **Efficient Femtojoule-level Nonlinear Optics in Nanophotonic PPLN Ridge Waveguides**
M. Jankowski, C. Langrock, B. Desiatov, A. Marandi, C. Wang, M. Zhang, C. R. Phillips, M. Loncar, M. M. Fejer
Stanford University / NTT PHI Labs

15:10 - 15:40

Th-13 : **Non-classical Light from Quantum Dots in Photonic Nanowires**

(Invited) D. Dalacu

National Research Council of Canada

15:40 - 16:10

Coffee Break

Session 10 : Fascinating Physics / Optics from Functional Materials

16:10 - 16:40

Th-14 : **III-V Semiconductor Nanostructures for Optoelectronic Device and Energy Applications**

(Invited) H. Hoe Tan

The Australian National University

16:40 - 17:00

Th-15 : **Spin-orbit Coupling Effect in ZnO Heterostructures**

D. Maryenko, M. Kawamura, M. Kriener, M. S. Bahramy, Y. Kozuka, M. Kawasaki

RIKEN

17:00 - 17:20

Th-16 : **Efficient Direct Bandgap Emission from Hexagonal SiGe**

E. M. T. Fadaly, A. Dijkstra, M. Van Tilburg, C. Mao, M. Verheijen, J. Haverkort, E. P.

A. M. Bakkers

TU Eindhoven

17:20 - 18:00

Bus Transfer

18:00 - 20:00

Banquet

November 22, Friday

Session 11 : Topological Systems and Spin-orbit Interactions

9:00 - 9:30

Fr-01 : **Imaging 2D Topological Systems by Microwave Impedance Microscopy**
(Invited) Y. Cui
 University of California, Riverside

9:30 - 9:50

Fr-02 : **Impact of Spin-orbit Interaction on the Topological Phase Transition in InAs/GaSb Composite Quantum Wells**
H. Irie, T. Akiho, K. Onomitsu, K. Muraki
NTT Basic Research Laboratories

9:50 - 10:10

Fr-03 : **Implementation of an Inhomogeneous Large Spin-orbit Interaction at the Nanoscale**
M. R. Delbecq, L. C. Contamin, T. Cubaynes, V. Vinel, M. M. Desjardins, M. C. Dartialh, S. Rohart, A. Thiaville, Z. Legthas, A. Cottet, T. Kontos
ENS / CNRS / Sorbonne Université / Université Paris-Diderot

10:10 - 10:30

Fr-04 : **Exploring Quantum Hybrid System with a Hole Nanowire**
R. Wang, R. S. Deacon, J. Sun, J. Yao, C. M. Lieber, K. Ishibashi
Tokyo University of Science

10:30 - 11:00	Coffee Break
---------------	--------------

Session 12 : Novel Functions from Low-dimensional Materials

11:00 - 11:30

Fr-05 : **Physics and Technology of Graphene-based 2D Heterostructures for Current-injection Terahertz Lasers and Amplifiers**
(Invited) T. Otsuji
 Tohoku University

11:30 - 12:00

Fr-06 : **Terahertz Spectroscopy of Electron-vibron Coupling in Single Molecules by Using Nanogap Electrodes**
(Invited) K. Hirakawa
 The University of Tokyo

12:00 - 12:20

Fr-07 : **Manipulating Continuous Transition Between Strong Coupling and Weak Coupling in TMD Monolayer Coupled with Plasmonic Nanocavities**
S. Hou, L. Y. M. Tobing, X. Wang, Z. Xie, J. Yu, J. Zhou, D. Zhang, C. Dang, P. Coquet, B. K. Tay, M. D. Birowosuto, E. H. T. Teo, H. Wang
Nanyang Technological University

12:20 - 12:40

Fr-08 : **Creation of Spin Singlet and Triplet Excitons in a Single Molecule**
K. Kimura, K. Miwa, H. Imada, M. Imai-Imada, Y. Kim
RIKEN / JST PRESTO

12:40 - 13:00

Fr-09 : **Plasmonic Response in Graphene with Transparent Patterned Gate**
N.-H. Tu, K. Yoshioka, S. Sasaki, M. Takamura, K. Muraki, N. Kumada
NTT Basic Research Laboratories

13:00 - 14:00

Lunch Time

Session 13 : Superconducting Quantum Circuits

14:00 - 14:30

Fr-10 : **Few-photon Parametric Oscillators and Dynamics**
(Invited) A. Safavi-Naeini
Stanford University

14:30 - 15:00

Fr-11 : **Error-corrected Operations on an Encoded Qubit**
(Invited) S. Rosenblum
Weizmann Institute of Science

15:30 - 16:00

Fr-12 : **Superconducting Circuits for Quantum Technologies**
(Keynote) Y. Nakamura
The University of Tokyo / RIKEN

16:00 - 16:10

Closing