

Oral Session Oct. 27 (Mon.), 9:00–17:30

09:00-09:15

Opening

Quantum Nanodevices

09:15-09:45 (Invite)

Mo-A01 III-V Nanostructures for Optoelectronic and Quantum Devices

Hoe Tan (The Australian National University (Australia))

09:45-10:15 (Invite)

Mo-A02 Hybrid Quantum Devices with Superconducting Microwave Circuits

Jinwoong Cha (Korea Research Institute of Standards and Science (Korea))

10:15-10:30

Mo-A03 Strain Effects on the Electronic Structure of ZnSe/ZnS Core/Shell Quantum Dots: Tight-Binding Analysis

○Jin Hyong Lim, Nobuya Mori (The University of Osaka (Japan))

10:30-11:00

Coffee Break

Nanostructure Transport

11:00-11:30 (Invite)

Mo-A04 Bidirectional Nuclear Polarization through Electric Dipole Spin Resonance Enabled by Spin-Orbit Interaction in a Single-Heavy-Hole Planar Double Quantum Dot Device

○David Guy Austing¹, Sergei Studenikin¹, Jordan Ducatel¹, Olivia Ellis², Marek Korkusinski¹, Alex Bogan¹, Piotr Zawadzki¹, Andy Sachrajda¹ (1. National Research Council of Canada (Canada), 2. University of Ottawa (Canada))

11:30-11:45

Mo-A05 Room-temperature Tunneling Transport Properties Dependent on a Single Spin of Deep Dopant in Silicon

-Towards Room-temperature Qubit Implemented in Transistor-
Keiji Ono (RIKEN (Japan))

11:45-12:00

Mo-A06 Disentangling the Physics of Individual Junctions in Multi-Terminal Devices

○Josua Thieme^{1,2}, Abdur Rehman Jalil^{3,4}, Benedikt Frohn^{1,2}, Joscha Domnick¹, Nisha Shahi¹, Anthony Achtermann^{1,2}, Peter Schüffegen¹, Detlev Grützmacher^{1,2} (1. Peter Grünberg Inst. (PGI-9), Forschungszentrum Jülich (Germany), 2. JARA-FIT, Jülich-Aachen Research Alliance (Germany), 3. Physical Inst. (EP³), Univ. of Würzburg (Germany), 4. Institute for Topological Insulators (Germany))

12:00-12:15

Mo-A07 Force-Induced Acceleration in Two-Dimensional Electron Gases with Off-Diagonal Effective Mass Tensor Components

○Nobuya Mori, Jo Okada, Hajime Tanaka (Osaka University (Japan))

12:15-12:30

Conference Photo

12:30-13:30

Lunch

Optical and Terahertz Systems

13:30-14:00 (Invite)

Mo-P01 Binary non-Hermitian systems and their realization in coupled-waveguide structures

○Jae Woong Yoon (Hanyang University (Korea))

14:00-14:15

Mo-P02 Semiclassical Theory of Strong Coupling between Emitters and Optical Resonators

○Benjamin Rousseaux^{1,2} (1. FEMTO-ST Inst. (France), 2. Lab. Photonique, Numérique et Nanosciences (France))

14:15-14:30

Mo-P03 Mid/near-infrared Triply Resonant Cavity toward Parametric Modulation of Molecular Vibrational Polaritons

○Ryoko Sakuma¹, Motoki Asano¹, Koji Sakai^{1,2}, Hiroshi Yamaguchi¹, Hajime Okamoto¹ (1. NTT Basic Res. Labs. (Japan), 2. NTT Bio-Medical Info. Res. Cent. (Japan))

14:30-14:45

Mo-P04 Electrical Detection of Ultrastrong Light-Matter Coupling with a Split Ring Resonator Dimer

○Jing Huang¹, Jinkwan Kwoen², Yasuhiko Arakawa², Kazuhiko Hirakawa^{1,2}, Kazuyuki Kuroyama¹ (1. Inst. of Indus. Sci., Univ. of Tokyo (Japan), 2. Inst. for Nano Quantum Info. Electronics, Univ. of Tokyo (Japan))

14:45-15:00

Mo-P05 Landau–Zener–Stückelberg–Majorana transitions utilized for quantum sensing

○Shintaro Nomura¹, Shunta Onodera¹, Yoshikatsu Ohkubo¹, Yusuke Azuma¹, Hideyuki Watanabe², Satoshi Kashiwaya³ (1. Univ. of Tsukuba (Japan), 2. AIST (Japan), 3. Nagoya Univ. (Japan))

15:00-15:30

Coffee Break

Nanomaterials

15:30-16:00 (Invite)

Mo-P06 Engineering 2D Materials for Next-Generation Nanoelectronics

Yu-Lun Chueh (National Tsing Hua University (Taiwan))

16:00-16:30 (Invite)

Mo-P07 In-Materio Physical Reservoir Computing: AI Devices based on Random Network of Nanomaterials for Future Robot Application

Hirofumi Tanaka (Kyushu Inst. of Tech. (Japan))

16:30-16:45

Mo-P08 Hybrid Coupling between Surface Acoustic Phonon and 2D Dirac Electron System in Graphene for Ultra-Highly Sensitive Gas Detection

○Sankar Ganesh Ramaraj, Haolong Zhou, Hiroyasu Yamahara, Hitoshi Tabata (Univ. of Tokyo (Japan))

16:45-17:00

Mo-P09 Ortho-para Conversion of a H₂O Molecule Encapsulated in a Fullerene Induced by Single Electron Tunneling

○Shaoqing Du^{1,2}, Yue Tian², Kazuyuki Kuroyama², Katsushi Hashimoto⁴, Yoshifumi Hashikawa³, Yasujiro Murata³, Yoshiro Hirayama⁴, Kazuhiko Hirakawa² (1. SIMIT,CAS (China), 2. Univ. of Tokyo (Japan), 3. Kyoto Univ. (Japan), 4. Tohoku Univ. (Japan))

17:00-17:15

Mo-P10 Single-mode wide waveguides in air-cladded photonic graphene structures

○Chengkun Zhang, Natsuko Ishida, Satoshi Iwamoto (Univ. of Tokyo (Japan))

17:15-17:30

Mo-P11 Temporal Phonon Coherence in Two-dimensional Graphene/h-BN Superlattice

○Xiaoyu Huang^{1,2}, Sebastian Volz^{1,3}, Masahiro Nomura¹, Zhongwei Zhang⁴, Yangyu Guo⁵, Yuxiang Ni² (1. Univ. of Tokyo, IIS (Japan), 2. Southwest Jiaotong Univ. (China), 3. Univ. of Tokyo, LIMMS (Japan), 4. Tongji Univ. (China), 5. Harbin Institute of Tech. (China))

17:45-19:30

Poster Session

Oral Session Oct. 28 (Tue.), 9:00–17:15

Device Applications of Quantum Structures

09:00-09:30 (Invite)

- Tu-A01** Remote Epitaxy for Ultrahigh-Density Vertical-Stack Heterogeneous Integration of Micro-LED R/G/B Pixel Architectures (5,100 ppi)
Young Joon Hong (Sungkyunkwan Univ. (Korea))

09:30-10:00 (Invite)

- Tu-A02** Wide-range Density Control of Self-Assembled Semiconductor Quantum Dots for Quantum Applications
Kouichi Akahane (NICT (Japan))

10:00-10:15

- Tu-A03** Hybrid Quantum Devices of Magnon and Phonon Coupled by Electric-field via Dzyaloshinsky-Moriya Coupling
EMK Ikbāl Ahamed, Md Shamim Sarker, R.Sonetaka, R.Nako, H.Yamahara, ○Hitoshi Tabata (Univ. of Tokyo (Japan))

10:15-10:30

- Tu-A04** Strained Germanium Quantum Wells for Quantum Device Applications
○Tanbhir Hasan, Kentarou Sawano (Advanced Res. Lab., Tokyo City Univ. (Japan))

10:30-11:00

Coffee Break

Material Characterization

11:00-11:30 (Invite)

- Tu-A05** Mapping Electronic Phase Transition Domains and Spin-Polarized Bands at the Atomic Frontier with Photoelectron Momentum Microscopy
○Fumihiko Matsui^{1,2} (1. Institute for Molecular Science (Japan), 2. The Graduate University for Advanced Studies, SOKENDAI (Japan))

11:30-11:45

- Tu-A06** Local Electrostatic and Dissipative Properties of Superconducting Channels in LaAlO₃/SrTiO₃
○Dilek Yildiz^{1,2}, Dengyu Yang^{3,4}, Muqing Yu^{3,4}, Sungmin Kim^{1,2}, En-Min Shih^{1,5}, Steven Blankenship¹, Patrick Irvin^{3,4}, Nikolai Zhitenev¹, Jeremy Levy^{3,4}, Joseph A. Stroscio¹ (1. Physical Measurement Lab., National Inst. of Standards and Tech. (United States of America), 2. Joint Quantum Inst., Department of Physics, Univ. of Maryland (United States of America), 3. Department of Physics and Astronomy, Univ. of Pittsburgh (United States of America), 4. Department of Physics, Univ. of Illinois at Urbana-Champaign (United States of America), 5. Department of Physics, Princeton Univ. (United States of America))

America), 4. Pittsburgh Quantum Inst. (United States of America), 5. Department of Chemistry and Biochemistry, Univ. of Maryland (United States of America))

11:45-12:00

Tu-A07 In Situ Synchrotron X-ray Diffraction Analysis of III-Nitride Surfaces, Interfaces, and Nanostructures
Takuo Sasaki (National Inst. for Quantum Science and Technology (QST) (Japan))

12:00-12:15

Tu-A08 Three-Dimensional Atomic Structural Analysis for Dopants and Semiconductor interfaces
○Tomohiro Matsushita, Yusuke Hashimoto (Nara inst. of sci. and tech. (Japan))

12:15-12:30

Tu-A09 Operando X-Ray Topographic Observation of Lattice Defects in Ga₂O₃ Schottky Barrier Diodes Using Synchrotron Radiation X-Ray Source
○Yongzhao Yao^{1,2}, Daiki Katsube², Hirotaka Yamaguchi², Yoshihiro Sugawara², Yukari Ishikawa², Daiki Wakimoto³, Hironobu Miyamoto³, Kohei Sasaki³, Akito Kuramata³ (1. Mie University (Japan), 2. Japan Fine Ceramics Center (Japan), 3. Novel Crystal Technology, Inc. (Japan))

12:30-13:30

Lunch

Topological Insulators and Quantum Transport

13:30-14:00 (Invite)

Tu-P01 Superconductive Coupling and Josephson Diode Effect in Multi-Terminal Hybrid Structures based on Topological Insulators
Thomas Schäpers^{1,2} (1. Forschungszentrum Jülich (Germany), 2. Tohoku University (Japan))

14:00-14:15

Tu-P02 Anomalous Hall Effect in Magnetic Topological Insulator/Superconductor Heterostructures
Minoru Kawamura (RIKEN Center for Emergent Matter Science (Japan))

14:15-14:30

Tu-P03 Weak Anti-Localization Effect in In-Doped SnTe Thin Films
Ryota Uesugi¹, Ryo Ando², Masaomi Mizuno¹, ○Tomosuke Aono¹, Takahiro Chiba³, Takashi Komine¹ (1. Ibaraki Univ. (Japan), 2. Ibaraki College (Japan), 3. Yamagata Univ. (Japan))

14:30-14:45

Tu-P04 Probing Sz-Conserving Intrinsic Spin–Orbit Coupling in Graphene via Angle-Resolved RDES
Yuma Hiraga¹, Wataru Izumida¹, Songtian Li², Seiji Sakai², Yoshiro Hirayama^{2,3}, ○ Katsushi Hashimoto^{1,3} (1. Graduated school of Sci., Tohoku Univ. (Japan), 2. QST (Japan), 3. CSIS, Tohoku Univ. (Japan))

14:45-15:00

Tu-P05 Superconducting Diode Using Double Quantum Dot
Go Takeuchi¹, ○Mikio Eto (Keio University (Japan))

15:00-15:30

Coffee Break

Biological Systems

15:30-16:00 (Invite)

Tu-P06 Investigation of Cell Functions under Physical Microenvironment Using Electrochemical Scanning Probe Microscopy
○Fei Li, Yuxiang Zhao, Yulin Liu and Yan Zhou (Xi'an Jiaotong University (China))

16:00-16:30 (Invite)

Tu-P07 Development of Imaging Diagnosis and Treatment Technologies using Nano Quantum Sensors and Their Medical Applications
○Hiroshi Yukawa^{1,2,3,4} (1. National Institutes for Quantum Science and Technology (QST) (Japan), 2. Nagoya University (Japan), 3. Chiba University (Japan), 4. Tohoku University (Japan))

16:30-16:45

Tu-P08 Single-Nanoparticle Characterization Technology toward Exosome Medicine
Takanori Ichiki (The University of Tokyo (Japan))

16:45-17:00

Tu-P09 Doxorubicin-Induced Toxicity and Bisoprolol Protective Efficacy for Cardiomyocytes Monitored by Scanning Electrochemical Microscopy
○Jingjing Song, Fei Li (School of Life Sci. and Tech., Xian Jiaotong Univ. (China))

17:00-17:15

Tu-P10 Microfluidic Devices for Two and Three-Dimensional Microphysiological Systems (MPS)
Cheng Ma, Sachin Yadav, Kazuya Fujimoto, ○Ryuji Yokokawa (Kyoto Univ. (Japan))

18:00-20:00

Banquet

Oral Session Oct. 29 (Wed.), 9:00–14:45

Future Device Technologies

09:00-09:30 (Invite)

We-A01 The Government Role on Semiconductor and Emerging Tech (AI and Quantum): Pros and Cons

○J Andrew Yeh, Tsung Ming Chao, Shang Ping Ma (National Tsing Hua University (Taiwan))

09:30-10:00 (Invite)

We-A02 Reconfigurable Nonlinear Computing in Silicon

Wilfred G. van der Wiel^{1,2} (1. University of Twente (Netherlands), 2. University of Münster (Germany))

10:00-10:30 (Invite)

We-A03 Quantum Sensing with Spins in Diamond

Norikazu Mizuochi (Kyoto Univ. (Japan))

10:30-11:00

Coffee Break

Novel Device Concepts

11:00-11:30 (Invite)

We-A04 Diamond optomechanical crystal for superconducting-optical hybrid quantum computer

Hideo Kosaka (Yokohama National University (Japan))

11:30-12:00 (Invite)

We-A05 Design of Semiconducting Oxide Channels Leveraging Quantum Confinement for High-Performance Memory Devices

Jae Seok Hur, ○Jae Kyeong Jeong (Hanyang University (Korea))

12:00-12:15

We-A06 Phonon-Lasing-Like Oscillation via Internal Resonance in a Doubly-clamped MEMS Beam Resonator

○Ya Zhang¹, Hiroto Kato¹, Tianye Niu², Kazuhiko Hirakawa^{1,2} (1. Tokyo Univ. of Agriculture and Technology (Japan), 2. Univ. of Tokyo (Japan))

12:15-12:30

We-A07 Optically Induced Mechanical Damping in an Optomechanical Resonator

○Hideki Arahari, Motoki Asano, Hiroshi Yamaguchi, Hajime Okamoto (NTT Basic Research Labs. (Japan))

12:30-13:30

Lunch

Physics and Application of Color Centers and Quantum Dots

13:30-13:45

We-P01 A Near-Quantum-Limited Maser Amplifier using Spins in Diamond

Morihiro Ohta, Ching-Ping Lee, Ivan Kostylev, Hiroki Takahashi, ○Yuimaru Kubo
(Okinawa Inst. for Sci. and Tech. Graduate Univ. (Japan))

13:45-14:00

We-P02 Room-Temperature Electrical Detection of Single Spins in Silicon Carbide

○Tetsuri Nishikawa¹, Naoya Morioka^{1,2}, Hiroshi Abe³, Koichi Murata⁴, Kazuki Okajima¹, Takeshi Ohshima^{3,5}, Hidekazu Tsuchida⁴, Norikazu Mizuochi^{1,2,6} (1. ICR, Kyoto Univ. (Japan), 2. CSRN, Kyoto Univ. (Japan), 3. QST (Japan), 4. CRIEPI (Japan), 5. Tohoku Univ. (Japan), 6. QUP, KEK (Japan))

14:00-14:15

We-P03 Enhanced Light Extraction Efficiency from Color Centers in Diamond Using a SiN Bull's-eye Structure on the Surface

○Ziyi Chen, Sangmin Ji, Natthajuks Pholsen, Satoshi Iwamoto(Univ. Tokyo (Japan))

14:15-14:30

We-P04 Coherent Storage of Femtosecond Weak Signals in InAs Quantum Dots and Time Resolving Measurement via Frequency Up-conversion

○Yuta Kochi¹, Maximilian C Hornauer^{1,2}, Sunao Kurimura³, Kouichi Akahane⁴, Junko Ishi-Hayase^{1,2} (1. Keio Univ. (Japan), 2. Keio CSRN (Japan), 3. NIMS (Japan), 4. NICT (Japan))

14:30-14:45

Closing