

Monday November 30

Opening Remarks

8:45-9:00 K. Ishibashi, S. M. Goodnick

Special Plenary (Devoting Prof. Klaus von Klitzing)

- 9:00-9:40 **Physics and Applications of Quantum Hall Effect**
Klaus von Klitzing(invited), Patricia Haremski, and Jürgen Weis
Max-Planck-Institut für Festkörperforschung
- 9:40-10:10 **Hawaii Symposiums, 1989-2005, and Recent Topics on Quantum Dot Solar Cells**
Chihiro Hamaguchi(invited)
- 10:10-10:50 **Quantum Hall Effect Theory Reprise**
Allan MacDonald(invited)

Coffee

- 11:10-11:50 **Topological Transport Phenomena in Graphene and Related Systems**
Tsuneya Ando(invited)
Department of Physics, Tokyo Institute of Technology
- 11:50-12:20 **Kondo Effect in the Quantum Hall Regime: A New Probe for the Electronic Structure of the Edge?**
Rolf Haug(invited)
- 12:20-12:50 **THz Emission from Intersubband plasmon excitations**
Erich Gornik(invited)

Ad Hoc

Atomic Layer Materials & Graphene I

- 19:00-19:30 **ATLAS-TFET: Toward Green Transistors and Sensors**
Kaustav Banerjee(invited)
- 19:30-19:45 **Electronic Structure, Magneto-excitons and Valley Polarized Electron Gas in 2D Semiconductors MoS₂ and WS₂**
Isil Ozfidan¹, Marek Korkusinski², Pawel Potasz³, and Pawel Hawrylak¹
¹ Department of Physics, University of Ottawa
² Emerging and Disruptive Technologies Portfolio, National Research Council Canada
³ Department of Theoretical Physics, Faculty of Fundamental Problems of technology, Wroclaw University of Technology
- 19:45-20:00 **Scanning gate imaging of MoS₂ transistors**
Masahiro Matsunaga¹, Ayaka Higuchi¹, Guanchen He², Yuichi Ochiai, Jonathan P. Bird², and Nobuyuki Aoki^{1,3}
¹ Graduate School of Advanced Integration Science, Chiba University
² Department of Electrical Engineering, University at Buffalo
³ Japan Science and Technology Agency-PRESTO

- 20:00-20:15 **High room temperature optical polarization due to spin-valley coupling in monolayer WS₂**
B. T. Jonker¹, A. T. Hanbicki¹, G. Kioseoglou², M. Currie¹, C. S. Hellberg¹, K. M. McCreary¹, and A. L. Friedman¹
¹Naval Research Laboratory
²University of Crete
- 20:15-20:30 **Plasmon mediated energy relaxation in graphene**
D. K. Ferry
School of Electrical, Computer, and Energy Engineering, Arizona State University
- 20:30-20:45 **1/f noise in monolayer and bilayer graphene and its application to THz detection at room temperature**
Yuichi Ochiai¹, Nobuyuki Aoki¹, Katsuhiko Miyamoto¹, Takashige Omatsu¹, Tomohiro Yamaguchi², Koji Ishibashi², Jonathan P. Bird³ and David K. Ferry⁴
¹Graduate School of Advanced Integration Science, Chiba University
²Advanced Device Laboratory, Advanced Science Institute (RIKEN)
³Department of Electrical Engineering, University at Buffalo
⁴Department of Electrical Engineering and CSSER

Tuesday December 1

Molecular Fluidic and Bio-related Systems

- 9:15-9:45 **Molecular- and polymer-based electronic devices on flexible substrates**
Takhee Lee(invited)
Department of Physics and Astronomy, Seoul National University
- 9:45-10:00 **Biological Cell Manipulation by Magnetic Nanoparticles**
Frederick Gertz, and Alexander Khitun
Electrical and Computer Engineering Department, University of California Riverside
- 10:00-10:15 **Selective Detection of Human & Bird Influenza Virus by Sugar Chain Modified Graphene FET**
Kazuhiko Matsumoto , Ryota Hayashi, and Takao Ono
Institute of Scientific and Industrial Research, Osaka University

Coffee

Quantum Dot

- 10:45-11:15 **Symmetry games in driven quantum dot circuits**
Stefan Ludwig(invited)
Paul-Drude-Institut für Festkörperelektronik
- 11:15-11:30 **High-accuracy measurement of single-trap electron pumps in Si**
Gento Yamahata¹, Stephen P. Giblin², Masaya Kataoka², Takeshi Karasawa¹, and Akira Fujiwara¹
¹ NTT Basic Research Laboratories
² National Physical Laboratory
- 11:30-11:45 **Non perturbative full counting statistics for solid state entangler with double ferromagnetic islands**
Yukimi Kanai¹, Yuri Sawamura¹, Megumu Mihata², Takeshi Inagaki³, and Shuichi Iwabuchi¹
¹ Department of Physics, Graduate School of Humanities and Sciences, Nara Women's University
² Microelectronics Center, TOSHIBA Corporation
³ Graduate School of Material Science, Nara Institute of Science and Technology
- 11:45-12:00 **Phonon Assisted Spin Orbit Transitions in Spin Interferometers**
Geof Aers¹, Sergei Studenikin¹, Marek Korkusinski¹, Ghislain Granger¹, Alicia Kam¹ and Andy Sachrajda¹
¹ National Research Council of Canada
- 12:00-12:15 **Terahertz single electron photovoltaic effect in self-assembled InAs quantum dots**
Y. Zhang¹, K. Shibata¹, N. Nagai¹, C. Ndebeka-Bandou², G. Bastard², and K. Hirakawa¹
¹ Institute of Industrial Science and INQIE, University of Tokyo
² Laboratoire Pierre Aigrain, Ecole Normale Supérieure

12:15-12:30 **Transport through InAs self-assembled quantum dots controlled by sidegate voltages**
Akira Oiwa¹, Ryoki Shikishima¹, Takashi Hirayama¹, Haruki Kiyama¹, Shoji Baba²,
Naomi Nagai³, Kazuhiko Hirakawa³, and Seigo Tarucha^{2,4}

¹ The Institute of Scientific and Industrial Research, Osaka University

² Department of Applied Physics, School of Engineering, The University of Tokyo

³ Institute of Industrial Science, The University of Tokyo

⁴ RIKEN Center for Emergent Matter Science (CEMS)

12:30-12:45 **Effects of charging and energy dissipation on current and noise correlation in solid state entangler based on non perturbative full counting statistics**

Yuri Sawamura¹, Yukimi Kanai¹, Megumu Mihata², Takeshi Inagaki³ and Shuichi Iwabuchi¹

¹ Department of Physics, Graduate School of Humanities and Sciences, Nara Women's University

² Microelectronics Center, TOSHIBA Corporation

³ Graduate School of Material Science, Nara Institute of Science and Technology

12:45-13:00 **Signatures and Detection of Majorana Zero Modes using Nano devices**

Dong E. Liu¹, Alex Levchenko², and Roman M. Lutchyn¹

¹ Station Q, Microsoft Research

² Department of Physics, University of Wisconsin-Madison

Ad Hoc

Poster

18:30-19:45

P1 **Electric-field control of quantum states in nanostructures by electric-double-layer gating**

Kenji Shibata^{1,2}, Kenji Yoshida², and Kazuhiko Hirakawa²

¹ Tohoku Institute of Technology

² IIS and INQIE, University of Tokyo

P2 **Formation of Au oxide layer for highly sensitive graphene photosensor toward single photon sensing**

Shohei Ishida¹, Yuki Anno¹, Shiho Kobayashi¹, Masato Takeuchi², Masaya Matsuoka²,
Kuniharu Takei¹, Takayuki Arie¹, Seiji Akita¹

¹ Department of Physics and electronics, Osaka Prefecture University

² Department of Applied Chemistry, Osaka Prefecture University

P3 **Dephasing effect on a perfectly conducting channel in disordered graphene nanoribbons with zigzag edges**

Yui Shimomura and Yositate Takane

Department of Quantum Matter, Graduate School of Advanced Sciences of Matter,
Hiroshima University

P4 **Electronic structures of zigzag-edge nanoribbon lateral superlattices**

Futo Hashimoto, Nobuya Mori, Osamu Kubo, and Mitsuhiro Katayama
Graduate School of Engineering, Osaka University

P5 **Electron Transport in Densely-Packed Graphene Nanoribbons Formed on a Corrugated SiC Surface**

Hirokazu Tanaka¹, Kohei Fukuma², Kohei Morita², Shingo Hayashi², Takashi Kajiwara²,
A. Visikovskiy², Satoru Tanaka², Akinobu Kanda¹

¹ Division of Physics and TIMS, Faculty of Pure and Applied Sciences, University of Tsukuba

² Department of Applied Quantum Physics and Nuclear Engineering, Kyushu University

- P6 **Boundary between mono- and bi-layer graphene as a valley filter**
Takeshi Nakanishi¹ and Tsuneya Ando²
¹ Nanomaterials Research Institute, AIST
² Department of Physics, Tokyo Institute of Technology
- P7 **Encapsulated Graphene/Superconductor Junctions: Formation and Electron Transport**
Katsuhide Yarimizu¹, Kenta Katakura¹, Youiti Ootuka¹, Kenji Watanabe², Takashi Taniguchi², Keiji Ueno³, Hikari Tomori^{1,4}, Akinobu Kanda¹
¹ Division of Physics and TIMS, Faculty of Pure and Applied Sciences, University of Tsukuba
² National Institute for Materials Science (NIMS)
³ Department of Chemistry, Saitama University
⁴ PRESTO-JST
- P8 **Control of Q-factor and nonlinearity of carbon nanotube mechanical resonator by electrostatic force**
Masaaki Yasuda, Kuniharu Takei, Takayuki Arie, and Seiji Akita
Department of Physics and Electronics, Osaka Prefecture University
- P9 **Tunnel barrier formation in multi-walled carbon nanotubes by Ar atom or Ga focused ion beam irradiation.**
Tomohiro Yamaguchi¹, Hiroshi Tomizawa^{1,2}, Seiji Akita³, and Koji Ishibashi^{1,2,4}
¹ Advanced Device Laboratory, RIKEN
² Department of Applied Physics, Tokyo University of Science
³ Department of Physics and Electronics, Osaka Prefecture University
⁴ RIKEN Center for Emergent Matter Science (CEMS)
- P10 **Electron transport on a surface of weak topological insulators with step edges**
Takashi Arita and Yositake Takane
Department of Quantum Matter, Graduate School of Advanced Sciences of Matter, Hiroshima University
- P11 **Doping Effect of Dielectric Encapsulation Layer in WSe₂ Field Effect Transistors**
Seung-Pil Ko¹, Jiung Cho², Jong Mok Shin¹, Ho Kyun Jang, Min Youl You, Jun-Eon Jin and Gyu-Tae Kim¹
¹ School of Electrical Engineering, Korea University
² Advanced Material Research Center, Korea Basic Science Institute
- P12 **Analysis of Ultra-High-Speed Image Sensor with Monte Carlo Simulation**
Natsumi Minamitani¹, Vu Truon Son Dao², Kazuhiro Shimonomura², Takeharu Goji Etoh², Yoshinari Kamakura¹, and Nobuya Mori¹
¹ Osaka University
² Ritsumeikan University
- P13 **Theoretical calculation of impact ionization rate for 4H-SiC in the GW approximation**
K. Konaga¹, T. Kotani², R. Fujita¹, Y. Kamakura¹, N. Mori¹
¹ Division of Electrical, Electronic and Information Engineering, Osaka University
² Department of Applied Mathematics and Physics, Tottori University

Wigner Session

- 20:00-20:15 **Comparison of Slab and Block Decomposition Strategies for the Two-Dimensional Wigner Monte Carlo Method**
Josef Weinbub, Paul Ellinghaus, Mihail Nedjalkov, and Siegfried Selberherr
Institute for Microelectronics, TU Wien
- 20:15-20:30 **Convergence of stationary Wigner equation with inflow boundary conditions**
Anton Arnold¹, Ruo Li², Tiao Lu², and Zhangpeng Sun²
¹ Institute for Analysis and Scientific Computing, Vienna Technology University
² CAPT, HEDPS, LMAM, IFSA Collaborative Innovation Center of MoE, School of Mathematical Sciences
- 20:30-20:45 **Uncertainty and quantum correlation in Wigner transport equations**
Kyoung-Youm Kim¹ and Saehwa Kim²
¹ Department of Electrical Engineering, Sejong University
² Department of Information and Communications Engineering, Hankuk University of Foreign Studies
- 20:45-21:00 **Phase-Space Functions and Entanglement: A Role for Wigner Functions**
D. K. Ferry
School of Electrical, Computer, and Energy Engineering, Arizona State University
- 21:00-21:15 **Wigner representation of electron dynamics in presence of thermal dephasing in disordered systems**
Bartłomiej Spisak¹ and Maciej Wołoszyn¹
¹ AGH University of Science and Technology, Faculty of Physics and Applied Computer Science

Wednesday December 2

Electronic Device & Nanowire

- 9:00-9:30 **Emerging Devices for Computing: A Still Unexplored Landscape**
Thomas N. Theis(invited)
Semiconductor Research Corporation (on assignment from IBM Research)
- 9:30-9:45 **Toward atom scale ultra low power electronic circuitry**
Robert Wolkow
Department of Physics, University of Alberta and National Institute for Nanotechnology
- 9:45-10:00 **Nanowire Transistor Performance at the Scaling Limit Comprehensive DD, EMC and NEGF simulation study**
A. Asenov^{1,2}, Y. Wang^{1,3}, A. Talib¹, X. Wang¹, V. Georgiev¹, E. Towie², S. M. Amoroso², A.R. Brown², B. Cheng², D. Reid², C. Riddet², X. Liu³, J. Kang³
¹ Device Modeling Group, School of Engineering, University of Glasgow
² Gold Standard Simulations Ltd.
³ Institute of Microelectronics, Peking University
- 10:00-10:15 **Multi-Scale Modeling of Self-Heating Effects in Silicon Nanoscale Devices**
A. R. Shaik¹, S. S. Qazi¹, R. L. Daugherty¹, A. Laturia¹, E. Bury², B. Kaczer², K. Raleva³
and D. Vasileska¹
¹ School of Electrical Computer and Energy Engineering, Arizona State University
² IMEC
³ Faculty of Engineering and Information Technology, University Sts. Cyril and Methodius
- 10:15-10:30 **Coupled Electrical and Thermal Transport in Hybrid Graphene-Silver Nanowire Transparent Conducting Electrodes**
David B. Janes^{1,3}, Suprem R. Das^{2,3}, Ruiyi Chen^{1,4}, Sajia Sadeque^{1,3}, Kerry Maize^{1,3}, Yuki Mori⁵, Doosan Back^{1,3}, Ali Shakouri^{1,3}, and Muhammad A. Alam^{1,3}
¹ School of Electrical and Computer Engineering, Purdue University
² Department of Physics, Purdue University
³ Birck Nanotechnology Center, Purdue University
⁴ Department of Information Science and Electronic Engineering, Zhejiang University
⁵ Osaka University
- 10:30-10:45 **Band gap due to inter-wall interaction in flattened carbon nanotubes**
Takeshi Nakanishi¹ and Tsuneya Ando²
¹ Nanomaterials Research Institute, AIST
² Department of Physics, Tokyo Institute of Technology

Coffee

New Approach & Novel Devices

- 11:15-11:30 **Magnonic Holographic Read-Only Memory**
F. Gertz¹, A. Kozhevnikov², Y. Filimonov², and A. Khitun¹
¹ Electrical Engineering Department, University of California-Riverside
² Kotel'nikov Institute of Radioengineering and Electronics of Russian Academy of Sciences

- 11:30-11:45 **Modeling Reliability and Metastability of CdTe Photovoltaics**
Da Guo¹, Richard Akis¹, Dragica Vasileska¹, Daniel Brinkman², Christian Ringhofer²,
Andrew Moore³ and Igor Sankin⁴
¹ School of ECEE, Arizona State University
² School of MSS, Arizona State University
³ Department of Physics, Colorado State University
⁴ First Solar Inc.
- 11:45-12:00 **Wideband spectroscopic probe for near-zone field mapping**
Daniel van der Weide
Department of Electrical & Computer Engineering, University of Wisconsin
- 12:00-12:15 **Directional and Polarized Emission from a Periodically Nanostructured Phosphor Film**
Yasuhisa Inada, Akira Hashiya, Mitsuru Nitta, Shogo Tomita and Taku Hirasawa
Advanced Research Division, Panasonic Corporation
- 12:15-12:30 **Antenna-Coupled Single-Metal Nanoscale Thermocouples: Where is the Hot Spot?**
Gergo P. Szakmany, Alexei O. Orlov, Gary H. Bernstein, and Wolfgang Porod
Center for Nano Science and Technology, Department of Electrical Engineering,
University of Notre Dame
- 12:30-12:45 **Topological Energy Transduction**
Timothy Phillip¹ and Matthew J. Gilbert¹
¹ Department of Electrical and Computer Engineering, University of Illinois–Urbana-
Champaign

Ad Hoc

Banquet

18:00-21:00

Thursday December 3

Phonon Control and Spintronics

- 9:00-9:30 **Acoustic control of optical properties and spins in quantum wells**
Tetsuomi Sogawa(invited), Haruki Sanada, Yoji Kunihashi, and Hideki Gotoh
NTT Basic Research Laboratories
- 9:30-9:45 **Tuning Phonon Transport at Nanoscale: Direct Evidence of the Acoustic Phonon Spectrum Modification and its Effect on Heat Conduction**
Fariborz Kargar, Sylvester Ramirez, Hoda Malekpour and Alexander A. Balandin
Phonon Optimized Engineered Materials (POEM) Center, Bourns College of Engineering,
University of California-Riverside
Spins and Heat in Nanoscale Electronic Systems (SHINES) Center, University of
California-Riverside
- 9:45-10:00 **Simulating the Ising Hamiltonian with phonons**
Imran Mahboob, Hajime Okamoto and Hiroshi Yamaguchi
NTT Basic Research Laboratories
- 10:00-10:15 **Spin-dependent Trap-assisted Tunneling in Ferromagnet-Oxide-Semiconductor Structures**
Viktor Sverdlov and Siegfried Selberherr
Institute for Microelectronics, TU Wien
- 10:15-10:30 **A Novel Method of SOT-MRAM Switching**
Alexander Makarov, Thomas Windbacher, Viktor Sverdlov, and Siegfried Selberherr
Institute for Microelectronics, TU Wien

Coffee

Quantum Hall Effect

- 11:00-11:15 **Quantum Hall effect in twisted bilayer graphene**
Tomoki Machida^{1,2}, Satoru Masubuchi¹, Naoko Inoue¹, Reina Kashiwagi¹, Sei Morikawa¹,
Kenji Watanabe³, and Takashi Taniguchi³
¹ Institute of Industrial Science, University of Tokyo
² INQIE, University of Tokyo
³ National Institute for Materials Science
- 11:15-11:30 **Quantum transport in hBN/graphene/hBN heterostructures with one-dimensional edge contacts**
Katsuyoshi Komatsu, Eichiro Watanabe, Daiju Tsuya, Kenji Watanabe, Takashi
Taniguchi, and Satoshi Moriyama
National Institute for Materials Science, Tsukuba
- 11:30-11:45 **Negative Compressibility of the Bubble and Stripe Phases in the Quantum Hall Regime**
Benedikt Friess¹, Vladimir Umansky², Bernd Rosenow³, Yang Peng⁴, Felix von Oppen⁴,
Klaus von Klitzing¹, and Jurgen Smet¹
¹ Max Planck Institute for Solid State Research
² Weizmann Institute of Technology
³ University of Leipzig
⁴ Freie Universität Berlin

- 11:45-12:00 **Superconductivity Induced Topological Phase Transition at the Edge of Even Denominator Fractional Quantum Hall States**
Maissam Barkeshli and Chetan Nayak
 Station Q, Microsoft Research
- 12:00-12:15 **Spin-split and spin-unpolarized incompressible strips revealed by optical local spin injection**
S. Nomura¹, S. Mamyouda¹, H. Ito¹, Y. Shibata¹, Y. Ootuka¹, S. Kashiwaya², M. Yamaguchi³, H. Tamura³, and T. Akazaki³
¹ Division of Physics, University of Tsukuba
² National Institute of Advanced Industrial Science and Technology
³ NTT Basic Research Laboratories
- 12:15-12:30 **Nuclear Electric Resonance and its Application to Magnetic Resonance Imaging**
 K. Hashimoto¹, T. Tomimatsu^{1*}, S. Shirai¹, K. Sato¹, and Y. Hirayama^{1,2}
¹ Graduate School of Science, Tohoku University
² WPI-AIMR, Tohoku University
 * Present address: The University of Electro-Communications

Ad Hoc

Majonara Physics and Topological Systems

- 19:00-19:30 **Spotting the elusion Majorana under the microscope**
Ali Yazdani (invited)
 Department of Physics, Princeton University
- 19:30-19:45 **Probing Spin-Orbit Coupling in Superconducting Junctions: From Spintronics to Majorana Fermions**
Igor Žutić¹, Petra Hoegl², Alex Matos-Abiague^{1,2}, and Jaroslav Fabian¹
¹ Department of Physics, University at Buffalo
² Institute for Theoretical Physics, University of Regensburg
- 19:45-20:00 **Stability and Properties of Disordered Weyl Semimetal Phases**
 Hassan Shapourian¹, and Taylor L. Hughes¹
¹ Department of Physics and Institute for Condensed Matter Theory, University of Illinois at Urbana-Champaign
- 20:00-20:15 **Surface States or Electron Fractionalization in Bismuth**
Philip Phillips
 University of Illinois at Urbana-Champaign
- 20:15-20:30 **Non-uniform magnetic structures and anisotropic spin wave dispersion in Dirac semimetals**
Yasufumi Araki^{1,2}, Kentaro Nomura¹
¹ Institute for Materials Research, Tohoku University
² Frontier Research Institute for Interdisciplinary Sciences, Tohoku University

20:30-20:45 **Writing superconductivity in bismuth selenide by controlled local doping**

J. T. Mlack^{1,2}, Atikur Rahman^{1,3}, Natalia Drichko¹ and Nina Markovic^{1,4}

¹ Department of Physics and Astronomy, Johns Hopkins University

² Department of Physics and Astronomy, University of Pennsylvania

³ Brookhaven National Laboratory

⁴ Department of Physics and Astronomy, Goucher College

20:45-21:00 **Transport in Topological Insulators and Topological Superconductors: In Search of Majorana Fermions**

Ewelina M. Hankiewicz

Institute for Theoretical Physics, Wurzburg University

Friday December 4

Optical Devices & Solar Cells

- 9:00-9:15 **Nanoscale optical studies of band potential fluctuations and lateral carrier diffusion in semipolar InGaN/GaN quantum wells**
Saulius Marcinkevičius¹, Mounir Mensi², Ruslan Ivanov¹, Daniel L. Becerra², Shuji Nakamura², Steven P. DenBaars², and James S. Speck²
¹ KTH Royal Institute of Technology, Department of Materials and Nanophysics,
² Materials Department, University of California
- 9:15-9:30 **Designing a Binary Random Phase Array to Improve the Light Extraction Efficiency of White Organic Light-Emitting Devices**
Akira Hashiya, Yasuhisa Inada, and Taku Hirasawa
Advanced Research Division, Panasonic Corporation
- 9:30-9:45 **Quantum processes of exciton dissociation at organic solar-cell interfaces: Effects of interface disorder, hot exciton, and polaron**
Takashi Nakayama, Hideyuki Iizuka, and Yoshimitsu Masugata
Department of Physics, Chiba University
- 9:45-10:00 **Smart stacked heterogeneous multijunction solar cells fabricated by advanced bonding using metal nanoparticle arrays**
Takeyoshi Sugaya¹, Kikuo Makita¹, Hidenori Mizuno¹, Toru Mochizuki^{1,2}, Ryuji Oshima¹, Jiro Nishinaga¹, Yoshinobu Okano², and Koji Matsubara¹
¹ National Institute of Advanced Industrial Science and Technology (AIST)
² Tokyo City University
- 10:00-10:15 **III-V dilute nitride solar cells with record open circuit voltages enabled by nanoscale engineering**
G.K. Vijaya¹, W. Wang¹, A. Mehrotra¹, D. Tang², A. Freundlich¹, D. J. Smith²
¹ Center for Advanced Materials, University of Houston
² Physics Department Arizona State University
- 10:15-10:30 **Simulation of Carrier Dynamics and Conversion Efficiency of III-V Nanowire Photovoltaic Devices**
Raghuraj Hathwar¹, Pietro Luppina², Dan Popescu², Paolo Lugli², and Stephen Goodnick^{1,2}
¹ School of Electrical Computer and Energy Engineering, Arizona State University
² Institute for Advanced Studies and the Institute for Nanoelectronics, the Technical University of Munich

Coffee

Graphene II

- 11:00-11:15 **Optically and electrically pumped graphene bilayer lasers: Dramatic enhancement of terahertz gain by remote doping**
Victor Ryzhii¹, Taiichi Otsuji¹, Maxim Ryzhii², Vladimir Mitin³, and Michael S. Shur⁴
¹ Research Institute of Electrical Communication, Tohoku University
² Department of Computer Science and Engineering, University of Aizu
³ Department of Electrical Engineering, University at Buffalo
⁴ Department of Electrical, Electronics, and Systems Engineering, Rensselaer Polytechnic Institute

- 11:15-11:30 **Inducing Strain to Encapsulated Graphene**
Hikari Tomori^{1,2}, Rineka Hiraide¹, Youiti Ootuka¹, Kenji Watanabe³, Hisashi Taniguchi³,
Akinobu Kanda¹
¹ Division of Physics and TIMS, Faculty of Pure and Applied Sciences, University of
Tsukuba
² PRESTO-JST
³ National Institute for Materials Science (NIMS)
- 11:30-11:45 **Tuning Graphene via Engineered Strain Arrays**
Nadya Mason
Department of Physics and Materials Research Laboratory, University of Illinois at
Urbana-Champaign
- 11:45-12:00 **Introducing carbon isotopes and isotopic heterojunction into graphene for enhancing
graphene-based thermoelectric device performance**
Yuki Anno, Kuniharu Takei, Seiji Akita, and Takayuki Arie
Department of Physics and Electronics, Osaka Prefecture University
- 12:00-12:15 **Influence of Metal Contacts on Graphene Transport Properties and Its Reduction with
Nano-carbon Interfacial Layer**
Akinobu Kanda¹, Kenta Katakura¹, Yu. Ito¹, Youiti Ootuka¹, Hikari Tomori²
¹ Division of Physics and TIMS, Faculty of Pure and Applied Sciences, University of
Tsukuba
² PRESTO-JST
- 12:15-12:30 **Conductance Fluctuations in High-Mobility Bilayer-Graphene/h-BN Heterostructures**
Masaaki Mineharu¹, Masahiro Matsunaga¹, Yuichi Ochiai¹, Inyeal Lee², Gil-Ho Kim²,
Kenji Watanabe³, Takashi Taniguchi³, David K. Ferry⁴, Jonathan P. Bird^{1,5} and Nobuyuki
¹ Graduate School of Advanced Integration Science, Chiba University
² School of Electronic Electrical Engineering and Sungkyunkwan Advanced Institute of
Nanotechnology (SAINT), Sungkyunkwan University
³ National Institute for Materials Science
⁴ School of Electrical, Computer, and Energy Engineering, Arizona State University
⁵ Department of Electrical Engineering, University at Buffalo
- 12:30-12:45 **Electronic Noise Suppression in the Near-Ballistic BN-Graphene-BN Heterostructure
Field-Effect Transistors**
Maxim A. Stolyarov¹, Sergey L. Romyantsev^{2,3}, Michael Shur² and Alexander A.
Balandin¹
¹ Nano-Device Laboratory, Department of Electrical and Computer Engineering,
University of California – Riverside
² Department of Electrical, Computer, and Systems Engineering, Center for Integrated
Electronics, Rensselaer Polytechnic Institute
³ Ioffe Physical-Technical Institute

Closing