

NNCI2007 PROGRAM

February 20th, Tuesday

18:00~20:00

WELCOME PARTY at Atsugi Royal Park Hotel

February 21st, Wednesday

9:30~9:50

Opening Remarks

SESSION 1 : Coherent Spin Control and Quantum Information Processing

9:50:~10:30

We-01 : **Architecture for a Shor Factorization Engine Based on Semiconductor Spins**

[PLENARY] G. Mazzeo, E. Yablonovitch, T. Szkopek
University of California, Los Angeles

10:30:~10:45

We-02 : **Measurement of Qubits in Photonic and NMR Systems**

S. K. Ozdemir
SORST-JST, CREST-JST, and Osaka University

10:45:~11:00

We-03 : **Demonstration of Parametric Tunable Coupling of Optimally Biased Flux Qubits**

A.O. Niskanen, K. Harrabi, F. Yoshihara, Y. Nakamura, J.S. Tsai
CREST-JST and VTT Information Technology, Microsensing

11:00~11:15

We-04 : **Josephson Vortices for Information Processing and High Frequency Applications**

D. R. Gulevich and F. V. Kusmartsev
Loughborough University

11:15~11:45

COFFEE BREAK

SESSION 2 : 2-Dimensional Systems and Metal-insulator Transition

11:45~12:15

We-05 : **Interplay of Disorder and Interactions in Two Dimensions**

[INVITED] S.V. Kravchenko, S. Anissimova, A. Punnoose, A.M. Finkel'stein, T.M. Klapwijk
Northeastern University

12:15~12:30

We-06 : **Temperature Dependent Resistivity of a Two-Dimensional
Electron System in a SiO₂/Si/SiO₂ Quantum Well**

K. Takashina, V. Renard, Y. Niida, A. Fujiwara, Y. Hirayama and T. Fujisawa
NTT Basic Research Laboratories, NTT Corporation

12:30~12:45

We-07 : **Dissipation Mechanism by the Pseudospin Soliton
in the $\nu=1$ Bilayer Quantum Hall State**

A. Fukuda, D. Terasawa, M. Morino, K. Iwata, S. Kozumi,
M. Suzuki, A. Sawada, Z. F. Ezawa, N. Kumada, Y. Hirayama
Kyoto University

12:45~14:00

LUNCH

SESSION 3 : Electron Transport in Quantum Dots

14:00~14:30

We-08 : **The Quantum RC Circuit:**
【INVITED】 : **Charge Relaxation Resistance and Time-Resolved Single Charge Injection**
D.C. Glattli
ENS Paris/CEA Saclay

14:30~14:45

We-09 : **Full Counting Statistics of Electron Number in Quantum Dots**
Y. Utsumi, D. S. Golubev, G. Schön
RIKEN and Universität Karlsruhe

14:45~15:00

We-10 : **Strong Two- and Three- Energy Level Mixing Effects in**
Weakly Coupled Vertical Quantum Dots
C. Payette, D. G. Austing, G. Yu, J. A. Gupta, S. V. Nair
National Research Council of Canada and McGill University

15:00~15:15

We-11 : **Zeeman Splitting in a Few-Electron Quantum Dot under Vector Magnetic Field**
T. Fujisawa, G. Shinkai, T. Hayashi
NTT Basic Research Laboratories, NTT Corporation,
Tokyo Institute of Technology, and SORST-JST

15:15~15:45

We-12 : **Magnetic Field Induced Resonance and Hysteresis Effects in the Current Flowing**
【INVITED】 : **Through Weakly Coupled Vertical Quantum Dots at High Source-Drain Bias**
D.G. Austing, C. Payette, G. Yu, A. Gupta
National Research Council of Canada and McGill University

15:45~16:15

COFFEE BREAK

SESSION 4 : Coherent Nuclear Spin Control and NMR

16:15~16:45

We-13 : **Coherent Control of Nuclear Spins via the Hyperfine Interaction**
【INVITED】 : C. Ramanathan, J. S. Hodges, J. C. Yang, D. G. Cory
Massachusetts Institute of Technology

16:45~17:00

We-14 : **NMR Observation of Local Magnetic Field Generated by Nano-scale Magnet**
S. Sasaki, S. Watanabe, J. Harada, M. Kaneko, S. Sato
Niigata University

17:00~17:30

We-15 : **Nuclear Spin Control in Quantum Hall Systems**
【INVITED】 : T. Machida
University of Tokyo

17:30~17:45

We-16 : **Nuclear Quadrupolar Interaction in a GaAs Quantum**
Well Probed by Resistively-Detected NMR
T. Ota, N. Kumada, G. Yusa, S. Miyashita, and Y. Hirayama
NTT Basic Research Laboratories, NTT Corporation and SORST-JST

17:45~18:00

We-17 : **Canted Antiferromagnetic Spin Order**
in a Bilayer $\nu = 2$ System Investigated by NMR
N. Kumada, K. Muraki, and Y. Hirayama
NTT Basic Research Laboratories, NTT Corporation

POSTER PRESENTATION

- PWe-01** : **Determining Effective Nuclear Fields
in Dynamically-Polarized Double Quantum Dots**
Y. Kitamura, J. Baugh, K. Ono, S. Tarucha
University of Tokyo
- PWe-02** : **Reentrant Behavior of Singlet-Triplet Exchange Energy Proved by
Onset Magnetic Field of Nuclear Spin Polarization**
N. Ko, K. Takahashi, K. Kono, S. Tarucha, and K. Ono
RIKEN
- PWe-03** : **Inter-Dot Tunneling Through Two-Electron States
under the Influence of Environments**
T. Kodera, K. Ono, S. Amaha, Y. Tokura, S. Tarucha
University of Tokyo and JSPS
- PWe-04** : **Electrically Detected Indirect Exciton
Photo-Absorption in Semiconductor Double Quantum Dot**
K. Ono, N. Ko, K. Takahashi, K. Kono, S. Tarucha, and H. Kosaka
RIKEN and CREST-JST
- PWe-05** : **Ballistic Current Injection into a Semiconductor Quantum Dot**
T. Kobayashi, S. Tsuruta, S. Kang, S. Sasaki, H. Tamura, T. Fujisawa, Y. Tokura, T. Akazaki
NTT Basic Research Laboratories, NTT Corporation and CREST-JST
- PWe-06** : **Transport Properties of an Independently
Contacted Double Quantum Dot-Quantum Wire Coupled Device**
S. Sasaki, H. Tamura, S. Miyashita, T. Maruyama, T. Akazaki, Y. Hirayama, H. Takayanagi
NTT Basic Research Laboratories, NTT Corporation and Tohoku University
- PWe-07** : **Large g-Factor Anisotropy Observed
for a Single InAs Self-Assembled Quantum Dot**
Y. Igarashi, M. Jung, M. Yamamoto, A. Oiwa, T. Machida, K. Hirakawa, and S. Tarucha
University of Tokyo
- PWe-08** : **A Study of Quantum Dot in Double Well Heterostructures**
L. Kulik, V. Antonov
Russian Academy of Sciences
- PWe-09** : **Effects of Electron-Electron Interactions and Gate Voltage on Conductance Peak
Spacing Distribution of Quantum Dot: Diffusion Monte Carlo Approach**
M. Molayem, A. Namiranian, G. Tayebirad
Iran University of Science and Technology
- PWe-10** : **Full Counting Statistics for Transport Through a Molecular Quantum Dot Magnet**
K. Imura, Y. Utsumi, T. Martin
RIKEN

- PWe-11** : **Suppression of Kondo Effect in Laterally Coupled Double Quantum Dots**
T. Kubo, Y. Tokura, S. Tarucha
ICORP-JST
- PWe-12** : **Fano-Kondo Effect in Charge Qubit based on Quantum Dots**
T. Tanamoto and Y. Nishi
Toshiba R&D Center
- PWe-13** : **Numerical Study of Coulomb Oscillation
in Strongly Tunnel-Coupled Quantum Dots**
H. Yokouchi and M. Eto
Keio University
- PWe-14** : **Andreev Reflection and Kondo Effect in Double-Dot Systems**
Y. Tanaka, N. Kawakami, A. Oguri
Osaka University
- PWe-15** : **Current Distribution in GaAs/AlGaAs Quantum Hall Devices
by Electro-Optical Potentiometry**
M. Dohi, S. Kaneko, R. Inaba, K. Oto, K. Muro
Chiba University
- PWe-16** : **Optically Modulated Transport Properties of
Superconductor-Normal Metal-Superconductor Junctions**
K. Tsumura, S. Nomura, T. Akazaki, H. Takayanagi
University of Tsukuba
- PWe-17** : **Conductance Measurement on
GaAs/AlGaAs Heterostructure under Local Optical Excitations**
N. Hayashi, K. Tsumura, S. Nomura, M. Yamaguchi, H. Tamura, T. Akazaki, Y. Hirayama
University of Tsukuba
- PWe-18** : **Temporal Behaviors of Dynamic Wires Formed by Surface Acoustic Waves**
T. Sogawa, H. Gotoh, H. Yamaguchi, S. Miyashita, P. V. Santos
NTT Basic Research Laboratories, NTT Corporation
- PWe-19** : **Simultaneous Measurement of Photoluminescence
and Capacitance Spectra in GaAs QW**
M. Yamaguchi, S. Nomura, T. Maruyama, S. Miyashita, Y. Hirayama, H. Tamura, T. Akazaki
NTT Basic Research Laboratories, NTT Corporation and CREST-JST
- PWe-20** : **Lateral p-n Diode Based on a GaAs/AlGaAs
Quantum Well Containing 2DEG and 2DHG**
M. Utko, A. Jensen, P. Erik Lindelof, K. Takashina, Y. Hirayama
University of Copenhagen

February 22nd, Thursday

SESSION 1 : Nanowires and Nanotubes

9:05~9:45

Th-01 : **Semiconductor Nanowires:**
[PLENARY] : **Novel Applications in Transport, Optics and Nanomechanics**
Lars Samuelson
Lund University

9:45~10:00

Th-02 : **Electrocatalytic Activity of 1nm Pt-Cluster Formed on Carbon Nanotube**
T. Mitani
JAIST

10:00~10:15

Th-03 : **Nanoelectronics of Graphene Nanoribbons**
M. Ezawa
University of Tokyo

10:15~10:45

Th-04 : **Transport Coupled to Vibrational Modes in Suspended Carbon Nanotubes**
[INVITED] : H.S.J. van der Zant
Delft University of Technology

10:45~11:15

COFFEE BREAK

SESSION 2 : Novel Nanostructures

11:15~11:45

Th-05 : **Coherent Spin Transport and Manipulation in Moving Quantum Dots**
[INVITED] : J.A.H. Stotz, R. Hey, P.V. Santos, and K.H. Ploog
Queen's University and Paul Drude Institute

11:45~12:00

Th-06 : **Piezovoltic Effects in a Two-Dimensional Electron System**
H. Yamaguchi, H. Okamoto, S. Miyashita and Y. Hirayama
NTT Basic Research Laboratories, NTT Corporation

12:00~12:15

Th-07 : **Quantum Phase Transition of Exciton Polaritons**
in a Semiconductor Quantum Well Microcavity
S. Utsunomiya, Chih-Wei Lai, N. Y. Kim, T. Byrnes,
P. Recher, H. Deng, N. Kumada, T. Fujisawa and Y. Yamamoto
National Institute of Informatics, University of Tokyo,
and NTT Basic Research Laboratories, NTT Corporation

12:15~12:30

Th-08 : **Direction controlled Coulomb Drag in Coupled One-Dimensional Quantum Wires**
M. Yamamoto, M. Stopa, Y. Hirayama, Y. Tokura, S. Tarucha
University of Tokyo and SORST-JST

12:30~12:45

Th-09 : **Modification of Chaotic Transport in an Array of Billiards by a Magnetic Field**
R. Brunner, R. Meisels, F. Kuchar, R. Akis, D.K.Ferry, J. P. Bird
University of Leoben

12:45~14:00

LUNCH

SESSION 3 : Spintronics and Novel Spin Materials

14:00~14:30

Th-10 : **Light and Spins in III-V Magnetic Alloy Semiconductors**

[INVITED] : H. MuneKata
Tokyo Institute of Technology

14:30~15:00

Th-11 : **A Novel Method to Probe Spin-Flip Scattering and Spin-Flip Length in Nanoscale Layers of Magnetic Tunnel Junctions**

[INVITED] : X. F. Han, Z.M. Zeing, J.F. Feng, X.-G. Zhang
Chinese Academy of Science

15:00~15:15

Th-12 : **Kondo Effect and Magnetic Ordering at the Conducting Interface Between Non-Magnetic Oxides**

A. Brinkman, M. Huijben, M. van Zalk, J. Huijben,
W.G. van der Wiel, G. Rijnders, D.H.A. Blank and H. Hilgenkamp
University of Twente

15:15~15:30

Th-13 : **High-Quality Contacts to Organic Single-Crystal Spin Transistors**

W.J.M. Naber, A. Kumar, M.F. Craciun, C.A. Nijhuis,
K.S. Wimbush, A. Molinari, A.F. Morpurgo and W.G. van der Wiel
University of Twente

15:30~15:45

Th-14 : **Magnetic and Electrical Properties of Co₂MnGa Heusler Alloy Thin Films Grown Epitaxially on GaAs(001)**

C.D. Damsgaard, M.C. Hickey, S.N. Holmes, A. Husmann,
R. Feidenhans'l, P.E. Lindelof, C.S. Jacobsen, J.B. Hansen
Technical University of Denmark

15:45~16:00

Th-15 : **Spin Transport in Mesoscopic Rings with Inhomogeneous Spin-Orbit Coupling**

Y.Tserkovnyak and A. Brataas
University of California, Los Angeles

16:00~18:00

(POSTER PRESENTATION)

PTh-01 : **Controllable Coupling between Flux Qubit and Nanomechanical Resonator by Magnetic Field**

F. Xue, Y. D. Wang, C.P. Sun, H. Okamoto, H. Yamaguchi, K. Semba
Chinese Academy of Sciences

PTh-02 : **Coherence Time Measurement of a Flux Qubit near the Degeneracy Point**

K. Kakuyanagi, S. Saito, H. Nakano, K. Semba
NTT Basic Research Laboratories, NTT Corporation

PTh-03 : **Quantum-Thermal Exponent Crossover of the Vortex Escape in an Annular Josephson Junction**

A. Kemp, A. Price, A. V. Ustinov
Friedrich Alexander Universitaet Erlangen-Nuernberg and
NTT Basic Research Laboratories, NTT Corporation

PTh-04 : **Adiabatic Quantum Pumping in a SQUID-Geometry**

J. Tobiska, S. Russo, T. M. Klapwijk, A. F. Morpurgo
NTT Basic Research Laboratories, NTT Corporation

PTh-05 : **Quantum State Tomography of Phase and Amplitude Randomized Coherent States**

S. Shinohara, S. K. Ozdemir, T. Yamamoto, M. Koashi, N. Imoto
Osaka University, SORST, and CREST

PTh-06 : **NMR Quantum State Tomography Based on Longitudinal Magnetization Measurement**

S. K. Ozdemir, A. Miranowicz, T. Ota, G. Yusa, N. Imoto, Y. Hirayama
SORST-JST and CREST-JST and Osaka University

- PTTh-07** : **Observation of Electron Spin Resonance and Dynamic Nuclear Spin Polarization in Quantum Hall Regime by a Time-Resolved Kerr Rotation Spectroscopy**
D. Fukuoka, N. Tanaka, T. Yamazaki, K. Oto, K. Muro, Y. Hirayama, H. Yamaguchi
Chiba University
- PTTh-08** : **Detecting Localized Spins with Coupled Quantum Point Contacts**
T. Morimoto, N. Yumoto, Y. Ujiie, N. Aoki,
 Youngsoo Yoon, J. P. Bird, **R. Brunner** and Y. Ochiai
Chiba University
- PTTh-09** : **Piezoresistance of InAs/AlGaSb Nanoelectromechanical Systems**
K. Yamazaki, S. Etaki, H. S. J. van der Zant, H. Yamaguchi
NTT Basic Research Laboratories, NTT Corporation
- PTTh-10** : **Strain-Induced Modulation of Carrier Transport Properties in GaMnAs**
K. Onomitsu, I. Mahboob, H. Okamoto, and H. Yamaguchi
NTT Basic Research Laboratories, NTT Corporation
- PTTh-11** : **Temperature-Dependent Internal Friction in a GaAs Piezoresistive Cantilever**
H. Okamoto, D. Ito, K. Onomitsu, H. Yamaguchi
NTT Basic Research Laboratories, NTT Corporation
- PTTh-12** : **Three-Phase Model for the Volmer-Weber Crystal Growth**
H. Ceric, E. Langer, S. Selberherr
TU Wien
- PTTh-13** : **Silica Nanomachining Using Laser Plasma Soft X-Rays**
T. Makimura, S. Uchida, T. Fujimori, H. Niino, K. Murakami
University of Tsukuba
- PTTh-14** : **Bending-Node Formation in Heterostructure Nanowires**
K. Tateno, G. Zhang, H. Sanada, Nakano
NTT Basic Research Laboratories, NTT Corporation
- PTTh-15** : **GaP Heterostructure Nanowires Grown on Si by MOVPE**
G. Zhang, K. Tateno, H. Sanada, H. Nakano
NTT Basic Research Laboratories, NTT Corporation
- PTTh-16** : **Landau and Zeeman Quantization in the Adsorbate-Induced Two-Dimensional Electron System on n-type InSb(110)**
K. Hashimoto, J. Wiebe, M. Morgenstern, and R. Wiesendanger
University of Hamburg
- PTTh-17** : **Imaging the Percolation of Localized Electronic States in Semiconductor Quantum Wells**
S. Perraud, K. Kanisawa, Z. Z. Wang, T. Fujisawa
NTT Basic Research Laboratories, NTT Corporation and Laboratoire de Photonique et de Nanostructures, CNRS
- PTTh-18** : **Electronic Properties of Heterojunction Transistor Investigated with Scanning Maxwell-Stress Microscopy**
K. Takami, T. Inoue, T. Tokizaki, S. Miyashita, H. Yamaguchi, Y. Hirayama, H. Yokoyama
SORST-JST and AIST NRI
- PTTh-19** : **Near-Field Spectroscopy of Two-Dimensional Electron Gas Systems in GaAs Single Heterostructures under Magnetic Fields**
T. Tokizaki, H. Yokoyama
AIST
- PTTh-20** : **Conductance Image of InAs Nanowires on a GaAs Substrate Using Integrated Nanogap Electrode Probe**
M. Nagase, H. Yamaguchi
NTT Basic Research Laboratories, NTT Corporation

18:00~20:00

BANQUET at Cafeteria (Building 1, basement)

February 23rd, Friday

SESSION 1 : Scanning Probe Spectroscopy and Imaging

9:05~9:45

Fr-01 : **Imaging Electrons in Nanoscale Devices**
【PLENARY】 R.M. Westervelt
Harvard University

9:45~10:15

Fr-02 : **Confinement in Metal Nanostructures**
【INVITED】 : **Assembled from Native and Foreign Adatoms**
J. Lagoute, X. Liu, C. Nacci, S. Fölsch
Paul Drude Institute for Solid-State Electronics

10:15~10:30

Fr-03 : **Electrical Nanoprobing of Nanoscale Devices**
by Scanning Maxwell-Stress Microscopy
T. Inoue, K. Takami, T. Tokizaki, S. Miyashita, H. Yamaguchi, Y. Hirayama, H. Yokoyama
SORST-JST and AIST NRI

10:30~10:45

Fr-04 : **Correlation Between Densities of Two-Dimensionally Accumulated**
Electrons and Point Defects at the Epitaxial InAs(111)A Surface
K. Kanisawa, S. Perraud, Y. Hirayama, and T. Fujisawa
NTT-Basic Research Laboratories, NTT Corporation

10:45~11:15

COFFEE BREAK

SESSION 2 : Electron Correlation and Interference

11:15~11:45

Fr-05 : **Electronic Correlation Measurements in Quantum Nano-Structures**
【INVITED】 S. Oberholzer, E. Bieri, C. Schönenberger, M. Giovannini, J. Faist, T. Akazaki
University of Basel

11:45~12:00

Fr-06 : **Dephasing in Electron Interference around InAs/GaSb Heterointerfaces**
K. Suzuki, C. Janer, K. Kanisawa, S. Perraud, K. Takashina, and T. Fujisawa
NTT Basic Research Laboratories, NTT Corporation

12:00~12:15

Fr-07 : **Aharonov-Bohm Effect of an Electron-Hole Composite System in Quantum Tubes**
S. Nomura, K. Tsumura, P. Mohan, J. Motohisa and T. Fukui
University of Tsukuba, CREST-JST,
and NTT Basic Research Laboratories, NTT Corporation

SESSION 3 : Silicon Nanoelectronics

12:15~12:45

Fr-08 : **Physics and Engineering of Nanoscale Silicon Field-Effect Transistors**
【INVITED】 Ken Uchida
Toshiba Corporation

12:45~13:00

Fr-09 : **Hopping Conduction in Buried-Channel SOI MOSFETs with Shallow Impurities**
Y. Ono, J.-F. Morizur, K. Nishiguchi, K. Takashina,
H. Yamaguchi, A. Fujiwara, K. Hiratsuka, S. Horiguchi, H. Inokawa, and Y. Takahashi
NTT Basic Research Laboratories, NTT Corporation

13:00~14:15

LUNCH

SESSION 4 : Spin-related Phenomena in Nanostructures

14:15~14:45

Fr-10 : **Spin-Dependent Transport in Double Quantum Dots Realized in InAs Nanowires**
【INVITED】 R. Leturcq, A. Pfund, K. Ensslin, I. Shorubalko
ETH Zurich

14:45~15:00

Fr-11 : **Doublet-Triplet Spin Selection Rules
in a Excitation Spectrum of Vertical Quantum Dots**
S. M. Huang, H. Akimoto, K. Kono, J. J. Lin, S. Tarucha, and K. Ono
RIKEN and National Chiao Tung University

15:00~15:15

Fr-12 : **Analytical Expression of Leakage Current
through Double Quantum Dots in Spin Blockade**
K. Saito and M. Eto
Keio University

15:15~15:30

Fr-13 : **Scaling Behavior in the Competition between Superconductivity**
C. Buizert, A. Oiwa, K. Shibata, K. Hirakawa, S. Tarucha
University of Tokyo

15:30~15:45

Fr-14 : **Theoretical Analysis of the Fidelity and Yield of a Spin-Coherent Photo-Detector**
Y. Rikitake, H. Imamura, H. Kosaka
CREST-JST and AIST

15:45~16:15

Fr-15 : **The Dynamic Nuclear Environment in GaAs Quantum Dots**
【INVITED】 C. M. Marcus
Harvard University

16:15~16:30

CLOSING