The 3rd RIEC International Workshop on Spintronics
Solid-State Quantum Information Technology -Spin, Photon and Superconductivity-

October 31st – November 1st, 2007
Laboratory for Nanoelectronics and Spintronics, Research Institute of Electrical Communication (RIEC), Tohoku University, Sendai, Japan

October 31st (Wednesday)

9:00 Opening

Session 1: Semiconductor spintronics (1)

Chair: Hideo Ohno

9:15-10:00 [S1-1] Manipulating single electron spins and coherence in semiconductors
David D. Awschalom (University of California, Santa Barbara)

10:00-10:35 [S1-2] Control and optical detection of nuclear spin coherence in GaAs quantum well
Yuzo Ohno, Y. Kondo, M. Ono, S. Matsuzaka, K. Morita, H. Sanada, H. Ohno (Tohoku University)

10:35-10:50 Coffee break

Chair: David Awschalom

10:50-11:25 [S1-3] Relaxation and coherent manipulation in spin qubits
Tristan Meunier, F.H.L. Koppens, I.T. Vink, K.C. Nowack, H.P. Tranitz, W. Wegscheider, L.P. Kouwenhoven, L.M.K. Vandersypen (Delft University of Technology)

11:25-12:00 [S1-4] Coherent transfer of light polarization to electron spins in a semiconductor –toward quantum media conversion–
Hideo Kosaka, H. Shigyou, Y. Mitsumori, Y. Rikitake, H. Imamura, T. Kutsuwa, K. Edamatsu (Tohoku University)

12:00-13:30 Lunch

Session 2: Photons and quantum dots

Chair: Keiichi Edamatsu

13:30-14:15 [S2-1] Advances in quantum dots for quantum information technologies
Yasuhiko Arakawa (University of Tokyo)

14:15-15:00 [S2-2] Semiconductor Quantum Dots as Entangled Light Sources
David Gershoni (Israel Institute of Technology)

15:00-15:15 Coffee break

Chair: David Gershoni

15:15-16:00 [S2-3] Single photons on demand: New light for quantum information processing
M. Scholz, G. Steudle, Oliver Benson (Humboldt University, Berlin)

Poster Session

Chair: Hideo Kosaka

16:00-17:30 Posters at the lobby

Reception

18:00-20:00 Reception at Sendai Kokusai Hotel

November 1st (Thursday)

Session 3: Superconducting quantum bits

Chair: Koji Nakajima

9:00-9:45 [S3-1] Toward scalable superconducting quantum bits
Jaw-Shen Tsai, A.O. Niskanen, K. Harrabi, F. Yoshihara, Y. Nakamura, S. Lloyd, O. Astafiev, K. Inomata, T. Yamamoto, Yu.A. Pashkin (NEC, Tsukuba)

9:45-10:30 [S3-2] Temperature dependence of coherent oscillations in a Josephson junction
Alexey V. Ustinov (Friedrich-Alexander University Erlangen-Nuremberg)

10:30-10:45 Coffee break

Chair: Jaw-Shen Tsai

10:45-11:20 [S3-3] Recent advances in Josephson phase qubits: memory, gates, and Bell violation
Markus Ansmann, R. Bialczak, N. Katz, E. Lucero, R. McDermott, M. Neeley, A.D. O'Connell, M. Steffen, E. Weig, A. Cleland, J.M. Martinis (University of California, Santa Barbara)

11:20-11:55 [S3-4] Study on the quantum property of Bi2212 intrinsic Josephson junctions
Shigeo Sato, K. Inomata, N. Kitabatake, M. Kinjo, H.B. Wang, T. Hatano, K. Nakajima (Tohoku University)

11:55-13:30 Lunch

Session 4: Semiconductor spintronics (2)

Chair: Yuzo Ohno

13:30-14:15 [S4-1] Nuclear spins in quantum dots and interacting 2DEGs
Daniel Loss (University of Basel)

14:15-15:00 [S4-2] Electrical control of electronic spin and nuclear spin in quantum dots
Seigo Tarucha (University of Tokyo)

15:00-15:15 Coffee break

Chair: Daniel Loss

15:15-15:50 [S4-3] Electrically controlled quantum coherences of nuclear spins in GaAs point contacts
Go Yusa, K. Muraki, Y. Hirayama (Tohoku University)

15:50-16:25 [S4-4] Spatially resolved Kerr microscopy in GaAs with various doping concentration
Shunichiro Matsuzaka, Y. Ohno, H. Ohno (Tohoku University)

16:25 Closing

Posters

P-1 Optically detected nuclear quadrupole resonance in a GaAs quantum well
Masaaki Ono, Y. Kondo, S. Matsuzaka, K. Morita, H. Sanada, Y. Ohno, H. Ohno (Tohoku University)

P-2 Study on multi-photon activation and universal switching of Bi-2212 intrinsic Josephson junctions
Nobuhiro Kitabatake, K. Inomata, S. Sato, M. Kinjo, H. Wang, T. Hatano, K. Nakajima (Tohoku University)

P-3 Probability of finding solutions in neuromorphic adiabatic quantum computation algorithm
Aiko Ono, S. Sato, M. Kinjo, K. Nakajima (Tohoku University)

P-4 Photon echoes from InGaAlAs/GaAlAs semiconductor quantum dot
Yasuyoshi Mitsumori, H. Kosaka, K. Edamatsu, K. Akahane, N. Yamamoto, M. Sasaki, N. Ohtani (Tohoku University)

P-5 A number countable electron trap in a quantum dot with nearly-zero g-factor for photon-spin quantum media conversion
Takeshi Kutsuwa, M. Kuwahara, T. Konno, K. Ono, Y. Mitsumori, H. Kosaka, K. Edamatsu (Tohoku University)

P-6 Single photon responses in a quantum dot for quantum media conversion from a photon to an electron spin
Makoto Kuwahara, T. Kutsuwa, T. Konno, K. Ohno, Y. Mitsumori, H. Kosaka, K. Edamatsu (Tohoku University)

P-7 Measurement of optical cross-Kerr nonlinearity induced by a few photons in a photonic crystal fiber
Nobuyuki. Matsuda, R. Shimizu, Y. Mitsumori, H. Kosaka, K. Edamatsu (Tohoku University)

P-8 Electron spin tomography using optical responses of quantum dots for photon-spin quantum state transfer
Yoshiaki Rikitake, H. Imamura, H. Kosaka (National Institute of Advanced Industrial Science and Technology)