

Monday Morning Oral Session

Monday, June 11, 8:00-8:20

Conference Opening - Don Miller

Monday, June 11, 8:20-10:10

Oral Session: Digital Circuits and Their Applications

Chair: *Hisao Hayakawa*

Co-Chair: *Aaron Pesetski*

8:20-8:50 Invited I-A01: **Japanese Superconductivity Programs**

Keiichi Tanabe

8:50-9:10 O-A01: **Power Independent RSFQ Cells**

Supradeep Narayan and V. K. Semenov

9:10-9:30 O-A02: **Experimental analysis of a new generation of compact Josephson-inductance-based RSFQ circuits**

Th. Ortlepp, B. Dimov, J. Kunert, H.-G. Meyer, P. Feuvre, and F. H. Uhlmann

9:30-9:50 O-A03: **Demonstration of picosecond delay time measurements by single-flux-quantum double-oscillator time-to-digital converters**

K. Nakamiya, N. Yoshikawa, A. Fujimaki, Y. Hashimoto, and H. Terai

9:50-10:10 O-A04: **Effects of the film thickness of a ground plane in the SFQ circuits with a dc-power layer**

H. Akaike, A. Fujimaki, S. Nagasawa, Y. Kitagawa, and M. Hidaka

Coffee Break 10:10-10:20

Late Monday Morning Poster Sessions

Monday, June 11, 10:20-12:00

Poster Session: **Digital Circuits and Systems (PB)**

Poster Session: **SQUIDS and Their Applications (PC)**

Poster Session: **Analog Devices, Novel and Misc. Devices (PD)**

Monday, June 11, 10:20-12:00

Poster Session: Digital Circuits and Systems (PB)

Chair: *Anna Kidiyarova-Shevchenko*

Co-Chair: *Igor Vernik*

- P-B01: **Characterization of 90 nm Cryo-CMOS Devices and Circuits for Hybrid Josephson-CMOS Memories**
N. Kawai, Y. Takahashi, K. Gotoh, N. Yoshikawa and T. Van Duzer
- P-B02: **Design of a reconfigurable data-path prototype in the single-flux-quantum circuit**
S Iwasaki, M Tanaka, Y Yamanashi, H Park, H Akaike, A Fujimaki, N Yoshikawa, N Takagi, K Murakami, H Honda, K Inoue
- P-B03: **Design and Implementation of Single-Flux-Quantum Floating-Point Adders**
Y. Yamanashi, H. Park, K. Taketomi, N. Yoshikawa, A. Fujimaki and N. Takagi
- P-B04: **Design and implementation of a pipelined 8-bit-serial single-flux-quantum microprocessor with cache memories**
M. Tanaka, Y. Yamanashi, N. Irie, H. -J. Park, S. Iwasaki, K. Takagi, K. Taketomi, A. Fujimaki, N. Yoshikawa, H. Terai and S. Yorozu
- P-B05: **FIFO based cache for RSFQ DSP**
A. Kidiyarova-Shevchenko, I. Kataeva, and R. Rafique
- P-B06: **4x4 SFQ network switch prototype system demonstration and 10-Gbps bit-error-rate test**
Y. Kameda, Y. Hashimoto, S. Yorozu, H. Terai, A. Fujimaki, N. Yoshikawa, M. Hidaka, S. Nagasawa, K. Hinode, and T. Sato
- P-B07: **Superconductive Passive Phase Shifters for Integrated RSFQ Digital Circuits**
B. Dimov, D. Balashov, M. Khabipov, Th. Ortlepp, F.-Im. Buchholz, A. B. Zorin, J. Niemeyer, F. H. Uhlmann
- P-B08: **Design and Development of a Semiconductor Amplifier for Interfacing RSFQ--Circuits at 4.2 K**
S. Wuensch, E. Crocoll, R. Schwemlein, A. Stassen, H.- J. Wermund and S. Siegel M. Schubert, G. Wende and H.-G. Meyer
- P-B09: **Parameter Optimization of Josephson Latching Drivers using Bit-Error-Rate Simulations**
K. Churei, N. Yoshikawa, S. Yorozu and Y. Hashimoto

P-B010: Cryocooler interface for RSFQ DSP

Henrik Engseth, Raihan Rafique, Irina Kataeva and Anna Kidiyarova-Shevchenko

P-B011: Magnetic Shield for SFQ Digital Circuits using Upper- and Lower- Ground Planes Connecting with Wall Structure

Hiroaki Myoren, Noriaki Kishita, Yu Yoshizawa, Tohru Taino, and Susumu Takada

P-B012: Implementation of a Frequency Divider for Comparison between NbN/TaN/NbN and Nb/AlO_x/Nb Junction Circuits

E. Baggetta, R.Setzu, V. Michal, and J-C. Villegier

Monday, June 11, 10:20-12:00

Poster Session: SQUIDS and Their Applications (PC)

Chair: *Keiji Enpuku*

Co-Chair: *David Tilbrook*

P-C01: Fast NDE of Superconducting Magnet Wires using a Flow-Through SQUID Microscope

John Matthews, F. C. Wellstood, and H. Weinstock

P-C02: Fabrication and Optimization of YBCO dc-SQUIDS for NDE Application

Rizwan Akram, Ilbeyi Avci, Ali Bozbey, Mustafa Tepe, and Dogan Abukay

P-C03: Remanence Measurements for Immunoassays with an RF-SQUID without a Flux Transformer

H. R. Carvalho, A. C. Bruno and S. R. W. Louro

P-C04: Radio frequency interference noise reduction using field programmable gate array for SQUID application

K. Sakuta, Y. Narita, and H. Itozaki

P-C05: Detection of human cervical spinal cord evoked magnetic field by a 75-ch SQUID biomagnetometer system

Yoshiaki Adachi, Masakazu Miyamoto, Jun Kawai, Gen Uehara, Hisanao Ogata, and Shigenori Kawabata

P-C06: A Fast Current Sensing Noise thermometer based on a Two-Stage DC SQUID Sensor

A. Casey, R. Bennett, B.P. Cowan, C. P. Lusher, J. Saunders, D. Drung, and Th. Schurig

P-C07: Electromagnetic Exploration with SQUID Magnetometers

A. Chwala, R. Stolz, N. Oukhanski, V. Zakosarenko, M. Schulz, F. Bauer, and H.-G. Meyer

Monday, June 11, 10:20-12:00

Poster Session: Analog, Novel and Miscellaneous Devices (PD)

Chair: *Masayoshi Tonouchi*

Co-Chair: *Rupert Lewis*

- P-D01: **RF characteristics of cryogenically-cooled amplifier employing GaN HEMT for mobile base station receivers**
Yasunori Suzuki, Shoichi Narahashi, and Toshio Nojima
- P-D02: **Synthesis of High Linearity SQIF Structures**
Victor K. Kornev, Igor I. Soloviev, Nikolai V. Klenov, and Oleg A. Mukhanov
- P-D03: **High Linearity Differential Parallel-Serial SQIF Structures**
Victor K. Kornev, Igor I. Soloviev, Nikolai V. Klenov, and Oleg A. Mukhanov
- P-D04: **Influence of Temperature Variation on a Precise Measurement of a Programmable Josephson Voltage Standard**
Takahiro Yamada, Hitoshi Sasaki, Hirotake Yamamori, and Akira Shoji
- P-D05: **Modeling Superconducting Quantum Interference Filters**
Patrick Longhini, Anna Leese de Escobar, and Fernando Escobar
- P-D06: **Coherent Magneto-Caloric Effect Superconductor Heat Engine**
Peter D. Keefe
- P-D07: **Parametric resonance in a system of intrinsic Josephson junctions in HTSC**
Yu. M. Shukrinov and F. Mahfouzi
- P-D08: **Vortex structure in long Josephson junctions with inhomogeneities**
O.Yu. Andreeva, T.L. Boyadjiev, and Yu. M. Shukrinov
- P-D09: **Improved Design of SNS Josephson Junction Series Arrays for an AC Josephson Voltage Standard**
Oliver F. Kieler, Johannes Kohlmann, and Franz Müller
- P-D10: **Efficiency Improvement of a Linear Compressor Used in Cryocoolers, Space Related Applications**
Satish C. Chikurde and V.K.Bhojwani

Lunch Break 12:00-13:30

Monday Afternoon Oral Session

Monday, June 11, 13:30-15:20

Oral Session: SQUIDS and Their Applications 1

Chair: *Cathy Foley*

Co-Chair: *Paul Seidel*

13:30-14:00 Invited I-F01: **SQUIDS**

John Clarke

14:00-14:20 O-F01: **SQUID-based Instrumentation for Ultra-Low-Field MRI**

Vadim S. Zotev, Petr L. Volegov, Andrei N. Matlashov, Algis V. Urbaitis, and Robert H. Kraus, Jr.

14:20-14:40 O-F02: **Ultra-Low Field NMR using a Two-Stage DC SQUID Sensor**

R. Körber, A Casey, A. Shibahara, M. Piscitelli, B.P. Cowan, C.P. Lusher, J. Saunders, D. Drung, and Th. Schurig

14:40-15:00 O-F03: **Characteristics of a Multi-channel Atomic Brain Magnetometer System in Comparison with SQUID-based Magnetoencephalography**

Kiwoong Kim, Hui Xia, Seung-Kyun Lee, Michael V. Romalis, Hyukchan Kwon, Yong-Ho Lee, Yong-Ki Park

15:00-15:20 O-F04: **A New Measurement Tool for Characterization of Superconducting r.f. Accelerator Cavities using High Performance LTS SQUIDS**

W. Vodel, R. Neubert, S. Nietzsche, K. Knaack, K. Wittenburg, A. Peters

Coffee Break 15:20-15:30

Late Monday Afternoon Oral Session

Monday, June 11, 15:30-17:20

Oral Session: Quantum Computing 1

Chair: *Yasunobu Nakamura*

Co-Chair: *William D. Oliver*

15:30-16:00 Invited I-G01: **Entanglement of Josephson-Junction Quantum Bits**

John Martinis

16:00-16:20 O-G01: **Coherent quantum state transfer between two Josephson phase qubits coupled through a resonant cavity**

Mika Sillanpaa, Jae Park, and Raymond Simmonds

16:20-16:40 O-G02: **Circuit QED: Quantum Optics and Quantum Computing on a Superconducting Chip**

Johannes B. Majer and Rob Schoelkopf

16:40-17:00 O-G03: **Coherence times of dc SQUID phase qubits with different couplings to current noise and homogeneous flux noise**

Hanhee Paik, S. K. Dutta, R. M. Lewis, B. K. Cooper, T. A. Palomaki, A. J. Przybysz, K. Mitra, Hyeokshin Kwon, A. J. Dragt, J. R. Anderson, C. J. Lobb, and F. C. Wellstood

17:00-17:20 O-G04: **Multiplexed Quantum Capacitance Readout for Two Qubits**

M. D. Shaw, J. F. Schneiderman, B. Palmer, P. Delsing, and P. M. Echternach

Coffee Break 17:20-17:30

Monday Evening Oral Session

Monday, June 11, 17:30-18:40

Oral Session: Novel and Miscellaneous Devices

Chair: *Jean-Claude Villegier*

Co-Chair: *Martin Huber*

17:30-18:00 Invited I-H01: **Carbon nanotube superconducting quantum interference device**

Vincent Bouchiat

18:00-18:20 O-H01: **Meshed intrinsic Josephson junctions for THz oscillators**

H. B. Wang, T. Hatano, S. Arisawa, B. Y. Zhu, and R. Kleiner

18:20-18:40 O-H02: **Cavity resonance in intrinsic Josephson junctions**

N. F. Pedersen and S. Madsen

Tuesday Morning Oral Session

Tuesday, June 12, 8:00-9:30

Oral Session: Advanced Nb Fabrication

Chair: *Paul Dresselhaus*

Co-Chair: *Karl Berggren*

- 8:00-8:30 Invited I-I01: **Advanced Nb Circuit Processes**
Mitsuo Hidaka
- 8:30-8:50 O-I01: **Plasma Process Induced Damage to Josephson Tunnel Junctions in Superconductor Integrated Circuit Fabrication**
Sergey K. Tolpygo, Denis Amparo, Alex Kirichenko, Daniel Yohannes
- 8:50-9:10 O-I02: **Low-Frequency Critical Current Fluctuation Measurements in Nb/AlO_x/Nb Junctions**
Shawn Pottorf, Vijay Patel, and James E. Lukens
- 9:10-9:30 O-I03: **Growth Of High Quality Ultra-thin NbN Layers For Superconducting Single Photon Detectors and THz mixers**
J-C. Villegier, R. Espiau de Lamaestre, E. Bellet-Amalric, P. Cavalier, S. Pouget, B. Guillet, and L. Mchin

Coffee Break 9:30-9:45

Mid-Tuesday Morning Oral Session

Tuesday, June 12, 9:45-11:15

Oral Session: Analog and Passive Devices

Chair: *Dan Oates*

Co-Chair: *Nils Schopohl*

- 9:45-10:15 Invited I-J01: **SQIFs**
Nils Schopohl
- 10:15-10:35 O-J01: **A novel optical interface based on a Josephson vortex flow transistor with a YBCO thin film**
Masayoshi Tonouchi, Yasushi Doda, Iwao Kawayama, and Hironaru Murakami
- 10:35-10:55 O-J02: **A voltage doubler based on the second-order operation of a voltage multiplier cell**
Yoshinao Mizugaki, Yoko Namatame, and Masaaki Maezawa
- 10:55-11:15 O-J03: **A Novel 5 GHz High-Temperature Superconducting Reaction-Type Transmitting Filter to Suppress Adjacent Channel Noise**
Shunichi Futatsumori, Takashi Hikage, and Toshio Nojima

Coffee Break 11:15-11:30

Late Tuesday Morning Oral Session

Tuesday, June 12, 11:30 -13:00

Oral Session: New Junction Materials

Chair: *Alan Kleinsasser*

Co-Chair: *Sergey Tolpygo*

11:30-12:00 Invited I-K01: **MgB₂**

Brian Moeckly

12:00-12:30 Invited I-K02: **Are all HTS Josephson junctions the same?**

C. P. Foley, E. E. Mitchell, S. K. H. Lam, S. Gnanarajan, P. Vohralik, J. Du, D. L. Tilbrook, K. E. Leslie and J. C. Macfarlane

12:30-12:50 O-K03: **Properties of Reactively Sputtered NbTiN/GaN/NbTiN Trilayer Junctions for RSFQ Circuit Applications**

Lei Yu, Yi Shen, Raghu Gandikota, Rakesh Singh, N. Newman, and John Rowell

12:50-1:10 O-K04: **Cosputtered NbSi Barrier Josephson Junctions for Superconductive Electronics Applications**

Burm Baek, Paul D. Dresselhaus, Samuel P. Benz, Alan W. Kleinsasser, and George L. Kerber

Break for Lunch

No sessions until evening

Tuesday Evening Poster Sessions

Tuesday, June 12, 19:30-21:00

Poster Session: **SQUIDS and Their Applications (PL)**

Poster Session: **HTS films and Junctions (PM)**

Poster Session: **Mixers and Detectors (PN)**

Poster Session: **Quantum Computing (PP)**

Tuesday, June 12, 19:30-21:00

Poster Session: SQUIDS and Their Applications (PL)

Chair: *Dietmar Drung*

Co-Chair: *John Matthews*

- P-L01: **Non-magnetic robotic system for scanning SQUID-based Non-Destructive Evaluation**
Y. Khatami, F. Sarreshtedari, M. Alavi, A.R. Azarhoush, M. Vesaghi, and M. Fardmanesh
- P-L02: **Properties of magnetic marker in solution for liquid phase immunoassay**
K. Enpuku, T. Tanaka, T. Matsuda, J. Hojo, N. Enomoto, F. Dang, K. Yoshinaga, F. Ludwig, F. Ghaffari, E. Heim and M. Schilling
- P-L03: **NQR of p-nitrotoluene using a high-T_c rf SQUID with normal metal transformer**
D. F. He, M. Tachiki, and H. Itozaki
- P-L04: **Low noise in a series-type HTS gradiometer rotating in the Earth's field**
D. L. Tilbrook, M. Bick, K. R. Blay, R. A. Binks, P. J. Cusack, C.P. Foley, R. Gnanarajan, K. E. Leslie, P. R. Sullivan, and R. G. Thorn
- P-L05: **Long-time stable HTSC DC-SQUID gradiometers with silicon dioxide passivation for measurements with superconducting flux transformers**
Paul Seidel, Christoph Becker, Alexander Steppke, Tobias Grumpelt, Henrik Schneidewind, Veit Grosse, Gabriel Zieger, Frank Schmidl
- P-L06: **High Frequency Flux Sampling SQUID Microscope**
C. P. Vlahacos, John Matthews, S. P. Kwon, F. C. Wellstood, L. Knauss, and A. Orozco
- P-L07: **A Low-Noise, Long Baseline Planar SQUID Gradiometer**
Robin Cantor, J. Ad Hall, Andrei N. Matlachov and Petr L. Volegov
- P-L08: **Investigation and Reduction of Thermal Cycling Effect on YBCO DC-SQUIDS**
I. Avci, B. P. Algul, A. Bozbey, M. Tepe, and D. Abukay

Tuesday, June 12, 19:30-21:00

Poster Session: HTS Films and Junctions (PM)

Chair: *Nate Newman*

Co-Chair: *Jia Du*

- P-M01: **Performance Analysis of Nano Engineered YBCO Josephson Junctions**
Berrin Pinar Algul, Ilbeyi Avci, Salih Okur, Mustafa Tepe, and Dogan Abukay
- P-M02: **Meandering Bicrystal Josephson Junction arrays in a hemispherical Fabry-Perot Resonator**
M. He, A. M. Klushin, M. I. Kurochka, and N. Klein
- P-M03: **Synthesis of superconducting (Cu, C)-Ba-O films by pulsed laser deposition**
Tetsuro Yamamoto, Kazuya Kikunaga, Kozo Obara, Naoto Kikuchi, Yasumoto Tanaka, Kazuyasu Tokiwa, Tsuneo Watanabe, A. Sundaresan, Shipra, Norio Terada
- P-M04: **Raman spectra and laser-induced phase transition in the depth of YBCO films-a tool to configure electronic devices**
Maria Branescu, C. Naudin, A. Vailionis
- P-M05: **Effects of high-energy electron beam on the superconducting properties of MgB₂ and YBa₂Cu₃O₇ films**
Jung Won Chang, Yun Won Kim, Sung Hak Hong, Min Wan Kim, Young Hwan Han, Seong Hee Park, and Byung Chul Lee
- P-M06: **Dynamic DC magnetron sputtering preparation of superconducting YBCO large-size thin films**
Tao Li, Yuegang Lei, and Hongwei Gu
- P-M07: **MOCVD growth of stacked heterostructures of SIS type with S=YBCO or BSCCO and I=(Ca, Ba)CuO₂ or (Ca, Sr)CuO₂**
K. Endo and P. Badica
- P-M08: **Depth Raman spectra and laser induced phase transition in the deep of the in-situ grown YBCO films**
M. Branescu, M. Kelly, C. Naudin, I. Ward, A. Vailionis, Y. Matsushita, and G. Zeltzer
- P-M09: **A Novel Buffered High-T_c Superconducting Step edge Josephson Junction**
W. F. van Staden, U. Büttner, V. V. Srinivasu, and W. J. Perold

Tuesday, June 12, 19:30-21:00

Poster Session: Mixers and Detectors (PN)

Chair: *D. E. Prober*

Co-Chair: *H. B. Wang*

- P-N01: **High count rate superconducting Nb nanowire single-photon detectors**
Anthony J. Annunziata, Aviad Frydman, Michael J. Rooks, and Daniel E. Prober
- P-N02: **Compact superconducting SWIFTS spectrometer for innovative astronomical applications**
E. le Coarer, Ph. Feautrier, R. Espiau de Lamaestre, J-C Villegier, N. Bergeard, and J-Ph Poizat
- P-N03: **Fabrications and properties of terahertz superconducting hot-electron bolometer mixers**
J. Chen, L. Kang, B. B. Jin, P. H. Wu, W. Zhang, L. Jiang, S.C. Shi and G.N. Gol'tsman
- P-N04: **Study of Parameters of High Temperature Superconducting Josephson Junction Mixers**
K. Lin, W. W. Xu, J. Chen, J. Yang, C. Shang, and P. H. Wu
- P-N05: **Development of an Antenna-coupled Superconducting YBCO Step-edge Josephson Junction Detector for a THz Imaging System**
J. Du, A. Hellicar, N. Nikolic, L. Li, J. Kot, S. Hanham and C. P. Foley
- P-N06: **Elaboration of ultra-thin PBCO/YBCO/PBCO constrictions for hot electron bolometer terahertz mixing applications**
M. Aurino, Ch. Peroz, J-C Villegier, A. Degardin, and A. Kreisler
- P-N07: **Read-out of YBCO transition edge bolometers by dc-SQUIDs: Investigation and optimization**
A. Bozbey, R. Akram, I. Avci, and M. Fardmanesh
- P-N08: **Fabrication and characterization of an MgB₂ bolometer**
Chiara Portesi, Mauro Rajteri, Emanuele Taralli, Riccardo Introzzi, Eugenio Monticone
- P-N09: **A Cryogenic Preamplifier for Superconducting Photodetector Readout**
Riccardo Introzzi, Giorgio Brida, and Mauro Rajteri
- P-N10: **Proximised ferromagnet/superconductor nano-layered structures for fast photodetector applications**
G. P. Pepe, V. Pagliarulo, C. De Lisio, L. Parlato, N. Marrocco, A. Barone, G. Peluso D. Pan, R. Sobolewski, J. Kitaygorski, and I. Komissarov
- P-N11: **A bolometer for terrestrial applications fabricated on a patterned SiN membrane**
S. Anders, T. May, V. Zakosarenko, M. Schmelz, M. Starkloff, H.-G. Meyer, N. Jethava and E. Kreysa
- P-N12: **Chopping frequency and bias current dependence of detectivity of YBCO transition edge bolometer**
A. Moftakharzadeh, A. Kokabi, Z. Ghods-elahi, M. Vesaghi, S. Khorasani, M. Fardmanesh
- P-N13: **SIS receiver approaching the quantum limit of the receiver noise in the Terahertz band**
A. Karpov, D. A. Miller, J. A. Stern, H. G. LeDuc, and J. Zmuidzinas

Tuesday, June 12, 19:30-21:00

Poster Session: Quantum Computing (PP)

Chair: *Ray Simmonds*

Co-Chair: *Johannes B. Majer*

- P-P01: **Quasiparticle Poisoning and Quantum Coherence in a Differential Charge Qubit**
M. D. Shaw, J. F. Schneiderman, B. Palmer, P. Delsing, and P. M. Echternach
- P-P02: **Energy relaxation in a microwave-driven Josephson junction**
Sun GuoZhu, Yu Yang, Cao JunYu, Wang YiWen, Chen Jian, Kang Lin, Xu WeiWei and Wu PeiHeng
- P-P03: **Silent Phase Qubit Tuning for Logic Operation**
Nikolai V. Klenov, Victor K. Kornev, Dmitriy Sosedko, and Niels F. Pedersen
- P-P04: **Evidence of Microstates in dc SQUID Phase Qubits**
Tauno A. Palomaki, S. K. Dutta, A. Przybysz, R. M. Lewis, Hanhee Paik, B. K. Cooper, H. Kwon, K. Mitra, E. Tiesinga, J. R. Anderson, A. J. Dragt, C. J. Lobb, and F. C. Wellstood
- P-P05: **Measurement of the Excited State Lifetime of a Cooper-Pair Box**
Zaeill Kim, Youngnoh Yoon, Vitaley Zaretsky, B. S. Palmer, F. C. Wellstood, J. F. Schneiderman, and P. M. Echternach
- P-P06: **Improving Superconducting Phase Qubits with Low-Loss Vacuum-Gap Capacitors**
Katarina Cicak, Fabio Altomare, M. S. Allman, K. D. Osborn, A. J. Sirois, J. A. Strong, J. D. Whittaker, and R. W. Simmonds
- P-P07: **Quantum Behavior of dc SQUID phase qubit**
Kaushik Mitra, Fred Strauch, Eite Tiesinga, F. C. Wellstood and C. J. Lobb
- P-P08: **Discrete Two-Level Systems in Josephson Junction Resonators**
Kevin Osborn, Josh Strong, Fabio Altomare, and Ray Simmonds

Wednesday Morning Oral Session

Wednesday, June 13, 8:20-10:00

Oral Session: SQUIDS and Their Applications 2

Chair: *John Clarke*

Co-Chair: *Robin Cantor*

- 8:20-8:40 O-Q01: **SQUID Micro-Susceptometer for Scanning Applications with Sub-Micron Pick-up Loops and Micromachined Terraces**
Martin E. Huber, Nicholas C. Koshnick, Julie Bert, and Kathryn A. Moler
- 8:40-9:00 O-Q02: **STM-SQUID Probe Microscope**
Tadayuki Hayashi, M. Tachiki and H. Itozaki
- 9:00-9:20 O-Q03: **High Tc SQUID Micro-detector for Metallic Contaminant for industrial products**
Saburo Tanaka, H. Fujita, Y. Hatsukade, T. Otani, S. Suzuki and T.Nagaishi
- 9:20-9:40 O-Q04: **High-performance SQUID sensors used in low-temperature measurement systems**
D. Drung, J. Beyer, C. Aßmann, A. Kirste, M. Peters, F. Ruede, and Th. Schurig
- 9:40-10:00 O-Q05: **Development of a Rotating Axial Gradiometer for Geophysical and Security Applications**
K. E. Leslie, M. Bick, R. A. Binks, K. R. Blay, P. J. Cusack, C.P. Foley, P. W. Schmidt, P. R. Sullivan, D. L. Tilbrook and R. G. Thorn

Coffee Break 10:00-10:20

Late Wednesday Morning Oral Session

Wednesday, June 13, 10:20-12:00

Oral Session: Mixed Signal Circuits and Systems

Chair: *Deborah Van Vechten*

Co-Chair: *F. Furuta*

10:20-10:50 Invited I-R01: **Digital RF Receivers**

Deep Gupta

10:50-11:20 Invited I-R02: **Demonstration of a Second Order Josephson Delta-Sigma Analog-to-Digital Converter**

Quentin Herr, Donald L. Miller, John X. Przybysz, and Aaron Pesetski

11:20-11:40 O-R01: **Stand-alone portable HTS sampler system**

H. Suzuki, M. Maruyama, T. Hato, Y. Wakana, S. Adachi, K. Tanabe, T. Konno, K. Uekusa, N. Sato, and M. Kawabata

11:40-12:00 O-R02: **High-Speed Digital Autocorrelator Operating at 20.48 GHz**

S. B. Kaplan and H. Engseth

Break for Lunch - 12:00-14:00

Wednesday Afternoon Oral Session

Wednesday, June 13, 14:00-15:50

Oral Session: Digital Circuits: Processor and Memory

Chair: *Shinya Hasuo*

Co-Chair: *Oleg Mukhanov*

14:00-14:30 Invited I-S01: **Core Microprocessor**

Nobuyuke Yoshikawa

14:30-14:50 O-S01: **Half-Nanosecond Latency Measurement on a 64-kbit Josephson-CMOS Memory**

Kan Fujiwara, Q. Liu, X. Meng, T. Van Duzer, N. Yoshikawa

14:50-15:10 O-S02: **Scalable Cache Memory for a Bit-Serial Single-Flux-Quantum Microprocessor**

N. Irie, M. Tanaka, Y. Yamanashi, H. -J. Park, N. Yoshikawa, H. Terai, S. Yorozu, A. Fujimaki

15:10-15:30 O-S03: **Asynchronous High-Speed Operation of RSFQ First-In First-Out Buffers**

H. Hara, Y. Nobumori, N. Yoshikawa, A. Fujimaki, Y. Hashimoto, H. Terai

15:30-15:50 O-S04: **Fast Bit-Serial Multipliers Using RSFQ Logic Circuits**

H. Park, Y. Yamanashi, K. Taketomi, N. Yoshikawa, A. Fujimaki and N. Takagi

Coffee Break 15:50-16:00

Late Wednesday Afternoon Poster Sessions

Wednesday, June 13, 16:00-18:00

Posters: **New Junction Fabrication (PT)**

Posters: **Quantum Computing (PU)**

Posters: **Mixed signal, Passive RF, and microwave components (PV)**

Wednesday, June 13, 16:00-18:00

Posters: New junction fabrication (PT)

Chair: *Brian Moeckly*

Co-Chair: *K. Endo*

- P-T01: **Fabrication of sub-micron YBCO Josephson Junctions by a sample mosaic navigation assisted laser etching process**
U Büttner , G. L. Hardie , R. Rouver, V.V. Srinivasu , and W J Perold
- P-T02: **Electro-dynamical Analysis on Optimization of Off-Axial DC Magnetron Sputtering Target for High T_c Superconducting Thin Film Deposition**
Naoki Arihara, Atsuchi Uchida and Shigeru Yoshimori
- P-T03: **Nano-scale stoichiometry and morphology at the surface of the YBCO films - key features for multi-layers devices process**
Maria Branescu, I. Ward, M. Kelly, Y. Matsushita, and G. Zeltzer
- P-T04: **Fabrication of Single and Bi-Crystalline YBCO Thin Films by Induced Plasma Sputtering on MgO Substrates without Buffer Layers**
Mustafa Yavuz, Atsushi Saito, Shiro Kambe, and Shigetoshi Ohshima
- P-T05: **Resolution enhancement technique for advanced superconductor microelectronics fabrication process with submicron Josephson junctions**
Sergey K. Tolpygo and D. Yohannes
- P-T06: **Phase evolution in PLD MgB_2 films during in situ annealing**
Yue Zhao, Y. S. Wu, H. J. Kim, M. Ionescu, C. H. Kong, D. Wexler, and S. X. Dou
- P-T07: **Influence of the Nb film surface roughness on the sub-gap leakage current of Nb/ AlO_x -Al/Nb trilayer Josephson junctions**
J. Du, A. D. M. Charles, K. D. Petersson and E. W. Preston
- P-T08: **Studies of the Superconducting Transition in Mo/Au-bilayer Thin Films**
Jack Sadleir, Stephen Smith, Naoko Iyomoto, Simon Bandler, Jay Chervenak, Ari Brown,

Regis Brekowsky, Caroline Kilbourne, Ian Robinson, Fred Finkbeiner, Richard Kelley, and Scott Porter

P-T09: Progress in Internally Shunted NbN Josephson Junctions with a Tantalum Nitride Barrier Sputtered near the Metal-Insulator Transition

R. Setzu, E. Baggetta, and J.-C. Villegier

P-T10: 150 mm Wafer Process for Nb/Al-AIO_x/Nb Josephson Junction Device Fabrication

Robin Cantor and J. Ad Hall

Wednesday, June 13, 16:00-18:00

Posters: Quantum Computing (PU)

Chair: *Katarina Cicak*

Co-Chair: *Hanhee Paik*

P-U01: Frequency adjustable Josephson junction resonators

Joshua Strong, Kevin Osborn, Fabio Altomare, Adam Sirois, and Raymond Simmonds

P-U02: Studies of non-linear vacuum-gap capacitor LC resonators

Michael Shane Allman, Katarina Cicak, Kevin Osborn, Joshua Strong, and Raymond W. Simmonds

P-U03: RF-SQUID qubit readout with a fast flux pulse

Douglas A. Bennett, Luigi Longobardi, Vijay Patel, Wei Chen and James Lukens

P-U04: An rf-readout of a dc-SQUID and its application to state detection of the phase qubit

R. M. Lewis, B. K. Cooper, T. A. Palomaki, Hanhee Paik, S. K. Dutta, A. Przybysz, H. Kwon, K. Mitra, J. R. Anderson, A. J. Dragt, C. J. Lobb, and F. C. Wellstood, Ben Palmer, and Eite Tiesinga

P-U05: An alternative complete solution of RSFQ based microwave controller for qubit

Raihan Rafique, Thomas A. Ohki, Henrik Engseth, and Anna Kidiyarova-Shevchenko

P-U06: Adapting nonlinear resonant techniques to phase qubit readout

B. K. Cooper, R. M. Lewis, T. A. Palomaki, S. K. Dutta, Hanhee Paik, A. J. Przybysz, H. Kwon, Alex J. Dragt, J. R. Anderson, C. J. Lobb, and F. C. Wellstood

P-U07: Stimulus and read-out interfaces for nSQUID arrays

Vasili Semenov and Jie Ren

P-U08: Quantum Computing and Quantum Challenge

A. V. Nikulov

P-U09: Microwave induced critical current fluctuation in a superconducting phase qubit

Ning Dong, Yiwen Wang, Yang Yu, Guozhu Sun, Junyu Cao, Jian Chen, Lin Kang, Weiwei Xu and PeiHeng Wu

P-U10: Adiabatic and spectroscopic measurements of superconducting flux qubits

M. Grajcar, A. Izmailkov, S.H.W. van der Ploeg and E. Il'ichev

Wednesday, June 13, 16:00-18:00

Posters: Mixed signal, Passive RF and Microwave Components (PV)

Chair: *John Przybysz*

Co-Chair: *Raihan Rafique*

- P-V01: **Cryocooled Wideband Digital Channelizing RF Receiver Based on Low-Pass ADC**
I. V. Vernik, D. E. Kirichenko, A. Talalaevskii, V. V. Dotsenko, R. Miller, R. Webber, P. Shevchenko, D. Gupta, and O. A. Mukhanov
- P-V02: **An X-band Digital-RF Receiver for Satellite Communication**
D. E. Kirichenko, T. V. Filippov, V. Dotsenko, R. Webber, R. Miller, P. Shevchenko, D. Gupta, O. A. Mukhanov, T. Wilstead, F. Fischer, J. Wong, and R. Dunnegan
- P-V03: **A Linear Model of Noise Shaping in Josephson Delta-Sigma Modulators**
Aaron Pesetski, Donald Miller, John Przybysz, and Quentin Herr
- P-V04: **Analysis of HTS Striplines using the Time-Dependent GL Equation**
Shigeru Yoshimori, Takehito Shimizu, and A. Uchida
- P-V05: **Tunable HTS power resonators with disk-shaped microstrip structure for microwave band**
Kazunori Yamanaka, Keisuke Sato, Akihiko Akasegawa, Teru Nakanishi, Masaharu Hida, Masao Kondo, and Kazuaki Kurihara
- P-V06: **Miniaturization of superconducting passive filters for on-chip applications**
Raihan Rafique, Peter Lenner, Bahar M Motlagh, Biddut Banik, Thomas A. Ohki, and Anna Kidiyarova-Shevchenko
- P-V07: **Design of transmit filter and tuning method using superconducting bulk ring and trimming rod**
Atsushi Saito, T. Tomioka, S. Ono, H. Teshima, S. Hirano, H. Hirano, and S. Ohshima
- P-V08: **Superconducting coplanar waveguide resonators for detector applications**
G. Hammer, S. Wünsch, K. Ilin, E. Crocoll and M. Siegel
- P-V09: **SQUIDs as tunable inductors integrated in the design of filters**
Raihan Rafique, Thomas A. Ohki, and Anna Kidiyarova-Shevchenko

Break 18:00-19:00

Conference Dinner 19:00 - 21:00

Thursday Morning Oral Session

Thursday, June 14, 8:00-10:00

Oral Session: Mixers and Detectors

Chair: *Quentin Herr*

Co-Chair: *N. F. Pedersen*

8:00-8:30 Invited I-W01: **Bolometer Arrays**
Kent Irwin

8:30-9:00 Invited I-W02: **Superconducting integrated receivers for radio astronomy and atmospheric monitoring**
Valery P. Koshelets

9:00-9:20 O-W01: **Superconductive Nanowire Single Photon Detector Efficiency and Area Enhancement**
Karl K. Berggren, Vikas Anant, Eric Dauler, Xiaolong Hu, Andrew J. Kerman, Kris Rosfjord, Joel Yang

9:20-9:40 O-W02: **Antenna-Coupled Superconducting Bolometers for Studying Dynamics with Terahertz Spectroscopy**
Daniel Santavicca, Anthony Annunziata, Luigi Frunzio, Matthew Reese, Joseph Bae, Alan True, Charles Schmuttermaer, and Daniel Prober

9:40-10:00 O-W03: **A widely tunable parametric amplifier based on a SQUID array resonator**
M. A. Castellanos-Beltran and K.W. Lehnert

Coffee Break 10:00-10:10

Late Thursday Morning Oral Session

Thursday, June 14, 10:10-12:00

Oral Session: Quantum Computing 2

Chair: *John Martinis*

co-chair: *Fred Wellstood*

10:10-10:40 Invited I-X01: **Quantum Computing**

Yasunobu Nakamura

10:40-11:00 O-X01: **Microwave-Induced Cooling of a Superconducting Persistent-Current Qubit**

William D. Oliver, Sergio O. Valenzuela, David M. Berns, Karl K. Berggren, Leonid S. Levitov, and Terry P. Orlando

11:00-11:20 O-X02: **Fluxon Based Qubit Readout**

A. Kidiyarova-Shevchenko, A. Fedorov, A. Shnirman, E. Ilichev

11:20-11:40 O-X03: **Experimental results in the RSFQ control of a superconducting qubit circuit**

P. Carelli, M. G. Castellano, F. Chiarello, M. I. Kabipov, G. Torrioli and A. B. Zorin

11:40-12:00 O-X04: **Experimental verification of the assumption on macroscopically distinct states in superconducting loop**

A. A. Burlakov, V. L. Gurtovoi, S. V. Dubonos, A. V. Nikulov, and V. A. Tulin

Coffee Break 12:00-12:15

CONFERENCE WRAP-UP 12:15-1:00