Oral Sessions

Dec. 12 (Wed.) Plenary Lecture  Main Convention Hall
Chairperson: Atsutaka Maeda (The University of Tokyo)

PL1-INV  9:30–10:10
10th Anniversary of High Tc Iron-based Superconductors: What we learned
*Hideo Hosono
Tokyo Institute of Technology

Chairperson: Mitsuho Furuse (AIST)

PL2-INV  10:10–10:50
Recent Topics and Future Prospects of Superconducting Joints Connecting HTS Materials
*Jun'ichi Shimoyama
Aoyama Gakuin University

Chairperson: Naoyuki Amemiya (Kyoto University)

PL3-INV  10:50–11:30
Superconducting Technology for Future Aircraft Electric Propulsion
*Hiroyuki Ohsaki
Graduate School of Frontier Sciences, the University of Tokyo, Japan

Dec. 13 (Thu.) Plenary Lecture  Main Convention Hall
Chairperson: Yoshiyuki Yoshida (AIST)

PL4-INV  9:00–9:40
High Temperature Superconductors for High Field Magnets
*David C Larbalestier
Applied Superconductivity Center, Florida State University, National High Magnetic Field Laboratory, Tallahassee FL, USA

Chairperson: Naoyuki Amemiya (Kyoto University)

PL5-INV  9:40–10:20
A Snapshot of Superconductivity Activities in the United States
*Bruce P. Strauss
U. S. Department of Energy
Dec. 14 (Fri.) Plenary Lecture
Main Convention Hall

Chairperson: Mutsuo Hidaka (AIST)

PL6-INV  9:00–9:40
Superconducting quantum-classical information processing systems
*Oleg Mukhanov¹,²
Hypres¹
SeeQC²

Dec. 12 (Wed.) Outreach Session
Room 202

Chairperson: Michiya Okada (AIST)

OR-1-INV  17:00–17:30
Development of metal exploration system using high-Tc SQUID
*Eiichi Arai¹, Satoshi Ueda¹, Masayuki Motoori¹, Kazuo Masuda¹, Akira Tsukamoto², Tsunehiro Hato², Hidehiro Ishikawa³, Hidehisa Watanabe³
Japan Oil, Gas and Metals National Corporation¹
Superconducting Sensing Technology Research Association²
Mitsui Mineral Development Engineering Co., Ltd³

OR-2-INV  17:30–18:00
Economy of thermal energy storage power plant and usage of superconductivity
*Toru Okazaki¹
The Institute of Applied Energy¹
Dec. 12 (Wed.) Physics and Chemistry  Room 201

**Vortex physics**

Chairpersons: Wai-Kwong Kwok (Argonne National Laboratory) and Yusuke Kato (The University of Tokyo)

**PC1-1-INV**  12:30–13:00

**Guiding Vortex Matter via Magnetic Patterned Structures**

*Wai-Kwong Kwok¹, Vitalii K. Vlasko-Vlasov¹, Timothy Benseman², Daniel Rosenmann³, Yong-Lei Wang¹, Xiaoyu Ma², Jing Xu¹, Yangyang Lyu¹, Zhi-Li Xiao¹, Alexey Snezhko¹, Boldizsar Janko⁵, Fabiano Colauto⁷, Ralu Divan³, John E. Pearson¹

Materials Science Division, Argonne National Laboratory, Argonne, Illinois, USA¹
City University of New York, CUNY Queens College, Queens, NY, USA²
Center for Nanoscale Materials, Argonne National Laboratory, Argonne, Illinois, USA³
Research Institute of Superconductor Electronics, School of Electronic Science and Engineering, Nanjing University, Nanjing, China⁴
Department of Physics, University of Notre Dame, Notre Dame, Indiana, USA⁵
Department of Physics, Northern Illinois University, DeKalb, Illinois, USA⁶
Federal University of Sao Carlos, Physics Department, SP, Brazil⁷

**PC1-2-INV**  13:00–13:30

**Theory of Forces on Quantum Vortex in Type II Superconductors**

*Yusuke Kato¹, Shunki Sugai¹, Noriyuki Kurosawa¹

Department of Basic Science, The University of Tokyo¹

**PC1-3**  13:30–13:45

**Competition between dynamic ordering and disordering for vortices under asymmetric periodic drive**

*Mihaly Dobroka¹, Koichiro Ienaga¹, Shin’ichi Kaneko¹, Satoshi Okuma¹

Tokyo Institute of Technology¹

**Novel materials**

Chairpersons: Alberto Morpurgo (University of Geneva) and Takashi Uchihashi (NIMS)

**PC2-1-INV**  13:45–14:15

**Vortex dynamics in Noncentrosymmetric 2D Superconductors**

Y. Itahashi¹, Y. Saito¹, T. Ideue¹, T. Nojima², *Y. Iwasa¹,³

QPEC & Department of Applied Physics, University of Tokyo, Tokyo, Japan¹
Institute for Materials Research, Tohoku University, Sendai, Japan²
RIEN Center for Emergent Matter Science, Wako, Japan³

**PC2-2-INV**  14:15–14:45

**Unconventional gate-induced superconductivity in transition metal dichalcogenides**
*Alberto Morpurgo
University of Geneva, Switzerland

**PC2-3-INV** 14:45–15:15

Superconducting Atomic layers on Silicon: Superconductivity Meets Surface Science

*Takashi Uchihashi
National Institute for Materials Science, Japan

**PC2-4** 15:15–15:30

Angular Dependence of Upper Critical Field Enhanced by Spin-Orbit Interaction in Ion-gated SrTiO$_3$

*Takumi Ouchi, Sunao Shimizu, Yoshihiro Iwasa, Tsutomu Nojima
Institute for Materials Research, Tohoku University, Japan
RIKEN Center for Emergent Matter Science, Japan
QPEC and Department of Applied Physics, The University of Tokyo, Japan

**PC2-5** 15:30–15:45

Pressure-induced superconductivity and topological quantum phase transitions in topological materials

*Yanpeng Qi
School of Physical Science and Technology, ShanghaiTech University

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**Recent progress of CC**

Chairpersons: David Larbalestier (Florida State University) and Yasuhiro Iijima (Fujikura)

**WB1-1-INV** 12:30–12:55

High Performance Coated Conductors for High Magnetic Field Applications

*Venkat Selvamanickam
University of Houston

**WB1-2-INV** 12:55–13:20

Recent Activities on R&D of coated conductors in AIST

*Teruo IZUMI, Takato Machi, Akira IBI, Koichi NAKAOKA, Michio SATO, Takeharu KATO, Masatake IWAKUMA, Masashi MIURA, Takanobu KISS, Satoshi AWAI
Advanced Industrial Science and Technology, Japan
Japan Fine Ceramics Center, Japan
Kyushu University, Japan
Preparation of YBCO Film on Conductive Nb-doped SrTiO$_3$ and Ni Buffered \{100\}<{001}> Cu/SS316 Lamination Tape
*Toshiya Doi$^1$, Kota Yamaguchi$^1$, Shigeru Horii$^1$, Ataru Ichinose$^2$
Kyoto University, Japan
Central Research Institute of Electric Power Industry, Japan

Electromagnetic loss characterization of a flexible woven HTS Cable
Guy Dubuis$^{1,2}$, Zhenan Jiang$^1$, *Nicholas J Long$^1$
Robinson Research Institute, Victoria University of Wellington, Lower Hutt, New Zealand
The MacDiarmid Inst. for Advanced Materials & Nanotechnology, Wellington, New Zealand

Asymmetric Critical Current in REBCO Films toward Novel Superconducting Diodes
*Yuji Tsuchiya$^1$, Keisuke Suzuki$^1$, Yusuke Ichino$^1$, Yutaka Yoshida$^1$
Nagoya University

Measurement and analysis of longitudinal $I_c$ variation in long coated conductors fabricated by different processes: IBAD-PLD and ISD-coevaporation methods
*Takanobu Kiss$^1$, Takumi Suzuki$^1$, Shohei Noda$^1$, Yuki Yamauchi$^1$, Kohei Higashikawa$^1$, Wataru Hirata$^2$, Shinnji Fujita$^2$, Yasuhiro Iijima$^2$, Markus Bauer$^3$
Dept. of Electrical Engineering, Kyushu University, Fukuoka, Japan
Fujikura Ltd. Sakura, Japan
THEVA GmbH, Ismaning, Deutschland

Characterization of Pinning Center in Zr-doped (Gd,Y)Ba$_2$Cu$_3$O$_x$Superconductor Tape by Anomalous Small-Angle X-ray Scattering
*Yojiro Oba$^1$, Hirokazu Sasaki$^2$, Satoshi Yamazaki$^2$, Ryusuke Nakazaki$^2$, Masato Ohnuma$^3$
Japan Atomic Energy Agency
Furukawa Electric Co., Ltd.
Hokkaido University
**Sensing**

Chairpersons: Xiaoming Xie (SIMIT/Chinese Academy of Sciences) and Hiroyuki Shibata (Kitami Institute of Technology)

**ED1-1-INV** 12:30–12:55  
Superconducting detector technologies for Single Photonics and Quantum Information  
*Sae Woo Nam*\(^1\)  
National Institute of Standards and Technology, U. S. A.\(^1\)

**ED1-2-INV** 12:55–13:20  
Study on Low temperature detectors in INFN  
*Flavio Gatti*\(^1,2\)  
Department of Physics, University of Genova, Genova, Italy\(^1\)  
INFN, Section of Genova, Genova, Italy\(^2\)

**ED1-3-INV** 13:20–13:45  
X-ray Microcalorimeters for High Resolution X-ray Spectroscopy of Astrophysical Plasmas  
*Yuichiro Ezoe*\(^1\)  
Tokyo Metropolitan University\(^1\)

**Sensing 2**

Chairpersons: Sae Woo Nam (NIST) and Tsunehiro Hato (SUSTERA)

**ED2-1-INV** 14:00–14:25  
Development of Low Tc DC SQUID and its Applications in China  
*Xiaoming Xie*\(^1,2\), *Y. Zhang*\(^1,2\), *Z. Wang*\(^1,2\), *L.L. Rong*\(^1,2\), *S.L. Zhang*\(^1,2\), *H. Dong*\(^1,2\), *L.Q. Qiu*\(^1,2\), *X.Y. Kong*\(^1,2\), *L. Chen*\(^1,2\)  
Center for excellence in superconducting electronics, Chinese Academy of Sciences, China\(^1\)  
Shanghai Inst. of Microsystem and Information Technology, Chinese Academy of Sciences, Shanghai, China\(^2\)

**ED2-2-INV** 14:25–14:50  
Vortices in Mesoscopic Superconductors and SQUID microscopy for 3D Imaging  
*Takekazu Ishida*\(^1,2\), *The Dang Vu*\(^3,4,5\), *Masaki Toji*\(^5\), *Yoshitdugu Ninomiya*\(^5\), *Shigeyuki Miyajima*\(^5,6\), *Thanh Huy Ho*\(^4\), *Hiroaki Shishido*\(^2,5\), *Masaru Kato*\(^2,5\), *Masaaki Maezawa*\(^7\), *Mutsuo Hidaka*\(^7\), *Masahiko Hayashi*\(^8\)  
Division of Quantum and Radiation Engineering, Osaka Prefecture University, Sakai, Japan\(^1\)  
NanoSquare Research Institute, Osaka Prefecture University, Sakai, Japan\(^2\)
ED2-3-IN V 14:50–15:15

Fabrication of MoN Superconducting Single Photon Detector

*Hiroyuki Shibata\(^1\), Naoto Kirigane\(^1\), Kento Sakai\(^1\), Hiromichi Nii\(^1\), Kentaro Fukao\(^1\), Daisuke Sakai\(^1\), Kou Ohnishi\(^2\), Wakako Nakano\(^2\), Yasutaka Matsuo\(^2\)

Kitami Institute of Technology, Hokkaido, Japan\(^1\)
Hokkaido University, Hokkaido, Japan\(^2\)

ED2-4 15:15–15:35

Research toward realization of large-scale superconducting nanowire single photon detector system

*Shigehito Miki\(^{1,2}\), Masahiro Yabuno\(^1\), Shigeyuki Miyajima\(^1\), Fumihiro China\(^1\), Naoki Takeuchi\(^3\), Taro Yamashita\(^4\), Hirotaka Terai\(^1\)

National Institute of Information and Communications Technology\(^1\)
Kobe University\(^2\)
Yokohama National University\(^3\)
Nagoya University\(^4\)

Dec. 12 (Wed.) Large Scale System Applications Room 101

**Electric aircrafts and motors**

Chairpersons: Minwon Park (Changwon National University) and Taketsune Nakamura (Kyoto University)

AP1-1-IN V 12:30–12:55

Development of fully-turbo electric propulsion systems for future aircrafts

*Masataka Iwakuma\(^1\), Masataka Komiya\(^1\), Takuya Aikawa\(^1\), Kouichi Yoshida\(^1\), Shun Miura\(^1\), Takashi Yoshida\(^1\), Teruyoshi Sasayama\(^1\), Akira Tomioka\(^2\), Masayuki Konno\(^2\), Yuhji Aoki\(^3\), Kazuissa Adachi\(^3\), Teruo Izumi\(^3\)

Kyushu University\(^1\)
Fuji Electric Co., Ltd.\(^2\)
SWCC Showa Cable Systems Co., Ltd.\(^3\)
AIST\(^4\)

AP1-2-IN V 12:55–13:20

Towards Superconducting Hybrid Electric Aircraft: KIT Research Activities within TELOS and ASuMED

*B. Holzapfel\(^1\), T. Benkel\(^1\), F. Grilli\(^1\), J. Hänisch\(^1\), A. Kudymow\(^1\), M. Lao\(^1\), Y. Liu\(^1\), S. Schlachter\(^1\), S. Strauss\(^1\)
AP1-3  13:20–13:40

Conceptual Study on Lighter and More Compact Transmission Cable Systems for More Electric Aircrafts
*S. Isojima\(^1\), Y. Yoshida\(^2\), N. Amemiya\(^3\), N. Sadakata\(^4\), M. Okada\(^2\), H. Ohsaki\(^5\)
Sumitomo Electric Industries, Ltd. Japan \(^1\)
National Institute of Advanced Industrial Science and Technology Japan \(^2\)
Kyoto University Japan \(^3\)
Fujikura Ltd. Japan \(^4\)
University of Tokyo Japan \(^5\)

AP1-4-IN V  13:40–14:05

Challenging Several Hundred kW class Transportation Equipment Using High Temperature Superconducting Induction/Synchronous Motor
*Taketsune Nakamura\(^1\), L. Wei\(^1\), F. Kucuk\(^1\), K. Kuroda\(^1\), Masaaki Yoshikawa\(^2\), Yoshitaka Itoh\(^2\), Toshihisa Terazawa\(^2\)
Kyoto University, Japan \(^1\)
IMRA MATERIAL R&D Co., Ltd. Japan \(^2\)

AP1-5  14:05–14:25

Experimental and Theoretical Discussion on Step Out Characteristics of High Temperature Superconducting Induction/Synchronous Motor
*Taketsune Nakamura\(^1\)
Kyoto University \(^1\)

AP1-6  14:25–14:45

Motor Structure and Output Density of IPM Motor Using Bulk Superconductors as Magnetic Field
*Wataru Akada\(^1\), Y. Terao\(^1\), H. Ohsaki\(^1\)
University of Tokyo \(^1\)

Fusions
Chairpersons: Joseph Minervini (MIT) and Bruce Strauss (U. S. Department of Energy)

AP2-1-IN V  14:55–15:20

Conceptual design of Japan’s fusion DEMO reactor JA DEMO with emphasis on superconducting magnet issues
*K. Tobita\(^1\), H. Utoh\(^1\), R. Hiwatari\(^1\), Y. Miyoshi\(^1\), S. Tokunaga\(^1\), Y. Sakamoto\(^1\), Y. Someya\(^1\), N. Asakura\(^1\), Y. Homma\(^1\), N. Nakajima\(^2\)
National Institutes for Quantum and Radiological Science and Technology (QST) \(^1\)
SPARC: An Accelerated Pathway to Fusion Energy Based on High-Field REBCO Superconducting Magnets

*Zachary S. Hartwig¹, Joseph V. Minervini¹, the SPARC team¹,²
Massachusetts Institute of Technology, USA.¹
Commonwealth Fusion Systems²

Development of the HTS Magnet System for the Next Stage of LHD Based on the Reliable 20 Years’ Operation

*Toshiyuki Mito¹,², Yuta Onodera¹,², Kazuya Takahata¹,², Nagato Yanagi¹,², Shinji Hamaguchi¹, Suguru Takada¹
National Institute for Fusion Science, National Institute of Natural Sciences, Japan¹
SOKENDAI (The Graduate University for Advanced Studies), Japan²
10 years commemoration of iron-based superconductors

Chairpersons: Masamichi Nakajima (Osaka University) and Yuta Mizukami (The University of Tokyo)

PC3-1-INV 10:45–11:15
Ultra-high-resolution laser-photoemission spectroscopy on Fe(Se,Te)
*Shik Shin
Institute for Solid State Physics, University of Tokyo, Kashiwa, Chiba, Japan

PC3-2-INV 11:15–11:45
Nematicity in heavily hole-doped iron-pnictides Ba$_{1-x}$Rb$_x$Fe$_2$As$_2$
*Yuta Mizukami
Department of Advanced Materials Science, University of Tokyo, Japan

PC3-3 11:45–12:00
Pulsed Laser Deposition of Iron Oxypnictide Thin Films
*Silvia Haindl, Erik Kampert, Kota Hanzawa, Masato Sasase, Hidenori Hiramatsu, Hideo Hosono
World Research Hub Initiative (WRHI), Institute of Innovative Research, Tokyo Inst. of Technology, Kanagawa, Japan
Dresden High Magnetic Field Laboratory (HLD-EMFL), Dresden, Germany
Lab. for Materials and Structures, Inst. of Innovative Research, Tokyo Inst. of Tech., Japan
Materials Research Center for Element Strategy, Tokyo Inst. of Technology, Japan

PC3-4 12:00–12:15
Transport Properties of CaFeAsF Single Crystals Under High Magnetic Fields
*Gang Mu, Yonghui Ma, Xiaoming Xie
Shanghai Institute of Microsystem and Information Technology, Chinese Academy of Sciences

PC3-5 12:15–12:30
Effects of fast neutron irradiation on the doping dependence of the pinning efficiency in K-doped Ba-122 single crystals
*Daniel Kagerbauer, Shigeyuki Ishida, Ventsislav Mishev, Dongjoon Song, Hiraku Ogino, Hiroshi Eisaki, Masamichi Nakajima, Akira Iyo, Michael Eisterer
Atominstitut, TU Wien, Vienna, Austria
Electronics and Photonics Research Institute, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan
Department of Physics, Osaka University, Toyonaka, Osaka, Japan
10 years commemoration of iron-based superconductors 2

Chairpersons: Yuji Matsuda (Kyoto University) and Fuyuki Nabeshima (The University of Tokyo)

PC4-1-INV 13:30–14:00

BCS-BEC crossover in FeSe

*Yuji Matsuda
Department of Physics, Kyoto University, Sakyo-ku, Kyoto, Japan

PC4-2-INV 14:00–14:30

Chemical pressure effects in iron chalcogenide superconductor FeSe

*Fuyuki Nabeshima
The University of Tokyo, Japan

PC4-3 14:30–14:45

Vortex Dynamics in Isovalent Optimally Doped Pnictide Superconductor BaFe$_2$(As$_{0.68}$P$_{0.32}$)$_2$ investigated by AC and DC magnetic measurements

*Adrian Crisan, Alina M Ionescu, Lucica Miu
National Institute of Materials Physics Bucharest, Magurele, Romania

PC4-4 14:45–15:00

Effect of in-plane strain on charge dynamics in FeSe

*Masamichi Nakajima, Kazuya Yanase, Yuki Senoo, Masataka Kawai, Tomoya Ishikawa, Naoki Shikama, Fuyuki Nabeshima, Atsutaka Maeda, Setsuko Tajima
Osaka University, Japan
The University of Tokyo, Japan

Novel materials 2

Chairpersons: Jianping Hu (IOP/Chinese Academy of Sciences) and Yoshikazu Mizuguchi (Tokyo Metropolitan University)

PC5-1-INV 15:15–15:45

Genes of Unconventional High Temperature Superconductors

*Jiangping Hu
Beijing National Laboratory for Condensed Matter Physics, and Institute of Physics, Chinese Academy of Sciences, Beijing, People’s Republic of China
University of Chinese Academy of Science, Beijing, People’s Republic of China

PC5-2-INV 15:45–16:15

Superconductivity in REO$_{0.5}$F$_{0.5}$BiS$_2$ with high-entropy-alloy-type RE site

*Yoshikazu Mizuguchi, Ryota Sogabe, Yosuke Goto
Tokyo Metropolitan University\textsuperscript{1}

PC5-3-INV 16:15–16:45

Exploration for novel superconductors in transition metal compounds
*Zhi An Ren\textsuperscript{1}

Beijing National Laboratory for Condensed Matter Physics, and Institute of Physics, Chinese Academy of Sciences, Beijing, China\textsuperscript{1}

PC5-4 16:45–17:00

Carrier doping effect on superconductivity of newly synthesized La\textsubscript{2}O\textsubscript{2}M\textsubscript{4}S\textsubscript{6} (M=Bi, Ag) type compounds
*Rajveer Jha\textsuperscript{1}, Yosuke Goto\textsuperscript{1}, Yoshikazu Mizuguchi\textsuperscript{1}

Tokyo Metropolitan University, Hachioji, Tokyo, Japan\textsuperscript{1}

PC5-5 17:00–17:15

Quasi-particle evidence for the nematic state above superconductivity in Sr\textsubscript{x}Bi\textsubscript{2}Se\textsubscript{3}.
*Yue Sun\textsuperscript{1}, Shunichiro Kittaka\textsuperscript{2}, Toshiro Sakakibara\textsuperscript{2}, Tsuyoshi Tamegai\textsuperscript{3}, Kazushige Machida\textsuperscript{4}, Jinghui Wang\textsuperscript{5}, Jinsheng Wen\textsuperscript{5}

Department of Physics and Mathematics, Aoyama Gakuin University, Japan\textsuperscript{1}
Institute for Solid State Physics, The University of Tokyo, Japan\textsuperscript{2}
Department of Applied Physics, The University of Tokyo, Japan\textsuperscript{3}
Department of Physics, Ritsumeikan University, Japan\textsuperscript{4}
Department of Physics, Nanjing University, China\textsuperscript{5}

PC5-6 17:15–17:30

Determination of the Pairing State in a Superconducting Doped Topological Insulator Sr\textsubscript{x}Bi\textsubscript{2}Se\textsubscript{3}
*Takaaki Takenaka\textsuperscript{1}, Yijie Miao\textsuperscript{1}, Kota Ishihara\textsuperscript{1}, Yuta Mizukami\textsuperscript{1}, Marcin Konczykowski\textsuperscript{2}, Kazumune Tachibana\textsuperscript{3}, Takao Sasagawa\textsuperscript{3}, Takasada Shibauchi\textsuperscript{1}

University of Tokyo, Japan\textsuperscript{1}
Ecole Polytechnique, France\textsuperscript{2}
Tokyo Institute of Technology, Japan\textsuperscript{3}

PC5-7 17:30–17:45

Discovery of New Pressure-induced Superconductors Explored by Data-driven Approach
*Ryo Matsumoto\textsuperscript{1,2}, Zhufeng Hou\textsuperscript{1}, Hiroshi Hara\textsuperscript{1,2}, Masanori Nagao\textsuperscript{3}, Shintaro Adachi\textsuperscript{1}, Hiromi Tanaka\textsuperscript{4}, Tetsuo Irifuji\textsuperscript{5}, Hiroyuki Takeya\textsuperscript{1}, Kiyoyuki Terakura\textsuperscript{1}, Yoshihiko Takano\textsuperscript{1,2}

National Institute for Materials Science\textsuperscript{1}
University of Tsukuba\textsuperscript{2}
University of Yamanashi\textsuperscript{3}
National Institute of Technology, Yonago College\textsuperscript{4}
Geodynamics Research Center, Ehime University\textsuperscript{5}
Low-Energy Quasiparticle Excitations in Half-Heusler Superconductors with $j=3/2$ Fermions

*Kota Ishihara$^1$, Takaaki Takenaka$^1$, Yijie Miao$^1$, Yuta Mizukami$^1$, Orest Pavlosiuk$^2$, Piotr Wiśniewski$^2$, Dariusz Kaczorowski$^2$, Takasada Shibauchi$^1$

Department of Advanced Materials Science, University of Tokyo$^1$
Polish Academy of Sciences$^2$

Dec. 13 (Thu.) Wires and Bulk Room 102

**Superconducting joints**
Chairpersons: Akiyoshi Matsumoto (NIMS) and Teruo Izumi (AIST)

**WB2-1-INv** 10:45–11:10

Recent Progress in REBCO Coated Conductors and Their Superconducting Joints

*Tatsuuki Nagaishi$^1$, Kotaro Ohki$^1$, Takashi Yamaguchi$^1$, Tatsuhiko Yoshihara$^1$, Takeharu Kato$^2$, Daisaku Yokoe$^2$, Tsukasa Hirayama$^2$, Yuichi Ikuhara$^3$, Yoshinori Yanagisawa$^4$, Renzhong Piao$^1$, Hideaki Maeda$^4$

Sumitomo Electric Industries, Ltd.$^1$
Japan Fine Ceramics Center$^2$
University of Tokyo$^3$
RIKEN$^4$

**WB2-2-INv** 11:10–11:35

Superconducting Joint between BSCCO and NbTi using Bi-Pb-Sn Solder

*Yoshihiko Takano$^{1,2}$, Ryo Matsumoto$^{1,2}$, Gen Nishijima$^1$

National Institute for Materials Science (NIMS), Tsukuba, Japan$^1$
University of Tsukuba, Tsukuba, Japan$^2$

Recent progress of commercial HTS wires
Chairpersons: Venkat Selvamanickam (University of Houston) and Nick Long (Victoria University of Wellington)

**WB3-1-INv** 13:00–13:25

Development of BMO Doped REBCO Coated Conductors by Productive Hot-Wall PLD Process

*Yasuhiro Iijima$^1$, Kazuomi Kakimoto$^1$, Shinji Fujita$^1$, Shogo Muto$^1$, Wataru Hirata$^1$, Tomo Yoshida$^1$, Yutaka Adachi$^1$, Satoru Hanyu$^1$, Ryo Kikutake$^1$, Masanori Daibo$^1$, Satoshi Awaji$^1$, Takanobu Kiss$^3$

Fujikura Ltd., Japan$^1$
Tohoku University, Japan$^2$
Kyushu University, Japan$^3$
Production and Development of REBCO (2G-HTS) Conductors
*Satoshi Yamano\textsuperscript{1}, Drew Hazelton\textsuperscript{1}, Paul Brownsey\textsuperscript{1}, Yifei Zhang\textsuperscript{1}, Aarthi Sundaram\textsuperscript{1}, Shinya Yasunaga\textsuperscript{1}, Gene Carota\textsuperscript{1}, Hiroshi Kuraseko\textsuperscript{1}, Toru Fukushima\textsuperscript{1}, Hisaki Sakamoto\textsuperscript{2}, Akinobu Nakai\textsuperscript{2}
SuperPower Inc. at United states of America\textsuperscript{1}
Furukawa Electric Co., Ltd. at Japan\textsuperscript{2}

Recent Progress on Manufacturing of Coated Conductors
*Markus Bauer\textsuperscript{1}
THEVA Dünnschichttechnik GmbH, Germany\textsuperscript{1}

Recent Progress on the Development of RE-123 CCs in SuNAM
*Seung-Hyun Moon\textsuperscript{1}
SuNAM Co. Ltd., Anseong, Korea\textsuperscript{1}

2G HTS Wire Production Status by the SuperOx Group of Companies
*Valery Petrykin\textsuperscript{1}, Sergey Lee\textsuperscript{1}, Alexander Molodyk\textsuperscript{2}, Sergey Samoilenkov\textsuperscript{2}
SuperOx Japan LLC, Sagamihara, Kanagawa, Japan\textsuperscript{1}
SuperOx, Moscow, Russia\textsuperscript{2}

Present status of superconducting wire development in China: RE-123 CCs and related applications
*Yutaka Yamada\textsuperscript{1,2}, Yue Zhao\textsuperscript{1,2}, Zhiyong Hong\textsuperscript{1,2}, Zhijian Jin\textsuperscript{2}
Shanghai Superconductor Technology Co. Ltd., Shanghai, P.R.C\textsuperscript{1}
Shanghai Jiao Tong University, Shanghai, P.R.C\textsuperscript{2}

Recent Developments of DI-BSCCO
*Soichiro Takeda\textsuperscript{1}, Shin-ichi Kobayashi\textsuperscript{1}, Goro Osabe\textsuperscript{1}, Masashi Kikuchi\textsuperscript{1}, Satoru Yamade\textsuperscript{1}, Takayoshi Nakashima\textsuperscript{1}, Tomoyuki Okada\textsuperscript{1}, Kenta Niki\textsuperscript{1}, Kazuhiko Hayashi\textsuperscript{1}, Takeshi Kato\textsuperscript{1}
Sumitomo Electric Industries, Ltd., Osaka Japan\textsuperscript{1}

Recent progress on the development of MgB\textsubscript{2} wires in Hitachi
*Hideki Tanaka\textsuperscript{1}, Motomune Kodama\textsuperscript{1}, Takaaki Suzuki\textsuperscript{1}
**Recent progress of iron-based superconductors**

Chairpersons: Yoshihiko Takano (NIMS) and Takanobu Kiss (Kyushu University)

**WB4-1-INV** 16:45–17:10

**Recent Progress of Iron Based Superconducting Round Wires**

*Sunseng Pyon¹, Tsuyoshi Tamegai¹, Katsutoshi Takano², Hideki Kajitani², Norikyo Koizumi², Satoshi Awaji³

Dept. of Appl. Phys., Univ. of Tokyo, Japan¹
Naka Fusion Inst., National Inst. for Quantum & Radiological Science & Technology, Japan²
High Field Laboratory for Superconducting Materials, Inst. for Materials Research, Tohoku Univ., Japan³

**WB4-2-INV** 17:10–17:35

**How good are the grain boundaries in Iron-based superconductors to be practical?**

*F. Kametani¹,², Y. Collantes¹, Y. Su¹, T. Shelby¹, A. Oloye¹, C. Pak¹, G. Bovone¹, C. Tarantini¹, E. E. Hellstrom¹,², D. C. Larbalestier¹,²

National High Magnetic Field Laboratory, Florida State University¹
Department of Mechanical Engineering, Florida State University²

**WB4-3** 17:35–17:55

**Slow Vortex Creep Induced by Grain Boundary Pinning in Advanced Ba122 Superconducting Tapes**

*Chiheng Dong¹, He Huang¹,², Yanwei Ma¹,²

Inst. of Electrical Engineering, Chinese Academy of Sciences, Beijing, People's Republic of China¹
University of Chinese Academy of Sciences, Beijing, People's Republic of China²

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**Novel device & fabrication**

Chairpersons: William D. Oliver (MIT) and Hirotake Yamamori (AIST)

**ED3-1-INV** 10:45–11:10

**RF Waveform Synthesizers with quantum-based accuracy for communications metrology**

*Manuel A. Castellanos Beltran¹, Justus A. Brevik¹, Christine A. Donnelly¹, Anna E. Fox¹, David I. Olaya¹,², Adam Sirois¹, Paul D. Dresselhaus¹, Peter Hopkins¹, Samuel P. Benz¹

NIST¹
University of Colorado Boulder²
ED3-2-INV 11:10–11:35

High-Transition Temperature Josephson Junctions

*Shane Cybart
Dept. of Mechanical Engineering, Materials Science and Engineering Program, University of California Riverside, U.S. A.

ED3-3 11:35–11:55

Transport Properties and Pinning Analysis for Co-doped BaFe$_2$As$_2$ Thin Films on Metal Tapes and Single Crystal Substrates

*Zhongtang Xu, Yanwei Ma
Key Laboratory of Applied Superconductivity, Institute of Electrical Engineering, Chinese Academy of Sciences, Beijing, People’s Republic of China
University of Chinese Academy of Science, Beijing, People’s Republic of China

ED3-4 11:55–12:15

TiN coplanar waveguide resonators fabricated on Si (100) substrates

*Hirotaka Terai, Wei Qiu
National Institute of Information and Communications Technology, Japan

Quantum computing

Chairpersons: Oleg Mukhanov (Hypres) and Shigeo Sato (Tohoku University)

ED4-1-INV 13:30–13:55

Quantum Engineering of Superconducting Qubits

*William D. Oliver
Massachusetts Institute of Technology, USA
MIT Lincoln Laboratory, USA

ED4-2-INV 13:55–14:20

Coherent quantum quantum phase slip effect in nano-wires from ultrathin niobium-nitride films

*O. V. Astafiev
Royal Holloway, University of London, Egham, Surrey, United Kingdom
National Physical Laboratory, Teddington, United Kingdom
Moscow Institute of Physics and Technology, Dolgoprudny, Russia

ED4-3-INV 14:20–14:45

Quantum hybrid system with a superconducting qubit and surface acoustic waves

*Atsushi Noguchi
Research Center for Advanced Science and Technology (RCAST), The Univ. of Tokyo, Japan
PRESTO, Japan Science and Technology Agency, Kawaguchi, Saitama, Japan

**ED4-4-INV** 14:45–15:10

Scalable superconducting quantum annealer based on 2.5D packaging technology and application specific architecture

*Shiro Kawabata¹
National Institute of Advanced Industrial Science and Technology (AIST)¹

**ED4-5** 15:10–15:30

Principle Verification of the Superconducting Flux Qubit Cell Toward the Quantum Sampling Approach for Training of Deep Neural Networks

*Daisuke Saida¹, Hayato Ariyoshi², Yuki Yamanashi²
MDR Inc.¹
Yokohama National University²

**Digital circuits**

Chairpersons: Manuel A. Castellanos Beltran (NIST) and Mutsuo Hidaka (AIST)

**ED5-1-INV** 15:45–16:10

Implementation of a Synchronous Front-end and Addressing Circuit for Using in Superconducting Stripline Detector Arrays

Eren Can Aydogan¹, Kubra Usenmez¹, Sasan Razmkhah¹, *Ali Bozbey¹, Akira Fujimaki²
TOBB Univ. of Economy and Technology, Dept. of Electrical and Electronics Engineering, Ankara, Turkey¹
Department of Quantum Engineering, Nagoya University, Nagoya, Japan²

**ED5-2-INV** 16:10–16:35

Development of an extremely energy-efficient AQFP microprocessor

*Christopher L. Ayala¹, Olivia Chen¹, Ro Saito², Tomoyuki Tanaka³, Naoki Takeuchi¹, Yuki Yamanashi¹,³, Nobuyuki Yoshikawa¹,³
Institute of Advanced Sciences, Yokohama National University, Japan¹
Dept. of Information Media and Environment Sciences, Yokohama National Univ., Japan²
Dept. of Electrical Engineering and Computer Engineering, Yokohama National Univ., Japan³

**ED5-3** 16:35–16:55

Numerical Analysis of Low-Power Half Single Flux Quantum Circuits Based on 0-π SQUIDs

*Masamitsu Tanaka¹, Yuta Yoshinomoto¹, Tomohiro Kamiya¹, Kyosuke Sano¹, Taro Yamashita¹,², Akira Fujimaki¹
Nagoya University, Japan¹
JST-PRESTO, Japan²
**Medical applications**

Chairpersons: Michael Sumption (Ohio State University) and Naoyuki Amemiya (Kyoto University)

**AP3-1-INV** 10:45–11:10

Ultra-High Field NMR Magnet Development at Bruker BioSpin

*Patrick Wikus*¹

Bruker BioSpin¹

**AP3-2-INV** 11:10–11:35

Development of HTS high stable magnetic field magnet system for MRI

*Shoichi YOKOYAMA*¹, *Tetsuya MATSUDA*¹, *Hideaki MIURA*¹, *Yusuke MORITA*¹, *Syunsuke OTAKE*¹, *Ryo EGUCHI*¹, *Tatsuya INOUE*¹, *Shinji SATO*¹, *Takanobu KISS*², *Makoto TSUDA*³, *Taketsune NAKAMURA*⁴, *Yasuyuki SHIRAI*⁴

Mitsubishi Electric Corporation, JAPAN¹

Kyusyu University, JAPAN²

Tohoku University, JAPAN³

Kyoto University, JAPAN⁴

**AP3-3-INV** 11:35–12:00

Progress of Superconductors and Medical Applications in the US

*Mike Sumption*¹

CSMM, Materials Science Department, The Ohio State University, U. S. A.¹

**AP3-4-INV** 12:00–12:25

Progress of S-Innovation project on cryocooler-cooled HTS accelerator magnet: beam-guiding and beam-injection tests of an HTS magnet on HIMAC beam line


Kyoto University¹

Toshiba Energy Systems & Solutions Corporation²

High Energy Accelerator Research Organization³

National Institute of Radiological Sciences⁴

Japan Atomic Energy Agency⁵

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**Electric power applications and cables**

Chairpersons: Michal Vojenciak (Institute of Electrical Engineering SAS) and Shinichi Mukoyama (Furukawa Electric)

**AP4-1-INV** 13:30–13:55

Research of HTS for DC Power Transmission
AP4-2-INV 13:55–14:20  
**Current Status and Future Expectation of Korean Large Scale HTS Power Applications**  
*Minwon Park*, Seokju Lee  
Changwon National University, school of mechatronics, the dept. of EE, Republic of Korea

AP4-3-INV 14:20–14:45  
**Recent status of 220kV SFCL project**  
Mikhail Moyzykh, Sergei Samoilenkov, *Sergey Lee*  
SuperOx  
SuperOx Japan

AP4-4-INV 14:45–15:10  
**Cost effective FCL using advanced superconducting tapes for future HVDC grids – overview of European project FASTGRID**  
Michal Vojenciak, Pascal Tixador, Guillaume Escamez, Cornelia Pop, Albert Calleja, Markus Bauer, Giuliano Angeli, Christian Lacroix, Amir Saraf, Jens Hänisch, Bertrand Dutoit, Marcela Pekarcikova  
Institute of Electrical Engineering SAS, Dubravska cesta 9, Bratislava, Slovakia  
University of Grenoble Alpes, CNRS Grenoble-INP, G2Elab, Institut Neel, Grenoble, France  
Supergrid Institute, Villeurbanne, France  
Institut de Ciencia de Materiales de Barcelona, ICMAB - CSIC, Bellaterra, Catalonia, Spain  
Oxolutia SL, Barbera del Valles, Spain  
THEVA Dünnschichttechnik GmbH, Ismaning, Germany  
Ricerca sul Sistema Energetico, Milano, Italy  
Department of Electrical Engineering, Polytechnique Montréal, Montréal, Canada  
School of Physics and Astronomy, Tel Aviv University, Ramat Aviv, Tel Aviv, Israel  
Karlsruher Inst. für Technologie (KIT), Inst. für Technische Physik (ITEP), Germany

AP4-5 15:10–15:30  
**Development of 220kV/1.5kA resistive type superconducting fault current limiter**  
*Shaotao Dai*, Lianqi Zhao, Yong Huang, Tao Ma, Lei Hu, Xiaofei Xu, Linlin Cai  
School of Electrical Engineering, Beijing Jiaotong University, Beijing, P. R. China  
Jiangsu Zhongtian Technology Co., Ltd, Nantong, P. R. China

AP4-6 15:45–16:05  
**Thermo-Hydrodynamic Cable Designs for 10km to 100km Superconducting DC Power Transmission Line Using Experimental Data of Ishikari Project**  
Takao Yamada, Takashi Iitsuka, Akio Sato, Toru Sawamura, *Sataro Yamaguchi*  
JGC Corporation
Superconducting feeder cables for railway systems
*Masaru Tomita
Railway Technical Research Institute, Japan

Recent Progress of High Temperature Superconducting Cable Project in Japan
*Tomoo Mimura, Takato Masuda, Hiroharu Yaguchi, Hiroyuki Fukushima
Tokyo Electric Power Company Holdings, Inc
Sumitomo Electric Industries, Ltd.
Mayekawa Mfg.
Furukawa Electric Co., Ltd.

Development of Hybrid Energy Storage System Using a SMES Coil Cooled by Thermo-Siphon Circulation of Liquid Hydrogen to Compensate for Output Fluctuation of Renewable Energy
*Daisuke Miyagi
Tohoku University, Japan

Recent Progress on Applications Using MgB₂ and Nb₃Sn Superconductors at Hyper Tech
*Michael Tomsic, Matthew Rindfleisch, David Doll, Xuan Peng, Michael Sumption, Michael Martens
Hyper Tech Research Inc., USA
Ohio State University, USA
Case Western Reserve University, USA
Dec. 14 (Fri.) Late News Room 201

Breaking news

Chairperson: Kazuo Kadowaki (University of Tsukuba)

BN-1-INV 10:10–10:30

Superconductivity above 280 K in superhydrides at megabar pressures
*Russell J. Hemley1, Maddury Somayazulu1,*, Muhtar Ahart1, Ajay K Mishra2, Zachary M. Geballe2, Maria Baldini2, Yue Meng3, and Viktor V. Struzhkin2

School of Engineering and Applied Science, The George Washington University, USA1
Geophysical Laboratory, Carnegie Institution of Washington, Washington DC, USA2
HPCAT, X-ray Science Division, Argonne National Laboratory, Argonne, USA3

Dec. 14 (Fri.) Physics and Chemistry Room 201

Novel materials 3 / Cuprate superconductors

Chairpersons: Philipp Werner (University of Fribourg) and Ryusuke Matsunaga (Osaka University)

PC6-1-INV 10:30–11:00

Superconductivity in light-driven materials
*Philipp Werner1, Yuta Murakami1, Hugo Strand2, Shintaro Hoshino3, Martin Eckstein4

Department of Physics, University of Fribourg, Fribourg, Switzerland1
Center for Computational Quantum Physics, Flatiron Institute, New York, NY, USA2
Department of Physics, Saitama University, Saitama, Japan3
Department of Physics, University Erlangen-Nuernberg, Erlangen, Germany4

PC6-2
(Moved to EDP2-11)

PC6-3-INV
(Cancelled)

PC6-4-INV 11:00–11:30

Higgs Amplitude Mode in Superconductors Studied by Nonlinear Terahertz Spectroscopy
*Ryusuke Matsunaga1,2

The Institute for Solid State Physics, The University of Tokyo, Japan1
PRESTO, Japan Science and Technology Agency, Japan2
**Cuprate superconductors 2**

Chairpersons: Johan Chang (University of Zurich) and Eun·Gook Moon (Korea Advanced Institute of Science and Technology)

**PC7-1-INV** 13:00–13:30

The Renaissance of high-$T_c$ superconductivity—Discovery of undoped cuprate superconductors and revise of the electronic phase diagram

*Michio Naito¹, Yoshiharu Krockenberger², Ai Ikeda², Hideki Yamamoto²*

Department of Applied Physics, Tokyo University of Agriculture and Technology⁰
NTT Basic Research Laboratories, NTT Corporation²

**PC7-2-INV** 13:30–14:00

Engineering the Mott State of Cuprates for High-Temperature Superconductivity

O. Ivashko¹, M. Horio¹, W. Wan², N. B. Christensen², D. E. McNally³, E. Paris³, Y. Tseng², N. E. Shaik³, H. M. Ronnow⁴, H. I. Wei⁵, C. Adamo⁶, C. Lichtensteiger⁷, M. Gibert¹, M. R. Beasley⁶, K. M. Shen⁵, J. M. Tomczak⁸, T. Schmitt⁹, *J. Chang¹

Physik-Institut, Universität Zürich, Zurich, Switzerland¹
Department of Physics, Technical University of Denmark, Kongens Lyngby, Denmark²
Swiss Light Source, Paul Scherrer Institut, Villigen PSI, Switzerland³
Inst. of Physics, Ecole Polytechnique Federale de Lausanne (EPFL), Lausanne, Switzerland⁴
Dept. of Physics, Lab. of Atomic and Solid State Physics, Cornell Univ., Ithaca, New York, USA⁵
Department of Applied Physics, Stanford University, Stanford, CA, USA⁶
Department of Quantum Matter Physics, University of Geneva, Geneva, Switzerland⁷
Institute of Solid State Physics, Vienna University of Technology, Vienna, Austria⁸

**PC7-3-INV** 14:00–14:30

Exotic Z2 Symmetry Breaking Transitions: theory of pseudo-gap transitions

Sangjin Lee¹, Jun Jung¹, Ara Go², *Eun·Gook Moon¹*

Department of Physics, KAIST, Daejeon, Korea¹
Center for Theoretical Physics of Complex Systems, IBS, Daejeon, Korea²

**PC7-4** 14:30–14:45

Spin and Charge Excitations along the Direction Perpendicular to Charge Stripes in Cuprates

*Takami Tohyama¹*

Department of Applied Physics, Tokyo University of Science, Tokyo, Japan¹

**PC7-5** 14:45–15:00

Three-Dimensional Fermi Surface of Overdoped La-Based Cuprates

*Masafumi Horio¹, Kevin Hauser¹, Yasmine Sassa², Zarina Mingazheva¹, Denys Sutter¹, Kevin Kramer¹, Ashley M. Cook¹, Elisabetta Nocerino³, Ola K. Forslund³, Oscar Tjernberg⁴, Masaki Kobayashi⁴, Alla Chikina⁴, Niels B. M. Schröter⁴, Jonas A. Krieger⁴, Thorsten Schmitt⁴, Vladimir N. Strocov⁴, Sunseng Pyon⁵, Tomohiro Takayama⁵, Hidenori Takagi⁵, O. J. Liporscombe⁶, Stephen M. Hayden⁶, Motoyuki Ishikado⁷, Hiroshi Eisaki⁸, Titus Neupert¹, Martin Månsson¹, Christian E. Matt¹, Johan Chang¹*
Pressure Effects on RT Measurements in the triple-layered cuprate Bi-2223

*Shintaro Adachi¹, Ryo Matsumoto¹,², Yoshito Saito¹,², Hiroshi Hara¹,², Hiroyuki Takeya¹, Takao Watanabe³, Yoshihiko Takano¹,²

MANA, National Institute for Materials Science (NIMS), Tsukuba, Japan¹
Graduate School of Pure and Applied Sciences University of Tsukuba, Tsukuba, Japan²
Graduate School of Science and Technology, Hirosaki University, Hirosaki, Japan³

Dec. 14 (Fri.) Wires and Bulk Room 102

Bulk materials and their applications

Chairpersons: Chan-Joong Kim (Korea Atomic Energy Research Institute) and Hiroyuki Fujishiro (Iwate University)

WB5-1-INV 13:00–13:25

Recent progress in a melt-growth processed YBCO superconductors with interior seeding

Chan-Joong Kim¹, Soon-Dong Park¹, *Byung-Hyuk Jun¹

Korea Atomic Energy Research Institute¹

WB5-2-INV 13:25–13:50

Recent topics of iron-pnictide bulk superconductors

*Akiyasu Yamamoto¹,², Shinnosuke Tokuta¹, Mark Ainslie³, Jeremy Weiss⁴, Anatolii Polyanskii⁵, Eric Hellstrom⁵, David Larbalestier⁵

Department of Applied Physics, Tokyo University of Agriculture and Technology, Japan¹
Materials Research Center for Element Strategy, Tokyo Institute of Technology, Japan²
Department of Engineering, University of Cambridge, Cambridge, United Kingdom³
Department of Physics, University of Colorado, Boulder, Co, USA⁴
Applied Superconductivity Center, National High Magnetic Field Laboratory, Florida State Univ., Tallahassee, FL, USA⁵

WB5-3 13:50–14:10

Growth and Properties of RE123 Bulks for Practical Applications

*Xin Yao¹

School of Physics and Astronomy, Shanghai Jiao Tong University¹
**WB5-4-INV**  14:10–14:35

Mechanical reinforcement of REBaCuO bulk during magnetizing process to achieve higher trapped field without fracture

*Hiroyuki Fujishiro¹, Tomoyuki Naito¹, Yousuke Yanagi², Yoshitaka Itoh², Takashi Nakamura³, Mark D. Ainslie⁴

Iwate University, Japan¹
IMRA Material R&D Co., Ltd, Japan²
RIKEN, Japan³
University of Cambridge, United Kingdom⁴

**WB5-5-INV**  14:35–15:00

Pulse Field Magnetization to Bulk Superconductor for Applications

*Tetsuya Ida¹, Masahiro Watasaki¹,², Koji Shigeuchi³, Mitsuru Izumi³

Tokyo University of Marine Science and Technology, Japan¹
National Institute of Technology, Hiroshima College, Japan²
Chiba University, Japan³

**WB5-6**  15:00–15:20

Generation of Uniform Magnetic Field between Face-to-Face HTS Bulk Magnets

*Tetsuo Oka¹, Kazuya Higa², Shunta Tsunoda², Jun Ogawa², Satoshi Fukui², Natsuki Inoue¹, Muralidhar Miryala¹, Masato Murakami¹, Kazuya Yokoyama³, Takashi Nakamura⁴

Shibaura Institute of Technology¹
Niigata University²
Ashikaga Institute of Technology, Japan³
RIKEN⁴

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**Dec. 14 (Fri.) Electronic Devices**  
**Room 202**

**Microwave**

Chairpersons: Bin Wei (Tsinghua University) and Naoto Sekiya (Yamanashi University)

**ED6-1-INV**  13:00–13:25

Recent progress of Chinese high-Tc superconductor filter to practical use

*Bin Wei¹

State Key Laboratory of Low-Dimensional Quantum Physics, Dept. of Physics, Tsinghua University, Beijing, China¹

**ED6-2-INV**  13:25–13:50

Wireless Power Transmission Technology using High-Tc Superconducting Wire

*Yoon Do Chung¹, Chang Young Lee², Eun Young Park³

Suwon Science College, Korea¹
Korea Railroad Research Institute, Korea²
Korea Christian University, Korea³
**Novel high-Tc superconducting wire for high quality factor at high-frequency and its applications**

*Naoto Sekiya*, Shinya Kobayashi
University of Yamanashi

**Superconducting submicron-CPW resonators for on-chip THz filterbank**

*Masato Naruse*, Ken’ichi Karatsu, Alejandro Pascual Laguna, Ozan Yurduseven, David J. Thoen, Vignesh Murugesan, Jochem J. A. Baselmans, Akira Endo
Graduate School of Science and Technology, Saitama University, Japan
Faculty of Electrical Engineering, Mathematics and Computer Science, Delft Univ. of Technology, the Netherlands
SRON-Netherlands Institute for Space Research, the Netherlands
Kavli Inst. of NanoScience, Faculty of Applied Sciences, Delft Univ. of Tech., the Netherlands

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**Fundamental technology and miscellaneous applications**

Chairpersons: Tengming Shen (Lawrence Berkeley National Laboratory) and So Noguchi (Hokkaido University)

**Strain control of HTS superconductors to prevent degradation of superconducting magnets during a quench**

*Tengming Shen*, Xiaorong Wang, Shijian Yin
Lawrence Berkeley National Laboratory, Berkeley, CA, USA

**Unbalanced Torque Simulation on NI REBCO Pancake Coils during Quench**

*So NOGUCHI*, Seungyong HAHN, Yukikazu IWASA
Hokkaido University, Japan
Seoul National University, Republic of Korea
Massachusetts Institute of Technology, USA

**A Hybrid Trapped Field Magnet Lens (HTFML): concept and realisation**

*Mark D Ainslie*, Hiroyuki Fujishiro, Devendra K Namburi, Sora Namba, Yunhua Shi, Anthony R Dennis, John H Durrell
Department of Engineering, University of Cambridge, UK
Department of Physical Science and Materials Engineering, Iwate University, Japan
Removal of Scale from Feed-water in Thermal Power Plant by Magnetic Separation—Composition Analysis of Oxygenated Treatment Scale—

*Mami Hiramatsu, Junya Yamamoto, Yoko Akiyama, Fumihito Mishima, Shigehiro Nishijima, Hidehiko Okada, Noriyuki Hirota, Tsuyoshi Yamaji, Hideki Matsuura, Seitoku Namba, Tomokazu Sekine

Osaka Univ., Japan
Fukui Univ. of Technology, Japan
National Inst. for Materials Science, Japan
Shikoku Research Institute Inc., Japan
Ebara Industrial Cleaning Co., Ltd., Japan

Remediation of Groundwater Contaminated by Heavy Metals Using Magnetic Separation Technique

*Albino Jose Amosse, Yoko Akiyama
Osaka University, Japan

Development of a contactless cryogenic rotation mechanism employed for a polarization modulator unit in cosmic microwave background polarization experiments

*Yuki Sakurai, Tomotake Matsumura, Teruhito Iida, Kunimoto Komatsu, Nobuhiko Katayama, Hajime Sugai, Hiroyuki Ohsaki, Yutaka Terao, Yukimasa Hirota, Hisashi Enokida

Kavli IPMU, The University of Tokyo
ispace, inc.
Okayama University
Dept. of Advanced Energy, Graduate School of Frontier Sciences, The University of Tokyo

Late news

Chairperson: Hirofumi Yamasaki (AIST)

Controlling Hysteresis in Superconducting Weak Links and Nano-Superconducting Quantum Interference Devices

*Nikhil Kumar, C.B. Winkelmann, H. Courtois, Anjan K. Gupta

Department of Physics, DDU Gorakhpur University, Gorakhpur, Uttar Pradesh, India
Department of Physics, Indian Institute of Technology Kanpur, Uttar Pradesh, India
Institute Neel, CNRS and University Joseph Fourier, Grenoble, France
Fabrication of 4-Superconducting Layers Coated Conductors

*Hongsoo Ha\textsuperscript{1}, Jaehun Lee\textsuperscript{2}, Seung-Hyun Moon\textsuperscript{2}, Sangsoo Oh\textsuperscript{1}
Korea Electrotechnology Research Institute, Changwon, Gyeongnam, Korea\textsuperscript{1}
SuNAM Co., Anseong, Gyeonggi, Korea\textsuperscript{2}

None s-wave triplet pairing in Superconducting boron doped diamond: a platform for all diamond based quantum information technology

*Somnath Bhattacharyya\textsuperscript{1}
University of the Witwatersrand, South Africa\textsuperscript{1}
Poster Sessions

Dec. 12 (Wed.) Physics and Chemistry Multi-Purpose Hall

Vortex physics 2
Chairperson: Hiroshi Eisaki (AIST)

PCP1-1 16:00–18:00

Negative magnetoresistance due to the depression of Quantum phase slip in NbN nanowires
*Bunju Shinozaki1, Kazumasa Makise2, Takayuki Asano3
Department of Physics, Kyushu University, Fukuoka, Japan1
National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan2
Department of Applied Physics, University of Fukui, Fukui, Japan3

PCP1-2 16:00–18:00

Detecting Vortex Penetration and Expulsion in Mesoscopic Thin Layered Superconductor NbSe2 Using Small Tunnel Junctions
Naoki Hoshi1, Dai Inoue1, Hikari Tomori1, *Akinobu Kanda1
University of Tsukuba, Japan1

PCP1-3 16:00–18:00

Evaluation of Layer Thickness Dependence of Critical Current Density Characteristics using Longitudinal Magnetic Field Effect in Superconducting Coated Conductors
*Tomohiro Yonenaka1, Edmund Soji Otabe1, Vladimir Vyatkin2, Sergey Lee2, Tadahiro Akune3, Terukazu Nishizaki3
Kyushu Institute of Technology Japan1
SuperOx Japan2
Kyushu Sangyo University Japan3

PCP1-4 16:00–18:00

TDGL Simulation on the Angular Dependence of the Critical Current Density in Superconductors with Columnar Defects
*Rina Yonezuka1, Yusei Hamada1, Kazunori Kamiji1, Kenta Tanimura1, Takaki Yoshihara1, Edmund Soji Otabe1, Yasunori Mawatari2, Tetsuya Matsuno3
Kyushu Institute of Technology, Japan1
National Institute of Advanced Industrial Science and Technology, Japan2
National Institute of Technology Ariake College, Japan3
**PCP1-5** 16:00–18:00

**Dynamics of a vortex system in a layered high-temperature superconductor under a pulsed current impact**

*Igor Rudnev¹, Anastasia Maksimova¹, Anna Moroz¹, Vladimir Kashurnikov¹*

National Research Nuclear University MEPHI (Moscow Engineering Physics Institute)¹

**PCP1-6** 16:00–18:00

**Observation of vortex trapping and expulsion in superconducting rings of amorphous MoGe thin films**

*Nobuhito Kokubo¹, Satoru Okayasu², Tsutomu Nojima³, Takahiko Sasaki³*

University of Electro-Communications¹
Japan Atomic Energy Research Institute²
Tohoku University³

**PCP1-7** 16:00–18:00

**Observation of Fractional Vortices in a Superconducting Double Layer**

*Taichiro Nishio¹, Shunichi Arisawa², Hirotake Yamamori³, Takashi Yanagisawa³, Yasumoto Tanaka³*

Tokyo University of Science, Japan¹
National Institute for Materials Science, Japan²
National Institute of Advanced Industrial Science and Technology, Japan³

**PCP1-8** 16:00–18:00

**Critical states in superconducting plates: Shape dependence**

Shinsuke Ooi¹, Masaru Kato¹
Osaka Pref. Univ. Japan¹

**Vortex physics 3**

Chairperson: Takekazu Ishida (Osaka Prefecture University)

**PCP2-1** 16:00–18:00

**Simulation of vortex lattice melting in a dirty superconductor**

Takashi Kusafuka¹, Masaru Kato¹, Osamu Sato²

Osaka Pre. Uni.¹
Osaka Pre. Uni. Collage of Technology²

**PCP2-2** 16:00–18:00

**Molecular Dynamics Simulation for Random Organization of Vortex Matter**

*Masaru Kato¹, Takashi Kusafuka¹, Osamu Sato²*

Department of Physics and Electronics, Osaka Prefecture University¹
Osaka Prefecture University College of Technology²
PCP2-3 16:00–18:00
Geometrical matching of vortex clusters in micron-sized superconducting regular polygons
*Shuuichi Ooi¹, Minoru Tachiki¹, Takashi Mochiku¹, Kazuto Hirata¹, Kazunori Komori¹, Shunichi Arisawa¹
National Institute for Materials Science¹

PCP2-4 16:00–18:00
Detection of the vortex liquid phase in thick superconducting films by Nernst effect
*Koichiro Ienaga¹, Taiko Hayashi¹, Shin-ichi Kaneko¹, Satoshi Okuma¹
Department of Physics, Tokyo Institute of Technology, Japan¹

PCP2-5 16:00–18:00
Time evolution of the vortex configuration associated with dynamic ordering by dc drive
*Shun Maegochi¹, Mihaly Dobroka¹, Koichiro Ienaga¹, Shin-ichi Kaneko¹, Satoshi Okuma¹
Tokyo Inst. Tech. Japan¹

PCP2-6 16:00–18:00
Clogging in a dc driven vortex system
*Takahide Minemura¹, Koichiro Ienaga¹, Shun Maegochi¹, Shin-ichi Kaneko¹, Satoshi Okuma¹
Department of Physics, Tokyo Institute of Technology, Japan¹

PCP2-7 16:00–18:00
Observation of vortex configurations under dc drives using scanning tunneling spectroscopy
*Takashi Ogawa¹, Koshiro Kato¹, Kazuki Tsuchiya¹, Shin-ichi Kaneko¹, Koichiro Ienaga¹, Hideaki Sakata², Satoshi Okuma¹
Department of Physics, Tokyo Institute of Technology, Japan¹
Department of Physics, Tokyo University of Science, Japan²

PCP2-8 16:00–18:00
STM and vortex images for Au/a-MoₓGe₁₋ₓ films
*Kazuki Tsuchiya¹, Takashi Ogawa¹, Koshiro Kato¹, Shinichi Kaneko¹, Koichiro Ienaga¹, Hideaki Sakata², Satoshi Okuma¹
Department of Physics, Tokyo Institute of Technology, Japan¹
Department of Physics, Tokyo University of Science, Japan²
**Iron-based superconductors 3**

Chairperson: Hiraku Ogino (AIST)

**PCP3-1**  16:00–18:00

**Domain Structures and Spontaneous Abrikosov Vortex-Antivortex Generation in the Ferromagnetic Superconductor EuFe₂(As₁ₓPₓ)₂ with x ~ 0.2**

*Ivan Veshchunov¹,², Lev Vinnikov³, Vasilyi Stolyarov²,³, Nan Zhou⁴, Zhixiang Shi⁴, Xiaofeng Xu⁵, Sunseng Pyon¹, Wenhe Jiao⁶, Guang-Han Cao⁶, Dimitri Roditchev⁷, Alexander Buzdin⁸, Tsuyoshi Tamegai¹*

Department of Applied Physics, The University of Tokyo, Tokyo, Japan¹
Moscow Inst. of Physics and Technology (State University), Dolgoprudny, Moscow, Russia²
Inst. of Solid State Physics, Russian Academy of Sciences, Chernogolovka, Moscow, Russia³
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Laboratoire de Physique et d’Etude des Materiaux LPEM-UMR8213 ESPCI-Paris, PSL Research University, INSP - Sorbonne Universite, Paris, France⁷
University Bordeaux, LOMA, F-33405 Talence, France⁸

**PCP3-2**  16:00–18:00

**Effects of Lattice Defects on the Superconducting Properties of Ba₁₂₂ Polycrystalline Materials Prepared by High Energy Ball-Milling**

*Shinnosuke Tokuta¹, Akiyasu Yamamoto¹,²*

Dept. of Applied Physics, Tokyo University of Agriculture and Technology, Tokyo, Japan¹
Materials Research Center for Element Strategy, Tokyo Inst. of Technology, Kanagawa, Japan²

**PCP3-3**  16:00–18:00

**Unusual Evolution of Nematic fluctuations in Ba₁₋ₓRbxFe₂As₂**

*Masaya Tsujii¹, Kousuke Ishida¹, Suguru Hosoi², Yuta Mizukami¹, Shigeyuki Ishida³, Akira Iyo³, Hiroshi Eisaki³, Kai Grube⁴, Thomas Wolf⁴, Hilbert. v. Löhneysen⁴, Rafael. M. Fernandes⁵, Takasada Shibauchi¹*

University of Tokyo, Japan¹
Osaka University, Japan²
National Institute of Advanced Industrial Science and Technology, Japan³
Karlsruhe Institute of Technology, Germany⁴
University of Minnesota, Unites States of America⁵

**PCP3-4**  16:00–18:00

**Global Phase Diagram of Different Superconducting States in 1111-type Iron Pnictides RFeₐ(AsₚP/Sb)(O,F/H) Systems (R=La and Nd)**

*T. Kawashima¹, H. Tsuji¹, M. Uekubo¹, M. Nakajima¹, S. Miyasaka¹, S. Tajima¹*

Department of Physics, Osaka University, Osaka, Japan¹
PCP3-5  16:00–18:00

Effect of Cr substitution for V in Sr$_2$VFeAsO$_3$
*Taihei Wakimura, Hiroaki Yokota, Masamichi Nakajima, Shigeki Miyasaka, Setsuko Tajima
Department of Physics, Osaka University

PCP3-6  16:00–18:00

Structural and magnetic transitions in 1111-type iron arsenide CaFeAsH
*Yoshinori Muraba, Soshi Iimura, Satoru Matsuishi, Hidenori Hiramatsu, Takashi Honda, Kazutaka Ikeda, Toshiya Otomo, Hideo Hosono
Materials Research Center for Element Strategy, Tokyo Institute of Technology
Laboratory for Materials and Structures, Tokyo Institute of Technology
Inst. of Materials Structure Science, High Energy Accelerator Research Organization (KEK)
J-PARC Center, KEK

PCP3-7  16:00–18:00

Single Crystal Growth, Phase Diagram and Vortex Properties of 4d Transition Metal Pd Doped 112-Type Iron Pnictide Superconductors
Xiangzhuo Xing, Zhanfeng Li, Chunqiang Xu, Ivan Veshchunov, Tsuyoshi Tamegai, *Zhixiang Shi
School of Physics, Southeast University, Nanjing, People’s Republic of China
Department of Applied Physics, The University of Tokyo, Tokyo, Japan

PCP3-8  16:00–18:00

Effects of Swift-Particle Irradiations on Critical Current Density in CaKFe$_4$As$_4$
*Ayumu Takahashi, Sunseng Pyon, Satoru Okayasu, Shigeyuki Ishida, Akira Iyo, Hiroshi Eisaki, Motoharu Imai, Hideki Abe, Taichi Terashima, Tsuyoshi Tamegai
Dept. of Applied Physics, The Univ. of Tokyo, Tokyo, Japan
Advanced Science Research Center, Japan Atomic Energy Agency, Tokai, Ibaraki, Japan
National Institute of Advanced Industrial Science and Technology, Tsukuba, Ibaraki, Japan
National Institute for Materials Science, Tsukuba, Ibaraki, Japan

PCP3-9  16:00–18:00

Evaluation of Anisotropic Critical Current Density in CaKFe$_4$As$_4$
*Tsuyoshi Tamegai, Ayumu Takahashi, Sunseng Pyon, Ivan Veshchunov, Shigeyuki Ishida, Akira Iyo, Hiroshi Eisaki, Motoharu Imai, Hideki Abe, Taichi Terashima, Shuuichi Ooi, Ataru Ichinose
The University of Tokyo, Japan
National Institute of Advanced Industrial Science and Technology, Japan
National Institute for Materials Science, Japan
Central Research Institute of Electric Power Industry, Japan
**Thin films / 2D materials**

Chairperson: Tsutomu Nojima (Tohoku University)

**PCP4-1** 16:00–18:00

**On The Growth of Co- and Ni-doped BaFe$_2$As$_2$ Thin Films on Fluoride Type Substrates**

*Marco Langer$^1$, Sven Meyer$^1$, Saicharan Aswartham$^2$, Sabine Wurmehl$^2$, Jens Hänsch$^1$, Bernhard Holzapfel$^1$  
Karlsruhe Inst. of Technology, Inst. for Technical Physics, Eggenstein-Leopoldshafen, Germany$^1$  

**PCP4-2** 16:00–18:00

**Electronic Anisotropy of NdFeAs(O,F) Epitaxial Thin Films Grown on Vicinal-Cut MgO Substrates**

*Takuya Matsumoto$^1$, Keisuke Kondo$^1$, Takafumi Hatano$^1$, Takahiro Urata$^1$, Kazumasa Iida$^1$, Hiroshi Ikuta$^1$  
Department of Materials Physics, Nagoya University, Japan$^1$

**PCP4-3** 16:00–18:00

**Transport properties of FeSe$_{1-x}$S$_x$ and FeSe$_{1-y}$Te$_y$ epitaxial thin films under magnetic fields**

*Naoki Shikama$^1$, Tomoya Ishikawa$^1$, Fuyuki Nabeshima$^1$, Atsutaka Maeda$^1$  
Department of Basic Science, University of Tokyo, Japan$^1$

**PCP4-4** 16:00–18:00


*Kota Hanzawa$^1$, Masato Sasase$^2$, Hidenori Hiramatsu$^{1,2}$, Toshio Kamiya$^{1,2}$, Hideo Hosono$^{1,2}$  
Lab. for Materials and Structures, Inst. of Innovative Research, Tokyo Inst. of Tech., Japan$^1$  
Materials Research Center for Element Strategy, Tokyo Institute of Technology, Japan$^2$

**PCP4-5** 16:00–18:00

**Complex Conductivity of a NbN Film Measured by Dielectric Resonator Technique**

*Hodaka Kurokawa$^1$, Fuyuki Nabeshima$^1$, Atsutaka Maeda$^1$  
University of Tokyo$^1$

**PCP4-6** 16:00–18:00

**Nernst effect measurements in disordered two-dimensional superconductors at very low temperatures**
*Taiko Hayashi¹, Koichiro Ienaga¹, Shin-ichi Kaneko¹, Satoshi Okuma¹
Tokyo Institute of Technology, Japan¹

**PCP4-7** 16:00–18:00

**Superconductor-insulator transitions and Tc dependence of disorder in superconducting Mo alloy thin films**

*Fusao Ichikawa¹, Kazumasa Makise², Genki Sawada³, Yuya Mizokami³, Sho Maeda³, Bunju Shinozaki⁴
Department of Physics, FAST, Kumamoto University, Kumamoto, Japan¹
National Inst. of Advanced Industrial Science and Tech. (AIST), Tsukuba, Ibaraki, Japan²
Physics, GSST, Kumamoto University, Kumamoto, Japan³
Department of Physics Kyushu University, Fukuoka, Japan⁴

**New materials**

Chairperson: Minoru Nohara (Okayama University)

**PCP5-1** 16:00–18:00

**Superconductivity in Weyl Semimetal NbP: Bulk vs. Surface**

M. Baenitz¹, M. Schmidt¹, V. Suess¹, C. Felser¹, *K. Lueders¹,²
Max-Planck-Institut für Chemische Physik fester Stoffe, Dresden, Germany¹
Fachbereich Physik, Freie Universität Berlin, Berlin, Germany²

**PCP5-2** 16:00–18:00

**Effect of non-magnetic rare earth substitution for Zr on mixed anion Zr(P,Se)₂ superconductors II**

*Kosuke Iwakiri¹,², Taichiro Nishio², Kenji Kawashima³, Shigeyuki Ishida¹, Kunihiro Oka¹, Hiroshi Fujihisa¹, Yoshito Gotoh¹, Yoshiyuki Yoshida¹, Akira Iyo¹, Hiraku Ogino¹, Hiroshi Eisaki¹, Hijiri Kito¹
AIST¹
Tokyo Univ. of Science²
IMRA Material R&D Co., Ltd³

**PCP5-3** 16:00–18:00

**Enhancement of the superconducting transition temperature and single crystal growth for PbFCl-type mixed anion APX superconductor**

*Hijiri Kito¹, Kousuke Iwakiri¹,², Taichiro Nishio¹,², Kenji Kawashima¹,³, Shigeyuki Ishida¹, Kunihiro Oka¹, Hiroshi Fujihisa¹, Yoshito Gotoh¹, Akira Iyo¹, Hiraku Ogino¹, Hiroshi Eisaki¹, Yoshiyuki Yoshida¹
National Institute of Advanced Industrial Science and Technology (AIST)¹
Tokyo University of Science²
IMRA Material R&D Co., Ltd³

**PCP5-4** 16:00–18:00

**Synthesis of a non-centrosymmetric superconductor Mg₂Rh₃P**
PCP5-5 16:00–18:00

Topochemical Fluorination of Layered Iridium Oxide and Its Physical Properties
*Kenta Kuramochi1,2, Tomohito Shimano1,2, Taichiro Nishio1, Kazumasa Horigane3, Hirotaka Okabe4, Jun Akimitsu3, Hiraku Ogino2
Department of Physics, Tokyo University of Science1 National Institute of Advanced Industrial Science and Technology2 Research Institute for Interdisciplinary Science, Okayama University3 Institute of Materials Structure Science/J-PARC Center, KEK4

PCP5-6 16:00–18:00

STM and STS study on Se doped 1T-TaS2
*Daichi Fujii1, Yuita Fujisawa2, Kenta Akiyama1, Takahiro Iwasaki1, Satoshi Demura3, Hideaki Sakata1
Department of Physics, Tokyo University of Science1 Okinawa Institution of Science and Technology2 College of Science and Technology, Nihon University3

PCP5-7 16:00–18:00

Microscopic Study of Domain Structure in Charge Density Wave States in 2H-TaS2-xSex
*Shun Ohta1, Yuita Fujisawa2, Satoshi Demura3, Hideaki Sakata1
Department of physics, Tokyo University of Science1 Okinawa Institution of Science and Technology2 College of Science and Technology, Nihon University3

PCP5-8 16:00–18:00

Observation of microscopic electronic states in ZrTe3-xSe2 by STM/STS
*Kazuki Miyata1, Ryota Ishio1, Satoshi Demura2, Hideaki Sakata1
Department of physics, Tokyo university of science, Japan1 College of science and technology, Nihon university, Japan2

New materials 2
Chairperson: Takao Sasagawa (Tokyo Institute of Technology)

PCP6-1 16:00–18:00

Influence of Microfabrication on Superconducting Properties of Exfoliated Thin Films of Layered Superconductor NbSe2: Reactive Ion Etching
*Hikari Tomori1, Naoki Hoshi1, Dai Inoue1, Akinobu Kanda1
PCP6-2 16:00–18:00

**Real Space Observation of Ag-Intercalated 2H-NbSe$_2$ by Scanning Tunneling Microscopy**

*Kenta Mogami$^1$, Kosuke Takahashi$^1$, Shun Ohta$^1$, Daichi Fujii$^1$, Satoshi Demura$^2$, Hideaki Sakata$^1$

Department of Physics, Tokyo Univ. of Science, Japan$^1$
College of Science and Technology, Nihon Univ., Japan$^2$

PCP6-3 16:00–18:00

**Reduction of $T_c$ by Ag intercalation in 2H-NbSe$_2$**

*Kosuke Takahashi$^1$, Kenta Mogami$^1$, Syun Ohta$^1$, Yuto Sakai$^1$, Daito Fujii$^1$, Satoshi Demura$^2$, Hideaki Sakata$^1$

Department of Physics, Tokyo Univ. of Science$^1$
College of Science and Technology, Nihon Univ.$^2$

PCP6-4 16:00–18:00

**Substitution effect in (La,Sr)O$_{0.5}$F$_{0.5}$Bi$_{1-x}$Pb$_x$S$_2**

*Shotaro Shobu$^1$, Satoshi Demura$^2$, Hideaki Sakata$^1$

Tokyo University of Science$^1$
Nihon University$^2$

PCP6-5 16:00–18:00

**CDW state in misfit transition-metal dichalcogenide (MS)(TaS$_2$) (M=Bi,Pb,Sb,Sn)**

*Shun Doyama$^1$, Yuta Sugai$^1$, Shun Ohta$^1$, Satoshi Demura$^2$, Hideaki Sakata$^1$

Tokyo University of Science, Japan$^1$
Nihon University, Japan$^2$

PCP6-6 16:00–18:00

**High pressure synthesis and substitution effect on InTe superconductor**

*Masayoshi Katsuno$^1$, Rajveer Jha$^1$, Kazuhisa Hoshi$^1$, Yosuke Goto$^1$, Yoshikazu Mizuguchi$^1$

Department of Physics, Tokyo Metropolitan University, Tokyo, Japan$^1$

PCP6-7 16:00–18:00

**Synthesis, Crystal Structure, and Physical Properties of New Layered Oxychalcogenide Superconductor La$_2$O$_8$Bi$_3$AgS$_6$**

*Yudai Hijikata$^1$, Osuke Miura$^1$, Yoshikazu Mizuguchi$^2$

Dept. of Electrical & Electronic Engineering, Tokyo Metropolitan Univ., Hachioji, Tokyo, Japan$^1$
Dept. of Physics, Tokyo Metropolitan University, Hachioji, Tokyo, Japan$^2$
**PCP6-8** 16:00–18:00

**Measurement of Seebeck coefficient in BiS$_2$ Based Superconductors**

*Ryunosuke Shirota$^1$, Takahiro Kaneko$^1$, Shotaro Kawano$^1$, Yuto Sakai$^1$, Naoki Ishida$^1$, Shotaro Shobu$^1$, Hideaki Sakata$^1$*

Tokyo univ. of Science, Japan$^1$

**New materials 3**

Chairperson: Akira Iyo (AIST)

**PCP7-1** 16:00–18:00

**Exploration of Topological Superconductors in Layered Compounds with a Bi Square-net**

Masayuki Murase$^1$, *Takao Sasagawa$^1$  
Laboratory for Materials and Structures, Tokyo Institute of Technology$^1$

**PCP7-2** 16:00–18:00

**Crystal Growth and Superconducting Properties of Misfit-Layer Bi-Compounds having Strong Spin Orbit Coupling**

*Shun Takeda$^1$, Takao Sasagawa$^1$  
Laboratory for Materials and Structures, Tokyo Institute of Technology$^1$

**PCP7-3** 16:00–18:00

**Crystal Growth and Superconducting Properties of Quasi-1D Bismuth Compounds**

*Keitaro Matsukawa$^1$, Takao Sasagawa$^1$  
Tokyo Institute of Technology, Japan$^1$

**PCP7-4** 16:00–18:00

**Interplay of Stress and Nematic Superconducting Order: The Case of Cu$_x$Bi$_2$Se$_3$**

*Pye Ton How$^1$, Sung-Kit Yip$^{1,2}$  
Institute of Physics, Academia Sinica$^1$  
Institute Of Atomic And Molecular Sciences, Academia Sinica$^2$

**PCP7-6** 16:00–18:00

**New Oxide Diluted Magnetic Semiconductor System La$_{1-x}$Ca$_x$Cu$_{0.9}$Mn$_{0.1}$SO with Independent Spin and Charge Doping**

*Li Zhang$^1$, Haoze Chen$^1$, Linxian Li$^1$, Yuke Li$^2$  
China Jiliang University$^1$  
Hangzhou Normal University$^2$
**PCP7-7** 16:00–18:00

**Influence of Microfabrication on Superconducting Characteristics of Exfoliated Thin Films of Layered Superconductor NbSe₂: Focused Ion Beam**

Hikari Tomori¹, Naoki Hoshi¹, Dai Inoue¹, *Akinobu Kanda¹

University of Tsukuba, Japan¹

**PCP7-8** 16:00–18:00

**Transmission EBSD (t-EBSD) as tool to investigate nanostructures in superconductors**

*Anjela Koblischka-Veneva¹,², Michael R Koblischka¹,², Jörg Schmauch¹,², Masato Murakami¹

Superconducting Materials Laboratory, Dept. of Materials Science and Engineering, Shibaura Institute of Technology, Toyosu, Tokyo, Japan¹

Experimental Physics, Saarland University, Saarbrücken, Germany²

**Cuprate superconductors 3**

Chairperson: Takasada Shibauchi (The University of Tokyo)

**PCP8-1** 16:00–18:00

**Porous high-⁴⁷Tc superconductors: Advantages and applications**

*M. R. Koblischka¹, Anjela Koblischka-Veneva¹, S. P. Kumar Naik, Denis Gokhfeld², Masato Murakami¹

Superconducting Materials Laboratory, Dept. of Materials Science and Engineering, Shibaura Institute of Technology, Toyosu, Tokyo, Japan¹

Kirensky Institute of Physics, Siberian Branch of the Russian Academy of Sciences, Akademgorodok, Krasnoyarsk, Russia²

**PCP8-2** 16:00–18:00

**New Cuprate Superconductor, (Nb,Pb)Sr₂EuCu₂O₇ (x~8)**

*Yoshihiro Yamada¹, Toshihiko Maeda¹,²

Kochi University of Technology¹

Center for Nanotechnology²

**PCP8-3** 16:00–18:00

**Effect of co-substitution of Ca for Y and Sr sites in (Pb,Cu)Sr₂YCu₂O₇ (x~7)**

Keisuke Ozaki¹, Toshihiko Maeda¹,²

Kochi University of Technology¹

Center for Nanotechnology²

**PCP8-4** 16:00–18:00

**Enhancement of local magnetic moment on Cu ion by excess oxygens in T'-cuprates**

*Kunito Yamazaki¹, Hiroki Tsuchiura¹, Pavel Novák²
Study of Critical Temperature for Alkali Metal Adsorbed Copper Oxide High-\(T_c\) Superconductors
*Chikako Sakai\textsuperscript{1}, Tsunehiro Takeuchi\textsuperscript{2}, Sakura N. Takeda\textsuperscript{3}, Hiroshi Daimon\textsuperscript{3}

National Institute for Materials Science, Japan\textsuperscript{1}
Toyota Technological Institute, Japan\textsuperscript{2}
Graduate School of Science and Technology, Nara Institute of Science and Technology, Japan\textsuperscript{3}

Difference of Local structure between YBa\(_2\)Cu\(_3\)O\(_z\) and PrBa\(_2\)Cu\(_3\)O\(_z\) Compounds
*J. Yu\textsuperscript{1,2}, C.Y. Zhang\textsuperscript{2}, C.Q. Guo\textsuperscript{2}, L. Li\textsuperscript{2}, H. Zhang\textsuperscript{2}

Yellow River Conservancy Technical Institute, Kaifeng, Henan, China\textsuperscript{1}
Materials Physics Laboratory, State Key Laboratory for Mesoscopic Physics, Department of Physics, Peking University, Beijing, China\textsuperscript{2}

Uniform hole doping in HgBa\(_2\)Ca\(_2\)Cu\(_3\)O\(_{8+\delta}\) studied by \(^{63}\)Cu NMR
*Yutaka Itoh\textsuperscript{1}, Akihiro Ogawa\textsuperscript{2}, Seiji Adachi\textsuperscript{3}

Dept. of Physics, Graduate School of Science, Kyoto Sangyo University, Kyoto, Japan\textsuperscript{1}
Chugoku Electric Power Company Inc. Energia Research Institute, Hiroshima, Japan\textsuperscript{2}
Superconducting Sensing Technology Research Association, Yokohama, Kanagawa, Japan\textsuperscript{3}

Kinetics of YbBa\(_2\)Cu\(_3\)O\(_y\) thick film formation on MgO substrates
*Atsuhiko Hattori\textsuperscript{1}, Muralidhar Miryala\textsuperscript{1}, Masato Murakmai\textsuperscript{1}

Shibaura Institute of Technology\textsuperscript{1}

Fabrication of Mesa-like Device on a Bi2212 Cross-Whisker Junction
*Yoshito Saito\textsuperscript{1,2}, Ryo Matsumoto\textsuperscript{1,2}, Shintaro Adachi\textsuperscript{1}, Masanori Nagao\textsuperscript{3}, Hiroyuki Takeya\textsuperscript{1}, Yoshihiko Takano\textsuperscript{1,2}

National Institute for Materials Science, Tsukuba, Japan\textsuperscript{1}
University of Tsukuba, Tsukuba, Japan\textsuperscript{2}
University of Yamanashi, Kofu, Japan\textsuperscript{3}

Microscopic Theory of Exotic Phases in Superconducting Cuprates
*Kazuhisa Nishi\textsuperscript{1}
University of Hyogo\textsuperscript{1}
PCP8-11  16:00–18:00

Effects of vicinal substrates on the orientation of Bi$_2$Sr$_2$CaCu$_2$O$_{8+x}$ thin films when the metal-organic decomposition method is used

*Yasuyuki Yamada$^1$, Tomoichiro Okamoto$^2$

Department of Innovative Electrical and Electronic Engineering, National Institute of Technology, Oyama College, Japan$^1$
Electrical, Electronics and Information Engineering, Nagaoka Univ. of Technology, Japan$^2$

Theory
Chairperson: Ryotaro Arita (RIKEN)

PCP9-1  16:00–18:00

Variational Approach to Impurity Problem in Hubbard Model---Effects of Short-Range Antiferromagnetic Order and One-Body Screening Projector

*Hisatoshi Yokoyama$^1$, Ryo Sato$^1$, Kenji Kobayashi$^2$

Department of Physics, Tohoku University, Japan$^1$
Department of Natural Science, Chiba Institute of Technology, Japan$^2$

PCP9-2  16:00–18:00

Relationship between superconductivity and anisotropy in two-dimensional Hubbard model

*Kenji Kobayashi$^1$, Hisatoshi Yokoyama$^2$

Chiba Institute of Technology, Japan$^1$
Tohoku University, Japan$^2$

PCP9-3  16:00–18:00

The coexisting state of the staggered flux and d-wave superconducting order in a t-J type model

*Shuhei Fukuda$^1$, Kunito Yamazaki$^1$, Hiroki Tsuchiura$^1$, Masao Ogata$^2$

Department of Applied Physics, Tohoku University, Japan$^1$
Department of Physics, University of Tokyo, Japan$^2$

PCP9-4  16:00–18:00

Antiferromagnetism, superconconductivity, renormalization and phase diagram in materials with strong correlation

*Takashi Yanagisawa$^1$

National Institute of Advanced Industrial Science and Technology$^1$

PCP9-5  16:00–18:00

Electronic Structure of Novel Non-centrosymmetric Superconductor Mg$_2$Rh$_3$P

*Izumi Hase$^1$, Takashi Yanagisawa$^1$, Akira Iyo$^1$, Hiroshi Eisaki$^1$, Kenji Kawashima$^2$
**PCP9-6** 16:00–18:00

*Effect of impurity potential on superconductivity in strongly correlated Hubbard model*

*Ryo Sato¹, Hisatoshi Yokoyama¹*
Tohoku University Japan¹

**PCP9-7** 16:00–18:00

*Nonlinear dynamics of Josephson junction networks driven by external currents with spatiotemporal modulation*

*Takaaki Kawaguchi¹*
Toho University, Japan¹

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**Dec. 12 (Wed.) Wires and Bulk Multi-Purpose Hall**

**PLD, films**
Chairperson: Toshiya Doi (Kyoto University)

**WBP1-1** 16:00–18:00

*Improvement of anisotropy of superconducting properties in Y-rich YBa₂Cu₃O₇₋ₓ film in magnetic fields*

*Motoki Shiomi¹, Yusuke Ichino¹, Yuji Tsuchiya¹, Ataru Ichinose², Yutaka Yoshida¹*
Nagoya Univ.¹
CRIEPI²

**WBP1-2** 16:00–18:00

*Deposition of Ag thin film by reel-to-reel pulsed laser deposition system*

*Jin Matsuzaka¹, Yuji Tsuchiya¹, Yusuke Ichino¹, Yutaka Yoshida¹*
Nagoya University¹

**WBP1-3** 16:00–18:00

*Effects of Sm₁₊ₓBa₂₋ₓCu₃O₇₋ₓ films with non-stoichiometric composition fabricated by combinatorial pulsed laser deposition method on the superconducting properties*

*Gohki MURASE¹, Yusuke ICHINO¹, Yuji TSUCHIYA¹, Yutaka YOSHIDA¹*
Dept of Electrical Engineering, Nagoya Univ.¹

**WBP1-4** 16:00–18:00

*Evaluation of superconducting properties for YBa₂Cu₃O₇₋ₓ coated conductors*
fabricated by self-heating technique in Pulsed Laser Deposition method
*Sato Wataru\textsuperscript{1}, Yuji Tsuchiya\textsuperscript{1}, Yusuke Ichino\textsuperscript{1}, Yutaka Yoshida\textsuperscript{1}
Department of Electrical Engineering, Nagoya University, Japan\textsuperscript{1}

\textbf{WBP1-5} \hspace{1cm} 16:00–18:00

Liquid phase stabilization and superconducting properties by adding Ag to SmBa\textsubscript{2}Cu\textsubscript{3}O\textsubscript{y} coated conductors fabricated by Vapor-Liquid-Solid growth technique
*Kento Yasuda\textsuperscript{1}, Tomohiro Ito\textsuperscript{1}, Yuji Tsuchiya\textsuperscript{1}, Yusuke Ichino\textsuperscript{1}, Ataru Ichinose\textsuperscript{2}, Yutaka Yoshida\textsuperscript{1}
Department of Electrical Engineering, Nagoya University, Japan\textsuperscript{1}
Central Research Institute of Electric Power Industry, Japan\textsuperscript{2}

\textbf{WBP1-6} \hspace{1cm} 16:00–18:00

Crystallinities and superconducting properties of SmBa\textsubscript{2}Cu\textsubscript{3}O\textsubscript{y} coated conductors using Vapor-Liquid-Solid growth techniques
*Tomohiro Ito\textsuperscript{1}, Yuji Tsuchiya\textsuperscript{1}, Yusuke Ichino\textsuperscript{1}, Yutaka Yoshida\textsuperscript{1}
Nagoya Univ.\textsuperscript{1}

\textbf{APC}
Chairperson: Kaname Matsumoto (Kyushu Institute of Technology)

\textbf{WBP2-1} \hspace{1cm} 16:00–18:00

The Influence of BaHfO\textsubscript{3} nanorods on \(J_c\) in the longitudinal magnetic field for PLD EuBa\textsubscript{2}Cu\textsubscript{3}O\textsubscript{y} coated conductors
*Jun Nishimura\textsuperscript{1}, Kenji Miyata\textsuperscript{1}, Kota Hirai\textsuperscript{1}, Masashi Miura\textsuperscript{1}, Akira Ibi\textsuperscript{2}, Teruo Izumi\textsuperscript{2}, Masaru Kiuchi\textsuperscript{3}, Teruo Matsushita\textsuperscript{3}
Seikei University Japan\textsuperscript{1}
AIST Japan\textsuperscript{2}
Kyushu Institute of Technology Japan\textsuperscript{3}

\textbf{WBP2-2} \hspace{1cm} 16:00–18:00

Influence of BaHfO\textsubscript{3} nanorods on in-field \(J_c\) in EuBa\textsubscript{2}Cu\textsubscript{3}O\textsubscript{y} coated conductors produced by PLD
*Shuji Anno\textsuperscript{1}, Kenji Miyata\textsuperscript{1}, Masashi Miura\textsuperscript{1}, Akira Ibi\textsuperscript{2}, Teruo Izumi\textsuperscript{2}
Seikei University, Japan\textsuperscript{1}
AIST, Japan\textsuperscript{2}

\textbf{WBP2-3} \hspace{1cm} 16:00–18:00

Improved pinning in Zn doped YBa\textsubscript{2}Cu\textsubscript{3}O\textsubscript{6+δ} films
*Kai Ackermann\textsuperscript{1}, Jens Hänisch\textsuperscript{1}, Bernhard Holzapfel\textsuperscript{1}
Karlsruhe Institute Of Technology, Germany\textsuperscript{1}
WBP2-4 16:00–18:00

In-Plane Anisotropy of Critical Current Density in BaTbO$_3$-doped SmBa$_2$Cu$_3$O$_y$ Films

*Hiroki Kato$^1$, Yuji Tsuchiya$^1$, Yusuke Ichino$^1$, Ataru Ichinose$^2$, Yutaka Yoshida$^1$

Nagoya University, Japan$^1$
Central Research Institute of Electric Power Industry, Japan$^2$

WBP2-5 16:00–18:00

Improvement of in-field performance for REBCO with heavily doped BMO coated conductors by PLD method

*Akira Ibi$^1$, Takato Machi$^1$, Koichi Nakaoka$^1$, Michio Sato$^1$, Teruo Izumi$^1$, Jun Nishimura$^2$, Masashi Miura$^2$, Daisaku Yokoe$^3$, Tomohiro Kato$^2$, Takeharu Kato$^3$, Tsukasa Hirayama$^3$

National Institute of Advanced Industrial Science and Technology (AIST)$^1$
Seikei University$^2$
Nanostructures Research Lab., Japan Fine Ceramics Center (JFCC)$^3$

WBP2-6 16:00–18:00

Development of high uniformity multi-filamentary structure long REBCO with BMO coated conductors by plane-plume PLD method

*Akira Ibi$^1$, Takato Machi$^1$, Koichi Nakaoka$^1$, Michio Sato$^1$, Teruo Izumi$^1$, Kohei Higashikawa$^2$, Takanobu Kiss$^2$

National Institute of Advanced Industrial Science and Technology (AIST)$^1$
Dept. of Electrical Engineering, Kyushu University$^2$

MOD

Chairperson: Takato Machi (AIST)

WBP3-1 16:00–18:00

The Effect of the Ba/Y ratio on in-field $J_c$ in TFA-MOD (Y$_{0.77}$Gd$_{0.23}$)Ba$_2$Cu$_3$O$_y$+BaHfO$_3$ CCs

*Kazuki Shimizu$^1$, Junya Kawanami$^1$, Masashi Miura$^1$, Koichi Nakaoka$^2$, Izumi Teruo$^2$

Seikei University$^1$
AIST$^2$

WBP3-2 16:00–18:00

The effect of BaZrO$_3$ nanoparticles on critical current density in TFA-MOD (Y$_{0.77}$Gd$_{0.23}$)Ba$_2$Cu$_3$O$_y$ films on CeO$_2$ buffered R-Al$_2$O$_3$ substrates

*Yoshinori Kamada$^1$, Ryota Oku$^1$, Keita Sakuma$^1$, Masashi Miura$^1$

Seikei University$^1$

WBP3-3 16:00–18:00

The influence of an intermediate heat treatment temperature on the in-field $J_c$ of
BaHfO\textsubscript{3} doped TFA-MOD (Y\textsubscript{0.77}Gd\textsubscript{0.23})Ba\textsubscript{2}Cu\textsubscript{3}O\textsubscript{y} wires

*Junya Kawanami\textsuperscript{1}, Kazuki Shimizu\textsuperscript{1}, Masashi Miura\textsuperscript{1}, Ryuji Yoshida\textsuperscript{2}, Takeharu Kato\textsuperscript{2}, Koichi Nakaoka\textsuperscript{3}, Teruo Izumi\textsuperscript{3}

Seikei University, Japan\textsuperscript{1}
Nanostructures Research Laboratory, Japan\textsuperscript{2}
AIST, Japan\textsuperscript{3}

**WBP3-4** 16:00–18:00

Influence of the twin boundaries on the in-field \( J_c \) in BaZrO\textsubscript{3} doped TFA-MOD (Y\textsubscript{0.77}Gd\textsubscript{0.23})Ba\textsubscript{2}Cu\textsubscript{3}O\textsubscript{y} CCs

*Kenji Miyata\textsuperscript{1}, Ryota Oku\textsuperscript{1}, Masashi Miura\textsuperscript{1}, Masaru Kiuchi\textsuperscript{2}, Teruo Matsushita\textsuperscript{2}

Seikei University Tokyo, Japan\textsuperscript{1}
Kyushu Institute of Technology, Japan\textsuperscript{2}

**WBP3-5** 16:00–18:00

Optimization of interim heat treatment condition on TFA-MOD process for fabrication of Y\textsubscript{0.77}Gd\textsubscript{0.23}Ba\textsubscript{2}Cu\textsubscript{3}O\textsubscript{y} coated conductors with BaHfO\textsubscript{3}

*Koichi Nakaoka\textsuperscript{1}, Ryuji Yoshida\textsuperscript{2}, Michio Sato\textsuperscript{1}, Akira Ibi\textsuperscript{1}, Takato Machi\textsuperscript{1}, Takeharu Kato\textsuperscript{2}, Teruo Izumi\textsuperscript{1}

National Institute of Advanced Industrial Science and Technology (AIST)\textsuperscript{1}
Nanostructures Research Lab., Japan Fine Ceramics Center (JFCC)\textsuperscript{2}

**WBP3-6** 16:00–18:00

Superconducting properties of (Y\textsubscript{1-x}Eu\textsubscript{x})Ba\textsubscript{2}Cu\textsubscript{3}O\textsubscript{y} coated conductors by TFA-MOD process

*Mitchio Sato\textsuperscript{1}, Koichi Nakaoka\textsuperscript{1}, Akira Ibi\textsuperscript{1}, Takato Machi\textsuperscript{1}, Teruo Izumi\textsuperscript{1}

National Institute of Advanced Industrial Science and Technology\textsuperscript{1}

**WBP3-7** 16:00–18:00

Film thickness dependence of critical current density in (Y,Gd)BaCuO+BaZrO\textsubscript{3} nanoparticle CCs

*Go Tsuchiya\textsuperscript{1}, Kota Hirai\textsuperscript{1}, Masashi Miura\textsuperscript{1}, Masaru Kiuchi\textsuperscript{2}, Teruo Matsushita\textsuperscript{2}

Seikei University\textsuperscript{1}
Kyusyu Institute of Technology\textsuperscript{2}

**WBP3-8** 16:00–18:00

The longitudinal magnetic field dependence of critical current density in multilayered TFA-MOD REBa\textsubscript{2}Cu\textsubscript{3}O\textsubscript{y} Coated Conductors

*Keiichi Sato\textsuperscript{1}, Jun Nishimura\textsuperscript{1}, Kota Hirai\textsuperscript{1}, Keita Sakuma\textsuperscript{1}, Masashi Miura\textsuperscript{1}, Masaru Kiuchi\textsuperscript{2}, Teruo Matsushita\textsuperscript{2}

Seikei University, Japan\textsuperscript{1}
Kyushu Institute of Technology, Japan\textsuperscript{2}
Comparison of different CSD-grown $REBCO$ ($RE = Yb, Er, Ho, Y, Dy, Gd, Sm, Nd$) compounds with respect to applicability as Coated Conductors
*Manuela Erbe$^1$, Pablo Cayado$^1$, Wolfram Freitag$^1$, Jens Haenisch$^1$, Bernhard Holzapfel$^1$
Karlsruhe Institute Of Technology, Germany$^1$

**WBP3-10** 16:00–18:00

**Dominate Effect of Fluorine on Decomposition Phase Evolution towards High Performance GdBCO Films**
*Lihua Jin$^1$, Yang Bai$^1$, Chengshan Li$^1$, Jianqing Feng$^1$, Pingxiang Zhang$^1$
Northwest Institute for Nonferrous Metal Research$^1$

**WBP3-11** 16:00–18:00

Enhancement of critical current densities for Hf and La doped Gd123 films fabricated by fluorine-free MOD method
Joichiro Fukui$^1$, Takumi Takahashi$^1$, Osuke Miura$^1$, Ryusuke Kita$^2$
Dept. of Electrical Engineering and Computer Science, Tokyo Metropolitan University, Japan$^1$
Electrical and Electronic Engineering, Shizuoka University, Japan$^2$

**WBP3-12** 16:00–18:00

Effect of Zirconium Doping Using a New Metal-organic Material on the Fabrication of Fluorine-free MOD-GdBCO Films
*Koyuki Kosugi$^1$, Ryusuke Kita$^1$, Joichiro Fukui$^2$, Osuke Miura$^2$
Shizuoka University$^1$
Tokyo Metropolitan University$^2$

**WBP3-13** 16:00–18:00

Investigation of temperature and oxygen partial pressure diagram for LaBa$_2$Cu$_3$O$_y$ film
*Tomohiro Miyajima$^1$, Ryo Teranishi$^1$, Yukio Sato$^1$, Kenji Kaneko$^1$
Kyushu University, Japan$^1$

**CC**
Chairperson: Satoshi Awaji (Tohoku University)

**WBP4-1** 16:00–18:00

Electron Backscatter Diffraction Study of EuBa$_2$Cu$_3$O$_y$ Coated Conductors Fabricated by Pulsed Laser Deposition
Daisaku Yokoe$^1$, Ryuji Yoshida$^1$, *Takeharu Kato$^1$, Akira Ibi$^2$, Teruo Izumi$^2$, Tsukasa Hirayama$^1$
Fatigue Behaviors of Differently Stabilized REBCO Coated Conductor Tapes at 77 K
Mark Angelo Diaz¹, Zherwinjay Bautista¹, *Hyung-Seop Shin¹
Dept. of Mechanical Design Engineering, Andong National University, Andong, Korea¹

Dependence of AC Loss in Stacked REBa₂Cu₃O₇ Superconducting Tapes on the Interval among Tapes under Perpendicular Magnetic Field
*Hiromasa Sasa¹, Goki Kawasaki¹, Shun Miura¹, Masataka Iwakuma¹, Teruo Izumi², Takato Machi², Akira Ibi²
Institute of Superconductors Science and Systems, Kyushu University, Japan¹
National Institute of Advanced Industrial Science and Technology, Japan²

Electromagnetic coupling of multifilamentary helically-wound superconducting tapes in a rapidly swept magnetic field
*Yoichi Higashi¹, Yasunori Mawatari¹
National Institute of Advanced Industrial Science and Technology (AIST)¹

Fabrication of a Compact High-field Magnet by Coated Conductor Stacks
*Tomohiro Hashimoto¹, Sunseng Pyon¹, Yasuhiro Iijima², Shiori Sugiura³, Sinya Uji³, Taichi Terashima³, Tsuyoshi Tamegai³
Department of Applied Physics, The University of Tokyo, Japan¹
Fujikura Ltd., Japan²
Research Center for Functional Materials Quantum Transport Properties Group, National Institute for Materials Science, Japan³

A study on the effect of slitting and packaging processes on the critical current of HTS tapes
Zhuyong Li¹, *Yuqian Li¹, Wenyi Li², Zhijian Jin¹, Zhiyong Hong¹, Longbiao Wang¹
Shanghai Jiao Tong University¹
Inner Mongolia University of Technology²

Influence of the contacting terminal on transport current distributions along the ReBCO tape
*Shinnosuke Matsunaga¹, Tetsuhiro Obana¹,², Yoshiro Terazaki², Nagato Yanagi¹,²
Dec. 12 (Wed.) Large Scale System Applications Multi-Purpose Hall

Fusion applications and others
Chairperson: Kazuhiro Kajikawa (Kyushu University)

APP1-1 16:00–18:00
Magnetic field measurements of the JT-60SA CS1 module
*Tetsuhiro Obana¹, Kazuya Takahata¹, Shinji Hamaguchi¹, Hirotaka Chikaraishi¹, Suguru Takada¹, Akifumi Iwamoto¹, Shinsaku Imagawa¹, Toshiyuki Mito¹, Haruyuki Murakami², Kyohei Natsume², Kaname Kizu²
National Institute for Fusion Science¹
National Institutes for Quantum and Radiological Science and Technology²

APP1-2 16:00–18:00
Numerical simulation of the fast processes in HTS tapes under the pulsed current load
*Irina Anischenko¹, Sergey Pokrovskii¹, Igor Rudnev¹, Maxim Osipov¹, Dmitriy Abin¹
National Research Nuclear University “MEPHI”(NRNU MEPHI), Russia¹

APP1-3 16:00–18:00
Observation of a Non-Uniform Current Distribution in Stacked High Temperature Superconducting Tapes
Tim A.J. Meulenbroeks¹, Yoshiro Terazaki², Shinnosuke Matsunaga³, Nagato Yanagi²,³
Eindhoven University of Technology¹
National Institute for Fusion Science²
SOKENDAI (The Graduate University for Advanced Studies)³

APP1-4 16:00–18:00
Analysis of current distribution in a simply-stacked HTS tapes conductor based on an electrical network model
*Shinnosuke Matsunaga¹, Tim A. J. Meulenbroeks², Yoshiro Terazaki³, Yuta Onodera³, Nagato Yanagi¹,³
SOKENDAI (The Graduate University for Advanced Studies)¹
Eindhoven University of Technology²
National Institute for Fusion Science³

APP1-5 16:00–18:00
Transport Current Characteristics of High Temperature Superconducting Busbar
*Yoshiro TERAZAKI¹, Nagato YANAGI¹
National Institute for Fusion Science¹
**APP1-6** 16:00–18:00

**Preload Structure Optimization Design and Mechanical Analysis of the CFETR Central Solenoid Model Coil**

Dapeng Yin\(^1\,2\), Yu Wu\(^1\), Aihua Xu\(^1\,2\), Houxiang Han\(^1\,2\)

Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, China\(^1\)

University of Science and Technology of China, Hefei, Anhui, China\(^2\)

**APP1-7** 16:00–18:00

**Measurement of the critical current for Bi-2212 subcable by using Four Hall Sensor Arrays**

W Chen\(^1\), *X S Yang\(^1\), C H Chen\(^1\), Y Zhao\(^1\)

Southwest Jiaotong University, China\(^1\)

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**Rotating machine**

Chairperson: Mark Ainslie (University of Cambridge)

**APP2-1** 16:00–18:00

**Experimental and Analytical Study on Load Characteristics of a 50 kW Class High Temperature Superconducting Induction/Synchronous Motor**

*Kentaro Kuroda\(^1\), Taketsune Nakamura\(^1\), Masaaki Yoshikawa\(^2\), Yoshitaka Itoh\(^2\), Ryohei Nishino\(^1\), Takuro Ogasa\(^1\), Toshihisa Terazawa\(^2\), Terazawa Fukui\(^3\), Mitsuho Furuse\(^4\), Yoshimasa Ohashi\(^5\)

Kyoto University, Japan\(^1\)

IMRA MATERIAL R&D Co., Ltd, Japan\(^2\)

Niigata University, Japan\(^3\)

National Institute of Advanced Industrial Science and Technology (AIST), Japan\(^4\)

AISIN SEIKI Co., Ltd, Japan\(^5\)

**APP2-2** 16:00–18:00

**Design of a 750 kW Class HTS Wind Generator with HTS Modules**

*Oyunjargal Tuvdensuren\(^1\), Hae-Jin Sung\(^1\), Byeong-Soo Go\(^1\), Minwon Park\(^1\), In-KeunYu\(^1\)

Changwon National University, Republic of Korea\(^1\)

**APP2-3** 16:00–18:00

**Numerical Analysis of AC loss and Power Density of 10 MW Fully Superconducting Generators for Electric Aircrafts from the viewpoint of Armature Winding Configuration**

*Masataka Komiya\(^1\), Takuya Aikawa\(^1\), Koichi Yoshida\(^1\), Shun Miura\(^1\), Masataka Iwakuma\(^1\), Takashi Yoshida\(^1\), Teruyoshi Sasayama\(^1\), Akira Tomioka\(^2\), Masayuki Konno\(^2\), Teruo Izumi\(^3\)

Research Inst. of Superconductor Science and Systems, Kyushu University, Fukuoka, Japan\(^1\)

Fuji Electric Co. Ltd., Ichihara-city, Japan\(^2\)

National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan\(^3\)
Magnetic levitation
Chairperson: Ken Nagashima (Railway Technical Research Institute)

**APP3-1** 16:00–18:00
Suspension Stability of Side-Suspended HTS Maglev System in Evacuated Tube
D J Zhou¹, F N Cai², L F Zhao³, Y Zhang², *Y Zhao¹,²
Fujian Normal University¹
Southwest Jiaotong University²

**APP3-2** 16:00–18:00
Vertical vibration characteristics of HTS Maglev systems under a long term external disturbance
*Shunshun Ma¹
Applied Superconductivity Laboratory, State Key Laboratory of Traction Power, Southwest Jiaotong University, Chengdu, P. R. China¹

**APP3-3** 16:00–18:00
Vibration suppression of high-temperature superconducting maglev system via electromagnetic eddy current damper
*Jinbo Yu¹, Haitao Li¹, Shuai Zhang¹, Ruixue Sun¹, Xiaochen Sang¹, Zigang Deng¹
Applied Superconductivity Laboratory, State Key Laboratory of Traction Power, Southwest Jiaotong University, P.R. China¹

**APP3-4** 16:00–18:00
Emulation and Analysis of an Axial Superconductor Magnetic Bearing
*Elkin Rodriguez¹,², Zigang Deng²
Laboratory of Applied Superconductivity – LASUP / UFRJ, Rio de Janeiro, Brazil.¹
Applied Superconductivity Laboratory, State Key Laboratory of Traction Power, Southwest Jiaotong University, P. R. China²

**APP3-5** 16:00–18:00
Energy losses in magnetic contactless bearings on the base of high-Tc superconducting tapes
*Igor Rudnev¹, Dmitriy Abin¹, Maksim Osipov¹, Sergey Pokrovskii¹, Irina Anischenko¹, Alexsey Podlivaev¹
National Research Nuclear University MEPHI (Moscow Engineering Physics Inst.), Russia¹

**APP3-6** 16:00–18:00
Levitation characteristics of superconducting stators with addition of a ring-shaped magnet
*Muneo Futamura¹, Ryo Shindo¹
Evaluation of loss characteristics of superconducting magnetic bearings for LiteBIRD satellite by three-dimensional finite element method analysis

*Yukimasa Hirota¹, Yutaka Terao¹, Hiroyuki Ohsaki¹, Tomotake Matsumura², Yuki Sakurai², Hajime Sugai², Nobuhiko Katayama²

The University of Tokyo, Japan¹
Kavli IPMU, The University of Tokyo, Japan²

Dec. 12 (Wed.) Late News

Late news (Poster 1)

Chairperson: Hirofumi Yamasaki (AIST)

Analysis on DC Circuit Breaker using superconducting coil

I.S.Jeong¹, H.W.Choi¹, S.Y.Park¹, H.S.Gu¹, H.S.Choi¹

Chosun University, Republic of Korea¹

Operation characteristics of superconducting coil type DC circuit breaker according to reactance value of superconducting coil using EMTDC/ PSCACD

*Hyewon CHOI¹, Huiseok Gu¹, Hyeosang CHOI¹

Dept. of Electrical Engineering, Chosun University, Dong-Gu, Gwangju, Republic of Korea¹
Dec. 14 (Fri.) Wires and Bulk  Multi-Purpose Hall

Joint

Chairperson: Tatsuoki Nagaishi (Sumitomo Electric Industries)

WBP5-1  10:00–12:00

Study of joint mechanism for superconducting joint of GdBa$_2$Cu$_3$O$_y$ coated conductors

*Tomohiro Miyajima$^1$, Ryo Teranishi$^1$, Yukio Sato$^1$, Kenji Kaneko$^1$, Miyuki Nakamura$^2$, Valery Petrykin$^2$, Sergey Lee$^2$, Satoshi Awaji$^3$, Tatsunori Okada$^3$, Akiyoshi Matsumoto$^4$

Kyushu University, Japan$^1$
SuperOx, Japan$^2$
Tohoku University, Japan$^3$
National Institute for Materials Science, Japan$^4$

WBP5-2  10:00–12:00

Influence of oxygen diffusion path on superconducting joint property of GdBa$_2$Cu$_3$O$_{7-\delta}$ coated conductor with additional deposited layer

*Shotaro Yasuyama$^1$, Tomohiro Miyajima$^1$, Ryo Teranishi$^1$, Yukio Sato$^1$, Kenji Kaneko$^1$, Valery Petrykin$^2$, Sergey Lee$^2$, Satoshi Awaji$^3$, Tatsunori Okada$^3$, Akiyoshi Matsumoto$^4$

Kyushu University, Japan$^1$
SuperOx, Japan$^2$
Tohoku University, Japan$^3$
National Institute for Materials Science, Japan$^4$

WBP5-3  10:00–12:00

Superconducting-Joint for REBCO coated conductors by low-temperature reaction using KOH

*Shuhei Funaki$^1$, Yugo Miyachi$^{1,2}$, Yasuji Yamada$^1$

Shimane Univ., Japan$^1$
JSPS Research Fellow, Japan$^2$

WBP5-4  10:00–12:00

Superconducting Joints between Bi2223 and NbTi Wires by in-situ Sheath-Dissolution Technique

Masachika Shibuya$^1$, Ryo Matsumoto$^{1,2}$, Gen Nishijima$^1$, Hiroyuki Takeya$^1$, Hitoshi Kitaguchi$^1$, Yoshihiko Takano$^{1,2}$

National Institute for Materials Science$^1$
University of Tsukuba$^2$
**MgB$_2$, Nb$_3$Sn, IBSs**
Chairperson: Yoshiyuki Yoshida (AIST)

**WBP6-1 10:00–12:00**

**Study of the Superconducting Layer Microstructure and (Nb,ti,Ta)$_3$Sn Bronze Strands Properties**
Ildar M. Abdyukhanov$^1$, Victor I. Pantsyrny$^1$, Alexander G. Silaev$^1$, Anastasiia S. Tsapleva$^1$, Maxim V. Alekseev$^1$, Elena A. Dergunova$^1$, Konstantin A. Mareev$^1$, Valery A. Drobyshev$^1$, Marina V. Kravtsova$^1$, Nadezhda V. Konovalova$^1$, Mansur N. Nasibulin$^1$, Pavel A. Lykianov$^1$
SC A.A. Bochvar High-Technology Research Institute of Inorganic Materials, Russia$^1$

**WBP6-2 10:00–12:00**

**CFETR CSMC Nb$_3$Sn Coil deformation analyze in Heat Treatment Process and the coil fixture design**
Song Jian$^1$, Wu Yu$^1$, Qin Jingang$^1$, Yu Min$^1$, Li Tong$^1$, Wang Weijun$^1$
Institute of Plasma physics, Chinese Academy of Sciences, China$^1$

**WBP6-3 10:00–12:00**

**Preparation of MgB$_2$ superconductor by the rapid heating and quenching method**
Xiaofeng Zou$^1$, Wenjie Zhang$^1$, Yong Zhao$^{2,3}$, Yong Zhang$^{1,2}$
Key Laboratory of Advanced Technologies of Materials (Ministry of Education of China), and Superconductivity & New Energy R&D Center, Southwest Jiaotong Univ., Chengdu, China$^1$
Key Laboratory of Magnetic Levitation Technologies & Maglev Trains (Ministry of Education of China), and School of Electric Engineering, Southwest Jiaotong Univ., Chengdu, China$^2$
College of Physics and Energy, Fujian Normal University, Fuzhou, China$^3$

**WBP6-4 10:00–12:00**

**Fabrication and properties of 19 cores MgB$_2$/NbCu/Monel wires with carbon coated boron as precursor powder**
*Qingyang Wang$^1$, Kerong Zhang$^2$, Fang Yang$^1$, Xiaomei Xiong$^1$, Dan Xi$^3$, Xifeng Pan$^3$, Guo Yan$^3$, Chengshan Li$^1$, Pingxiang Zhang$^{1,3}$
Northwest Institute for non-ferrous Metal Research, Xi’an, China$^1$
Xizang Minzu University, School of information technology. Xianyang, China$^2$
Western Superconducting Technologies Co. Ltd., Xi’an, China$^3$

**WBP6-5 10:00–12:00**

**Development of a Monitor for Parallel-type Superconducting Level Sensor**
*Naoki Tanaka$^1$, Kazuhiro Kajikawa$^1$, Hidetoshi Oguro$^2$, Makoto Sugino$^3$, Tsutomu Nakanishi$^1$, Itsuo Aoki$^3$
Graduate School of Information Science and Electrical Engineering, Kyushu University$^1$
School of Engineering, Tokai University$^2$
Jecc Torisha Co., Ltd.$^3$
WBP6-6 10:00–12:00

**Critical Current Properties of Superconducting Joint between Ba$_{1-x}$K$_x$Fe$_2$As$_2$ Tapes**

*Shota Imai$^{1,2}$, Shigeyuki Ishida$^2$, Yoshinori Tsuchiya$^2$, Akira Iyo$^2$, Hiroshi Eisaki$^2$, Kunio Matsuzaki$^1$, Taichiro Nishio$^1$, Yoshiyuki Yoshida$^1$

Department of Physics, Tokyo University of Science$^1$
National Institute of Advanced Industrial Science and Technology (AIST)$^2$

WBP6-7 10:00–12:00

**Fabrication of (Ba,Na)Fe$_2$As$_2$ round wires using HIP process**

*Daisuke Miyawaki$^1$, Sunseng Pyon$^1$, Tsuyoshi Tamegai$^1$, Satoshi Awaji$^2$, Katsutoshi Takano$^3$, Hideki Kajitani$^3$, Norikiyo Koizumi$^3$

The University of Tokyo$^1$
Institute for Materials Research, Tohoku University$^2$
National Institute for Quantum and Radiological Science and Technology$^3$

**Bulk materials**

Chairperson: Tetuo Oka (Shibaura Institute of Technology)

WBP7-1 10:00–12:00

**Effects of Nd$_2$O$_3$ and TiO$_2$ addition on the superconducting and microstructure properties of YBCO bulk superconductors fabricated by modified infiltration and growth technique**

*Fahad A Alzaid$^1$, Devendra K Namburi$^2$, Talal Aljuohani$^1$, Yunhua Shi$^2$, Anthony R Dennis$^2$, Maha M Khayyat$^1$, Abduljalil S Aljadani$^1$, Bandar M Alotaibi$^1$, David A Cardwell$^2$, John H Durrell$^2$

Center of Excellence for Advanced Materials and Manufacturing, King Abdulaziz City for Science and Technology, Riyadh, Saudi Arabia$^1$
Department of Engineering, University of Cambridge, Cambridge, UK$^2$

WBP7-2 10:00–12:00

**Fracture strength properties of (Gd,Y)BaCuO large single-grain bulk at liquid nitrogen temperature**

*Akira Murakami$^1$, Akifumi Iwamoto$^2$

National Institute of Technology, Ichinoseki College Japan$^1$
National Institute for Fusion Science Japan$^2$

WBP7-4 10:00–12:00

**Optimization of Liquid Phase Mass for the Production of Single Grain IG Processed Bulk YBa$_2$Cu$_3$O$_y$ by YbBa$_2$Cu$_3$O$_y$+Liquid Phase as a Liquid Source**

*Sushma Miryala$^{1,2}$, Masato Murakami$^1$

Shibaura Institute of Technology, Japan$^1$
Seisen, Japan$^2$
Optimization of the *Infiltration-Growth Process* for Fabrication of Large Bulk (YEr)Ba$_2$Cu$_3$O$_y$ Superconductors

*Kento Takemura$^1$, Tethuo Oka$^1$, Muralidhar Miryala$^1$, Masato Murakami$^1$

Shibaura Institute of Technology$^1$

Improvement of trapped field of REBCO bulk activated by pulsed field magnetization with a large soft-iron yoke

*Kazuya Yokoyama$^1$, Tetsuo Oka$^2$

Ashikaga University$^1$

Shibaura Institute of Technology$^2$

Numerical analysis of magnetic trapped fields for bulk superconductor with weak or insulated junctions between multiple-seed-growth domains

*Mitsuru Sawamura$^1$, Mitsuru Izumi$^2$

Steel Research Laboratories, Nippon Steel & Sumitomo Metal Corporation$^1$

Tokyo University of Marine Science and Technology (TUMSAT)$^2$

Numerical analysis of magnetic levitation forces for bulk superconductors with weak or insulated junctions between multiple-seed-growth domains

*Mitsuru Sawamura$^1$, Mitsuru Izumi$^2$

Steel Research Laboratories, Nippon Steel & Sumitomo Metal Corporation$^1$

Tokyo University of Marine Science and Technology (TUMSAT)$^2$

*Yuhei TAKAHASHI$^1$, Tomoyuki NAITO$^1$, Hiroyuki FUJISHIRO$^1$

Faculty of Science and Engineering, Iwate University$^1$

Synthesis and trapped field properties of dense MgB$_2$ bulks by Magnesium Vapor Transportation (MVT) method

*Yu Sanogawa$^1$, Akiyasu Yamamoto$^{1,2}$
Trapped Field Properties of Pulsed Field Magnetization (PFM) of MgB$_2$ Bulk Fabricated by Spark Plasma Sintering (SPS) Method

*Hayami Oki$^1$, Akira Takeda$^1$, Tetsuo Oka$^2$, Satoshi Fukui$^1$, Jun Ogawa$^1$, Kazuya Yokoyama$^6$, Jaques Noudem$^4$, Kengo Yamanaka$^2$, Masato Murakami$^2$

Niigata University (Japan)$^1$
Shibaura Institute Of Technology (Japan)$^2$
Ashikaga University (Japan)$^3$
Caen University (France)$^4$

Flux Pinning and Superconducting Properties of Bulk MgB$_2$ Using a Small Dy$_2$O$_3$ Additions

*Kotaro Kitamoto$^1$, Muralidhar Miryala$^1$, Masato Murakami$^1$
Shibaura Institute of Technology$^1$

FLUX PINNING AND SUPERCONDUCTING PROPERTIES OF Mg-RICH MgB$_2$

*Sai Srikanth Arvapalli$^1$, muralidhar miryala$^1$, masato murakami$^1$
Shibaura Institute of Technology$^1$

Processing and Characterization of Charcoal Added Bulk MgB$_2$

*Longji Dadiel$^1$, Muralidhar Miryala$^1$, Masato Murakami$^1$, S Pavan Kumar Naik$^1$
Shibaura Institute of Technology, Japan$^1$

Dec. 14 (Fri.) Electronic Devices

*EDP1-1 10:00–12:00

Multipoint measurements of a Pipe Using HTS-SQUID and Magnetostriction-Based Ultrasonic Guided Wave

*Yuki Azuma$^1$, Yuki Yokouchi$^1$, Shogo Kubota$^1$, Tomohiro Terawaka$^1$, Yoshimi Hatsukade$^1$, Seiji Adachi$^2$, Keiichi Tanabe$^2$

Kindai University, Japan$^1$
Superconducting Sensing Technology Research Association, Japan$^2$
Design and Performance of Digital SQUID Magnetometer using sub-flux quantum feedback

*Kosuke Okabe¹, Ryo Matsunawa¹, Kohki Itagaki¹, Itsuta Oshima¹, Masato Naruse¹, Tohru Taino¹, Hiroaki Myoren¹
Graduate School of Science and Engineering, Saitama University¹

Line width dependence of NbN-based microwave kinetic inductance detectors

*Shun Negishi¹, Seiichiro Ariyoshi¹, Satoru Hashimoto¹, Hikaru Mikami¹, Kensuke Nakajima², Hirotaka Teraí³, Saburo Tanaka¹
Toyohashi University of Technology¹
Yamagata University²
National Institute of Information and Communications Technology³

Plug-in Wire for 200-pixel Superconducting Tunnel Junction X-ray Detector Array on Helium Three Cryostat

*Shigetomo Shiki¹, Go Fuji¹, Masahiro Ukibe¹
National Institute of Advanced Industrial Science and Technology¹

Ginzburg-Landau Theory for the Operation Principle of Superconducting Delay-Line Induction Detectors

*Tomio Koyama¹, Takekazu Ishida¹,²
Division of Quantum and Radiation Engineering, Osaka Prefecture University¹
Nano Square Research Institute, Osaka Prefecture University²

Temperature dependent characteristics of neutron signals from a current-biased Nb nanowire detector with ¹⁰B converter

*The Dang Vu¹, Yuki Iizawa², Kazuma Nishimura², Hiroaki Shishido²,³, Kenji M Kojima⁴, Kenichi Oikawa¹, Masahide Harada¹, Shigeyuki Miyajima²,³, Mutsoo Hidaka⁶, Takayuki Oku¹, Kazuhioko Soyama¹, Kazuya Aizawa¹, Tomio Koyama⁷, and Takekazu Ishida²,⁷
Materials and Life Science Division, J-PARC Center, Japan Atomic Energy Agency, Tokai, Ibaraki, Japan¹
Department of Physics and Electronics, Osaka Prefecture Univ., Sakai, Osaka, Japan²
NanoSquare Research Institute, Osaka Prefecture Univ., Sakai, Osaka, Japan³
Muon Science Laboratory and Condensed Matter Research Center, Institute of Materials Structure Science, KEK, Tsukuba, Ibaraki, Japan⁴
Advanced ICT Research Institute, NICT, Kobe, Hyogo, Japan⁵
National Inst. of Advanced Industrial Science & Technology (AIST), Tsukuba, Ibaraki, Japan⁶
Divi. of Quantum and Radiation Engineering, Osaka Prefecture Univ., Sakai, Osaka, Japan⁷
EDP1-7 10:00–12:00

Si waveguide-integrated SSPD with AWG cold filter
*Hiromichi Nii1, Kento Sakai1, Tatsuou Hiraki2,3, Tai Tsuchizawa2,3, Koji Yamada2,3, Shinji Matsuo2,3, Daisuke Sakai1, Hiroyuki Shibata1

Electrical and Electronic Engineering, Kitami Institute of Technology, Kitami, Hokkaido.1
NTT Device Technology Labs, NTT Corporation, Atsugi, Kanagawa.2
NTT Nanophotonics Center, NTT Corporation, Atsugi, Kanagawa.3

EDP1-8 10:00–12:00

Reduction of Environmental Magnetic Field Noise for a Small Magnetic Contaminant Detection
*Takao Nishikawa1, Ken Sakuta1
The University of Shiga Prefecture, Japan1

EDP1-9 10:00–12:00

Simple photon incidence method from the front side for Superconducting Single-Photon Detector (SSPD) using alignment mark
*Kento Sakai1, Hiromichi Nii1, Daisuke Sakai1, Hiroyuki Shibata1
Kitami Institute of Technology, Kitami, Hokkaido, Japan.1

EDP1-10 10:00–12:00

Photon-Number Resolving Detector using Series Array of NbN Nanowire Shunted with Ti Resistors
*Satoshi Denda1, Masato Naruse1, Tohru Taino1, Hiroaki Myoren1
Graduate School of Science and Engineering, Saitama University, Japan1

EDP1-11 10:00–12:00

Development of High Throughput X-ray detectors using Superconducting Tunnel Junctions with a large area size
*Yuichi Fujisawa1, Go Fujii2, Masahiro Ukibe2, Shigetomo Shiki2, Masato Naruse1, Hiroaki Myoren1,2, Tohru Taino1
Saitama University1
AIST2

EDP1-12 10:00–12:00

Hybrid of Single and Double-Component Superconductors
*Y Tanaka1, H Yamamori1, T Yanagisawa1, T Nishio2, S Ooi3, M Tachiki3, S Arisawa3
National Institute of Advanced Industrial Science and Technology (AIST), Japan1
Department of Physics, Tokyo University of Science, Japan2
National Institute for Materials Science, Japan3
Design and fabrication of Josephson voltage standard circuit for ac-voltage standard

*Hirotake Yamamori¹, Michitaka Maruyama¹, Yasutaka Amagai¹, Takeshi Shimazaki¹
National Institute of Advanced Industrial Science and Technology¹

Unconventional Josephson effect in two dimensional electron gas-based superconductor-semiconductor Josephson junctions in quantum integrated circuits

*Kaveh Delfanazari¹,², Pengcheng Ma², Ian Farrer²,³, David Ritchie², Hannah J. Joyce¹, Michael J. Kelly¹,², Charles G. Smith²
Engineering Department, University of Cambridge, Cambridge, UK¹
Department of Physics, Cavendish Laboratory, University of Cambridge, Cambridge, UK²
Department of Electronic and Electrical Engineering, University of Sheffield, Sheffield, UK³

Enhancement of critical current density in YBa₂Cu₃O₇ superconducting thin films by changing magnetic environment

*Alaa H. Hammood¹, Antony Jones¹,², Mustafa M. AL-Qurainy¹, Sergey A. Fedoseev¹, Alexey V. Pan¹
Institute for Superconducting and Electronic Materials, Univ. of Wollongong, Northfields Avenue, Wollongong, NSW, Australia¹
CSIRO, Manufacturing, Bradfield Road, West Lindfield, NSW, Australia²

Artificial ferromagnetic dot arrays for the critical current enhancement in superconducting YBa₂Cu₃O₇-δ thin films

*Mustafa M. AL-Qurainy¹, Antony Jones¹,², S. Rubanov³, Sergey A. Fedoseev¹, Alaa H. Hammood¹, Alexey V. Pan¹
Institute for Superconducting and Electronic Materials, Univ. of Wollongong, New South Wales, Australia¹
CSIRO, Manufacturing, Bradfield Road, West Lindfield, NSW, Australia²
Electron Microscope Unit, Bio21 Institute, University of Melbourne, VIC, Australia³

Estimation of Electricity Storage Capacity of Compact SMESs Composed of Stacks of Si-wafers Loaded with Superconducting Thin Film Coils in Spiral Trenches formed by MEMS Process

Yushi Ichiki¹, Akihisa Ichiki², Tatsumi Hioki¹, Minoru Sasaki³, Joo-Hyong Noh⁴, Osamu Takai¹, Hideo Honma⁴, *Tomoyoshi Motohiro¹,²
Graduate School of Engineering, Nagoya University¹
Institutes of Innovation for Future Society, Nagoya University²
Graduate School of Engineering, Toyota Technological Institute³
Micro-Fabrication of NdFeAs(O,F) Thin Films towards Particle Detector Applications
*Yasunari Tsuji¹, Takuya Matsumoto¹, Takayuki Yamada¹, Takafumi Hatano¹, Yuto Nakamura², Kazumasa Iida¹, Hideo Kishida², Satoshi Kashiwaya², Hiroshi Ikuta¹
Department of Materials Physics, Nagoya University, Japan¹
Department of Applied Physics, Nagoya University, Japan²

Measurements of phase shifts in YBCO transmission lines for evaluation of kinetic inductances
*Ryo Ishida¹, Takashi Goto¹, Hisashi Shimakage¹, Masanori Takeda²
Ibaraki University Japan¹
Shizuoka University Japan²

Digital devices & qubits
Chairperson: Masamitsu Tanaka (Nagoya University)

Area Reduction of Adiabatic-Quantum-Flux-Parametron Register-Files by Using Asymmetric Gates
*Tomohiro Tamura¹, Naoki Takeuchi²,³, Christopher Ayala², Yuki Yamanashi¹, Nobuyuki Yoshikawa¹
Department of Electrical and Computer Engineering, Yokohama National University¹
IAS, Yokohama National University²
JST-PRESTO³

Design and evaluation of a one-instruction-set single-flux-quantum microprocessor for the demonstration of Josephson-CMOS hybrid system
*Yuki Hironaka¹, Yuki Yamanashi¹, Nobuyuki Yoshikawa¹
Department of Electrical and Computer Engineering, Yokohama National University¹

Design and demonstration of an 8-bit 18-sample/cycle sine code generator using single-flux-quantum circuits
*Fei Ke¹, Yuki Yamanashi¹, Thomas Ortlepp², Nobuyuki Yoshikawa¹
Department of Electrical and Computer Eng., Yokohama National University, Japan¹
CiS Research Institute for Microsensor Konrad-Zuse-Straße 14, Erfurt, German²
**EDP2-4** 10:00–12:00  
Design and measurement of 4-unit 2-bit FPGA using single-flux-quantum circuits  
*Mika Araki¹, Yuki Yamanashi¹, Nobuyuki Yoshikawa¹  
Yokohama National University, Japan¹

**EDP2-5** 10:00–12:00  
Design and Operation of Distributed Double-SQUID Amplifier for RSFQ Circuits  
*Komei Higuchi¹, Hiroshi Shimada¹, Yoshinao Mizugaki¹  
The University of Electro-Communications, Japan¹

**EDP2-6** 10:00–12:00  
Demonstration of 5.6 ps Latency of Adiabatic Quantum Flux Parametron using Delayed Clocking Scheme  
*Mai Nozoe¹, Naoki Takeuchi²,³, Yuki Yamanashi¹,², Nobuyuki Yoshikawa¹,²  
Department of Electrical and Computer Engineering, Yokohama National University, Japan¹  
Institute of Advanced Sciences, Yokohama National University, Japan²  
PRESTO, Japan Science and Technology Agency, Japan³

**EDP2-7** 10:00–12:00  
Design of High Timing resolution SFQ Time-to-Digital Converter for Time-Resolving Photon Detection System using SNSPDs  
*Ryotaro Kamiya¹, Kota Aita¹, Masato Naruse¹, Tohru Taino¹, Hiroaki Myoren¹, Jian Chen², Peiheng Wu²  
Graduate School of Science and Engineering, Saitama University, Japan¹  
Research Institute of Superconductor Electronics, Nanjing University, China²

**EDP2-8** 10:00–12:00  
Tunable Microwave Single Photon Source Based on Transmon Qubit with High Emission Efficiency  
*Yu Zhou¹,², Zhihui Peng², Yuta Horiuchi¹, Jaw-Shen Tsai¹,²  
Department of Physics, Tokyo University of Science, Kagurazaka, Shinjuku, Tokyo, Japan¹  
Center for Emergent Matter Science, RIKEN, Hirosawa, Wako, Saitama, Japan²

**EDP2-9** 10:00–12:00  
A transition edge sensor with broadband optical absorption for biological imaging  
*T. Konno¹, S. Takasu¹, K. Kobayashi¹,², K. Hattori¹, S. Inoue², D. Fukuda¹,²  
National institute of advanced industrial science and technology (AIST)¹  
Graduate school of science and technology, Nihon university²

**EDP2-10** 10:00–12:00  
Development of a Superconducting Microwave Beam Splitter for Boson Sampling
Experiments
*Julia Zotova$^{2,1}$, Yu Zhou$^1$, Rui Wang$^{3,1}$, Oleg Astafiev$^{2,4}$, Jaw-Shen Tsai$^{3,1}$
Center for Emergent Matter Science, RIKEN, Japan$^1$
Moscow Institute of Physics and Technology, Russia$^2$
Tokyo University of Science, Japan$^3$
Royal Holloway University of London, United Kingdom$^4$

EDP2-11 10:00–12:00
Characterization of C-shunt flux qubit and its further applications in circuit-QED
*Gopika Lakshmi Bhai$^{1,2}$, Rui Wang$^{1,2}$, Yu Zhou$^2$, Hasegawa Makoto$^1$, Jaw-Shen Tsai$^{1,2}$
Tokyo University of Science, Shinjuku, Japan$^1$
RIKEN, Wako, Japan$^2$

Dec. 14 (Fri.) Large Scale System Applications

Electric power applications and cables 2
Chairperson: Tomoo Mimura (TEPCO)

APP4-1 10:00–12:00
A feasibility study of smart high-temperature superconducting cable to improve stability of KEPCO system
*Sangsoo Seo$^1$, Seung Ryul Lee$^1$, Jeonwook Cho$^1$
Korea Electrotechnology Research Institute$^1$

APP4-3 10:00–12:00
Conceptual design and performance analysis of a multi-layer 3 phase coaxial HTS
*Seong-Yeol Kang$^1$, Seok-Ju Lee$^1$, Minwon Park$^1$, In-Keun Yu$^1$, Du-Yean Won$^2$, Hyung-Suk Yang$^2$
Changwon National University, Republic of Korea$^1$
KOREA, KEPCO Research Institute, Republic of Korea$^2$

APP4-4 10:00–12:00
Structural Study on a Single-phase Bi2223 High Temperature Superconducting Transformer for a 1 kHz-1 kA Class Power Supply
*Takafumi Adachi$^1$, Nozomu Nanato$^1$, Takahito Yamanishi$^1$
Okayama University$^1$

APP4-5 10:00–12:00
Design of an Air-core Bi2223 High Temperature Superconducting Transformer with Pancake Structure for a Large AC Current Supply and its Protection System for Normal Transitions
**APP4-6** 10:00–12:00

**Optimum Design of Cryogenic Pump for Circulation Cooling of High Temperature Superconducting Cables**

*Mikishi Kondo¹, Nozomu Nanato¹, Hokuto Yamada¹*

Okayama University, Japan¹

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**APP4-7** 10:00–12:00

**Heat Load to the cryogenic system in the 1000 m Class Superconducting DC Power Transmission System**

*APP5-1** 10:00–12:00

**Early Detection of Normal Transitions in a High Temperature Superconducting Transformer Wound with a Plurality of HTS Tapes Using the Active Power Method**

*APP5-2** 10:00–12:00

**Experimental investigation of the processes of degradation and transition to the normal state in CC-tapes under the action of current pulses**

*APP5-3** 10:00–12:00

**Three-Dimensional Electromagnetic and Thermal Coupled Analysis of an SFCL REBCO Coil Immersed in 65 K Liquid Nitrogen**

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*Chairperson: Shun Tonooka (Mitsubishi Electric)*

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*Magnet protection*

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**Magnetic separation**
Chairperson: Satoshi Fukui (Niigata University)

**APP6-1** 10:00–12:00

Recovery of strontium, rubidium and lithium from solution utilizing a rotary type high gradient magnetic separation with rice hull magnetic activated carbon
*Keisuke Ishida¹, Tatsuya Shiina¹, Osuke Miura¹
Dept. of Electrical and Electronic Engineering, Tokyo Metropolitan University, Japan¹

**APP6-2** 10:00–12:00

Levitation properties of valuable metals utilizing magneto-Archimedes effect in a high magnetic field gradient
*Daiki Yamamoto¹, Kenichi Yamagishi¹, Osuke Miura¹
Tokyo Metropolitan University, Department of Electrical and Electronic Engineering, Japan¹

**APP6-3** 10:00–12:00

Enhancement of the magneto-Archimedes levitation force by optimized ferromagnetic materials arrangement in magnetic fields
*Kenichi Yamagishi¹, Daiki Yamamoto¹, Osuke Miura¹
Dept. of Electrical and Electronic Engineering, Graduate School of Science and Engineering, Tokyo Metropolitan University, Japan¹

**APP6-4** 10:00–12:00

Design and Trial Production of Magnetic Filter for Medical Protein Screening System using High Gradient Magnetic Separation
*Masaki Mori¹, Mikihisa Kubota¹, Takuro Abe², S.B Kim¹, Hiroshi Ueda¹
Okayama University Graduate School of Natural Science and Technology¹
Okayama University Faculty of Engineering²

**APP6-5** 10:00–12:00

Fundamental Study on Cancer Therapy by Blocking Newborn Blood Vessels Using a Rotating Magnetic Field
*Makoto Kirimura¹, Yoko Akiyama¹
Div. of Sustainable Energy & Environmental Eng., Graduate School of Eng., Osaka Univ., Japan¹

**Fundamental technology and misc. Applications 2**
Chairperson: Shinji Matsumoto (NIMS)
APP7-1 10:00–12:00
Magnetic field design of a cosine-theta superconducting magnet with active shielding for a rotating gantry
*Tetsuhiro Obana¹, Toru Ogitsu²
National Institute for Fusion Science¹
High Energy Accelerator Research Organization²

APP7-2 10:00–12:00
Measurement of trapped magnetic field in REBCO single-turn loop including a joint
*Shinji MATSUMOTO¹, Gen NISHIJIMA¹, Akinobu NAKAI², Hisaki SAKAMOTO², Shinichi MUKOYAMA², Yasuyuki MIYOSHI³, Kazuyoshi SAITO³, Mamoru HAMADA³
National Institute for Materials Science, Japan¹
Furukawa Electric Co., Ltd., Japan²
Japan Superconductor Technology, Inc., Japan³

APP7-3 10:00–12:00
Three dimensional model for numerical computations of screening currents in REBCO coils
*Philippe J. Fazilleau¹, Guillaume Dilasser¹
CEA Saclay, France¹

APP7-4 10:00–12:00
Experimental and Numerical Study on the Stability of a Pancake Coil Wound with a Rutherford-Type MgB₂ Conductor for SMES
Tsuyoshi Yagai¹, *Toru Okubo¹, Moeto Hira¹, Kaoruko Abe¹, Yusuke Kuwahara¹, Masahiro Kamibayashi¹, Mana Jinbo¹, Tomoaki Takao¹, Yasuhiro Makida², Takakazu Shintomi², Naoki Hirano³, Toshihiro Komagome⁴, Kenichi Tsukada¹, Taiki Onji⁵, Yuki Arai⁵, Masaru Tomita⁵, Atsushi Shigemori⁶, Kenichi Nakajima⁶, Daisuke Miyagi⁷, Makoto Tsuda⁷, Takarato Hamajima⁴
Sophia University¹
High Energy Acceleration Research Organization²
Chubu Electric Power³
MAYEKAWA MFG. Co., Ltd⁴
Railway Technical Research Institute⁵
Iwatani Corporation⁶
Tohoku University⁷

APP7-5 10:00–12:00
Characterization of conduction-cooled MgB₂ wires
Satoru Inoue¹, Xijie Luo¹, Amemiya Naoyuki¹
Kyoto University¹
Late news (Poster 2)

Chairperson: Hirofumi Yamasaki (AIST)

**LNP2-1** 10:00–12:00

The improvement of MgB$_2$ superconductivity prepared by diffusion method with ultrasonic precursor

*Hong Zhang$^1$, QI Wang$^1$, Yong Zhao$^{1,2}$, Yong Zhang$^1$

Key Laboratory of Maglev Train and Maglev Technology of Ministry of Education, Superconductivity and New Energy R&D Center, Southwest Jiaotong Univ., Chengdu, China$^1$
School of Materials Science and Engineering, Univ. of New South Wales, Sydney, Australia$^2$

**LNP2-2** 10:00–12:00

Power Enhancement of the High-$T_c$ Superconducting Terahertz Emitter with a Modified Device Structure

*H. Minami$^{1,2}$, Y. Ono$^1$, K. Murayama$^1$, Y. Tanabe$^1$, K. Nakamura$^1$, S. Kusunose$^1$, T. Kashiwagi$^{1,2}$, M. Tsujimoto$^{1,2}$, K. Kadowaki$^{1,2}$

Graduate School of Pure and Applied Sciences, Univ. of Tsukuba, Tsukuba, Ibaraki, Japan$^1$
Division of Materials Science, Univ. of Tsukuba, Tsukuba, Ibaraki, Japan$^2$

**LNP2-3** 10:00–12:00

Local Heating Effects on the Radiation Intensity of High-$T_c$ Superconducting Terahertz Emitters

*K. Nakamura$^1$, H. Minami$^{1,2}$, R. Ota$^1$, K. Murayama$^1$, Y. Ono$^1$, S. Kusunose$^1$, T. Kashiwagi$^{1,2}$, M. Tsujimoto$^{1,2}$, K. Kadowaki$^{1,2}$

Graduate School of Pure and Applied Sciences, Univ. of Tsukuba, Tsukuba, Ibaraki, Japan$^1$
Division of Materials Science, Univ. of Tsukuba, Tsukuba, Ibaraki, Japan$^2$