

MAGDA 2011

The 20th MAGDA Conference in Pacific Asia

November 14-16, 2011
Kaohsiung, Taiwan

CONFERENCE PROGRAM

Sponsored by:

Japan Society of Applied Electromagnetics and Mechanics
Bureau of Foreign Trade, Taiwan
National Kaohsiung First University of Science and Technology

Collaborated by:

The Institute of Electrical Engineers of Japan
Japan Society of Mechanical Engineers
The Magnetics Society of Japan
Japan Society for Simulation Technology
Japan Biomagnetism and Bioelectromagnetics Society
The Society of Instrument and Control Engineers
The Institute of Systems Control and Information Engineers
Atomic Energy Society of Japan
Japan Society of Maintechnology
The Japan Society for Non-Destructive Inspection
IEEE Magnetic Society Japan Chapter
The Japan Society of Plasma Science and Nuclear Fusion Research
Japan Society of Spring Engineers
The Society of Life Support Engineering (LSE)

Introduction

Magnetodynamics (MAGDA) Conference is an annual event that is organized by the Japan Society of Applied Electromagnetics and Mechanics (JSAEM). It is the prime forum of communication for the community of magnetodynamics researchers and development engineers. It is also a point of contact of the academic and industrial professionals in the domain of Electromagnetics and Mechanics.

Topics

Computational Electromagnets
Motor Design
FEM analysis for Motor Design
Control Technology
Characteristic Analysis
Sensor Technology
Nondestructive Evaluation
Dynamical Analysis
Magnetic Bearings
Design of Electromagnetic Device
Generator and Transformer
Young Award Sessions

Venue

The symposium will be held at Garden Villa in Kaohsiung, Taiwan. Kaohsiung is in the southwestern of Taiwan. It takes about 2 hours from Taipei by Taiwan High Speed Rail.

The Garden Villa is located at the heart of the municipality of Kaohsiung and has the most beautiful view of Lianchitan. Within 1,000 meters there are Zuoying Station of Taiwan High Speed Rail, Kaohsiung MRT stations, Zuoying Railway Station, interchanges of the national highway, Kaohsiung Arena, Hanshin Department Store, and Shin Kong Mitsukoshi Department Store.



Language

The official language of the Conference is English, which will be used for all printed materials, presentations, and discussions.

Organizing Committee

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Yasuo Oshino (Tokai University)
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Shinichi Yokota (Tokyo Institute of Technology)

Tour

[Date & Time]

November 16th Wednesday 13:00 – 20:00

[Schedule]

Depart from Hotel→World Games Stadium/ Ecological Park →Lotus Pond (Zuoying)→ Railway Museum →
Sizihwan Sunset / British Consulate at Takou→Pier 12 (Love Pier) →Kaohsiung Harbor cruise (about two
hours including dinner buffet on the boat).

Schedule

Deadline of abstract submission	July 31, 2011
Notification of acceptance	August 20, 2011
Deadline of full paper submission	October 10, 2011
Deadline of advanced registration	October 10, 2011

MAGDA 2011 Secretariat

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Conference Time Table

November 13th (Sun.)			
16:00 – 18:00	Pre-registration (R 107)		
November 14th (Mon.)			
08:50 - 17:00	Registration (Banquet Hall No. 2, a.m. only)		
09:40 - 10:00	Opening Ceremony (Banquet Hall No. 2)		
10:00 - 11:00	Keynote Speech I : (Banquet Hall No. 2) Vector Magnetic Characteristic Technology for Development of Super Premium Efficiency (IE4 Level) Motor Masato Enokizono (Oita University) Chairperson: Takeshi Mizuno (Saitama University)		
	Room A	Room B	Banquet Hall No. 2
11:20 - 12:20	1A1 Young Award I	1B1 Young Award IV	1C1 Computational Electromagnets I
12:20 - 13:20	Lunch Break		Room C
13:20 - 15:00	1A2 Young Award II	1B2 Young Award V	1C2 Computational Electromagnets II
15:00 - 15:20	Break		
15:20 - 17:00	1A3 Young Award III	1B3 Young Award VI	1C3 Motor Design
17:00 - 18:00	Break		
18:00 - 20:00	Reception (Hoya Restaurant)		
November 15th (Tue.)			
	Room A	Room B	Room C
08:40 - 10:00	2A1 Young Award VII	2B1 Young Award X	2C1 FEM analysis for Motor Design
10:00 - 10:20	Break		
10:20 - 12:00	2A2 Young Award VIII	2B2 Young Award XI	2C2 Control Technology
12:00 - 13:00	Lunch Break		
13:00 - 14:00	2A3 Young Award IX	2B3 Young Award XII	2C3 Characteristic Analysis
14:00 - 14:20	Break		
14:20 - 15:20	Keynote Speech II : (Room C) Expanding Electromagnetic Horizon- Electric Motor Technology Research Shyh-Jier Huang (National Cheng Kung University) Chairperson: Yung-Tien Liu (National Kaohsiung First Univ. of Science and Technology)		
15:20 - 15:50	Award Ceremony (Room C)		
15:50 - 16:00	Break		
16:00 - 17:30	Award Presentation (Room C)		
17:30 - 18:30	Break		
18:30 - 20:30	Conference Dinner (Banquet Hall No. 1)		
November 16th (Wed.)			
	Room A	Room B	Room C
08:40 - 10:00	3A1 Sensor Technology	3B1 Dynamical Analysis	3C1 Design of Electromagnetic Device
10:00 - 10:20	Break		
10:20 - 12:00	3A2 Nondestructive Evaluation	3B2 Magnetic Bearings	3C2 Generator and Transformer
12:00 - 13:00	Lunch Break		
13:00 - 20:00	Tour		

Conference Program

November 14th (Mon.)

9:40 - 10:00 Opening Ceremony (Banquet Hall No. 2)

10:00 - 11:00 Keynote Speech I (Banquet Hall No. 2)

Chairperson: *Takeshi Mizuno (Saitama University)*

1K1 Vector Magnetic Characteristic Technology for Development of Super Premium Efficiency (IE4 Level) Motor

Masato Enokizono (Oita University)

11:20 - 12:20 Young Award I (Room A)

Chairperson: *Tatsuo Sawada (Keio University)*

1A11 Iron Loss Analysis of Wound-Core Transformer Taking Account of Joint Configuration

Yoshifumi Takakura (Doshisha University), Yasuhito Takahashi (Doshisha University), Koji Fujiwara (Doshisha University), Yoshiyuki Ishihara (Doshisha University), Tsuyoshi Masuda (Toshiba Industrial Products Manufacturing Corporation)

1A12 2D Vibration Stage Using PZT Actuators

Jiang Guo (University of Tokyo), Sze Keat Ch e (Mechano Transformer Corp.), Takeshi Yano (Mechano Transformer Corp.), Toshiro Higuchi (University of Tokyo)

1A13 Proposal of Short Armature Core Double-Sided Type Transverse Flux Type Linear Synchronous Motor

Jung-Seob Shin (University of Tokyo), Takafumi Koseki (University of Tokyo), Hounng-Joong Kim (Sung-Jin Royal Motion Co. Ltd)

11:20 - 12:20 Young Award IV (Room B)

Chairperson: *Yohji Okada (Ibaraki University)*

1B11 Realization of Voltage-Controlled Double Magnetic Suspension System

Kazuya Nishimura (Saitama University), Takeshi Mizuno (Saitama University), Masaya Takasaki (Saitama University), Yuji Ishino (Saitama University)

1B12 Measurement of Properties of Positioning of Cylindrical Magnetic Gear

Yoshinori Ando (Gunma University), Akira Baba (Gunma University), Takatoshi Ugajin (Gunma University), Iwanori Murakami (Gunma University), Kou Yamada (Gunma University)

1B13 Document Authentication System Using Dynamic Time Warping Algorithm

Shunji Sonoda (Yokohama National University), Takayuki Yajima (Yokohama National University), Tsutomu Yamada (Yokohama National University), Yasushi Takemura (Yokohama National University)

11:20 - 12:20 Computational Electromagnets I (Banquet Hall No. 2)

Chairperson: *Takashi Todaka (Oita University)*

1C11 New Method to Predict Common Mode, Differential Mode and Total Conducted Emission for Led Lighting Implement

Yoshihiko Namba (Panasonic Electric Works Analysis Center Co., Ltd.), Katsuhisa Tsujimoto (Panasonic Electric Works Analysis Center Co., Ltd.), Katsuhiko Hirata (Osaka University), Keita Ogawa (Osaka University), Fumiya Kitayama (Osaka University), Ryuzo Nakata (Osaka University)

1C12 FDM and FEM-BIM Micromagnetic Analysis of a Single-Pole-Type Perpendicular Write Head

Toshio Tsukamoto (Niigata Institute of Technology), Hideto Hosokai (Niigata Institute of Technology), Yasushi Kanai (Niigata Institute of Technology), Kazuetsu Yoshida (Kogakuin University), Simon John Greaves (Tohoku University), Hiroaki Muraoka (Tohoku University)

1C13 Simple Model of Axial Magnetic Reluctance for Hollow-Cylindrical Iron Cores in Frequency Domain

Satoru Fukata (Kyushu University)

12:20 - 13:20 Lunch Break

13:20 - 15:00 Young Award II (Room A)

Chairperson: *Nobuyuki Kurita (Gunma University)*

1A21 Trajectory Analysis in Two Axes of Spherical Resonant Actuator Employing 3-D Finite Element Method

Satoshi Suzuki (Gifu University), Yoshihiro Kawase (Gifu University), Tadashi Yamaguchi (Gifu University), Shuhei Toyama (Gifu University), Katsuhiko Hirata (Osaka University), Tomohiro Ota (Panasonic Electric Works, Ltd.)

1A22 A Radial Type Self-Bearing Motor for Small Maglev Regenerative Blood Pump

Keigo Ukita (Ibaraki University), Toru Masuzawa (Ibaraki University), Hiroyuki Onuma (Ibaraki National College of Technology), Takashi Nishimura (University of Tokyo), Shunei Kyo (University of Tokyo)

1A23 Influence of External Stress on Iron Loss in an Actual Stator Core Using the Excitation Inner Core Method

Kazunori Shimada (Oita National College of Technology), Mohachiro Oka (Oita National College of Technology), Makoto Kawano (Oita National College of Technology), Masato Enokizono (Oita University)

1A24 Rotation Control of a 14-12 Spherical Stepping Motor

Ryo Sasaki (Okayama University), Akio Gofuku (Okayama University), Tomoaki Yano (National Institute of Advanced Industrial Science and Technology), Mitsunobu Shibata (Okayama University)

1A25 Study on Synchronization between an Electrostatic Motor and a Rotary Transformer

Fumiaki Kanayama (University of Tokyo), Takuya Hosobata (University of Tokyo), Akio Yamamoto (University of Tokyo), Toshiro Higuchi (University of Tokyo)

13:20 - 15:00 Young Award V (Room B)

Chairperson: *Shoichiro Nagata (University of Miyazaki)*

1B21 Flow Regime Identification of Solid-Liquid Two-Phase Flow Using Magnetic Fluid Based on Electromagnetic Induction Method

Haruhiko Yamasaki (Doshisha University), Xiao-Dong Niu (Doshisha University), Hiroshi Yamaguchi (Doshisha University)

1B22 Accuracy Verification of a Single Sheet Tester - Area-turn Calibration of H-coil and Measurement Area-

Toshiharu Kibe (Doshisha University), Yasuhito Takahashi (Doshisha University), Koji Fujiwara (Doshisha University), Yoshiyuki Ishihara (Doshisha University), Akifumi Kutsukake (Oita Prefectural Organization for Industry Creation), Yukihito Kido (Oita Prefectural Organization for Industry Creation), Tetsu Ikeda (Oita Prefectural Organization for Industry Creation), Tsugunori Kanada (Oita Prefectural Organization for Industry Creation), Masato Enokizono (Oita University)

1B23 Basic Study of Transmitting and Receiving Ultrasonic Waves by Using EMAT and PVDF Sensor

Yusuke Fujita (Hiroshima University), Yoshikazu Tanaka (Hiroshima University), Yukio Fujimoto (Hiroshima University)

1B24 Dual Sampling Rate Digital Signal Processing of Optical Encoder for Low Speed Dynamic Tests of Electromagnetic Traction Systems, Including Iron-Wheel Suspended Linear Motors

Takafumi Hara (University of Tokyo), Yasuhiro Takada (University of Tokyo), Takafumi Koseki (University of Tokyo), Yuichiro Nozaki (Hitachi, Ltd. Rail Systems Company)

1B25 MEMS-Based Liquid-Rate Gyroscope Using Electro-Conjugate Fluid

Thanh Vinh Xuan Nguyen (Tokyo Institute of Technology), Tsunehiko Imamura (Tamagawa Seiki Co., Ltd.; Tokyo Institute of Technology), Joon-Wan Kim (Tokyo Institute of Technology), Shinichi Yokota (Tokyo Institute of Technology), Kazuya Edamura (New Technology Management Co., Ltd.)

13:20 - 15:00 Computational Electromagnets II (Room C)

Chairperson: *Kunihisa Tashiro (Shinshu University)*

- 1C21 **Influence of Vector Magnetic Property with Rotational Magnetic Flux, Magnetic Hysteresis and Angle Difference on Stator Core Loss**
Keisuke Fujisaki (Nippon Steel Corporation), Shouji Satoh (N-Tec Oita Corporation), Masato Enokizono (Oita University),
- 1C22 **Study on a Coupling Between External Electromagnetic Filed and Nonlinear Circuit by Using a Combination of Electromagnetic Topology and Harmonic Balance**
Min-Hyuk Kim (Seoul National University), Hyun-Kyo Jung (Seoul National University)
- 1C23 **Magnetostatic Analysis by Magnetic Moment Method with Surface Loop Current as State Variable**
Kazuhisa Ishibashi (ABB Switzerland Ltd), Zoran Andjelic (ABB Switzerland Ltd), Yasuhito Takahashi (Doshisha University), Koji Fujiwara (Doshisha University), Yoshiyuki Ishihara (Doshisha University), Kenta Tsuzaki (Waseda University), Shinji Wakao (Waseda University)
- 1C24 **High Frequency Electromagnetic Field Leakage Phenomenon at Mechanical Contact Point** *Keisuke Fujisaki (Nippon Steel Corporation)*
- 1C25 **Determination of Optimum Operating Frequency for Non-Contact Charger**
Daigo Yonetsu (Kansai University), Takehisa Hara (Kansai University), Takuma Fujiwara (Kansai Electric Power Co., Inc.), Kyoji Ishizu (Kansai Electric Power Co., Inc.), Toshiki Hanada (Kansai Electric Power Co., Inc.)

15:00 - 15:20 Break

15:20 - 17:00 Young Award III (Room A)

Chairperson: *Riichi Murayama (Fukuoka Institute of Technology)*

- 1A31 **Effect of Magnetic Field on Pressure Drop in Two-Dimensional Magnetic Fluid Flow**
Akihiro Nakamura (Keio University), Yasuhiro Fujita (Keio University), Tatsuo Sawada (Keio University)
- 1A32 **Development of a High-Density Linear Synchronous Motor**
Atsushi Ikariga (Oita Prefectural Organization for Industry Creation), Akira Goto (Ishii Tool and Engineering Corporation), Takuya Okamoto (Ishii Tool and Engineering Corporation), Takashi Todaka (Oita University), Masato Enokizono (Oita University)
- 1A33 **Study of the Mutual Inductance with Coil Using Wireless Power Transmission Coupled Magnetic Resonance for Capsule Endoscope**
Koji Toriumi (Tokyo City University), Masaya Watada (Tokyo City University), Yong-Jae Kim (Chosun University)
- 1A34 **Development of Lorentz Force Type Tilt Control Motor for Rotary Blood Pumps**
Takanori Ichinose (Ibaraki University), Toru Masuzawa (Ibaraki University), Ulrich Steinseifer (Rwth Aachen University), Daniel L Timms (The Prince Charles Hospital)
- 1A35 **Continuously Variable Speed Magnetic Gear**
Ariff Zaini (Osaka University), Noboru Niguchi (Osaka University), Katsuhiko Hirata (Osaka University)

15:20 - 17:00 Young Award VI (Room B)

Chairperson: *Kazuhisa Ishibashi (ABB Switzerland Ltd)*

- 1B31 **Nondestructive Detection of a Removal of Cooling Fin By MFES**
Shoichiro Nagata (University of Miyazaki), Ippai Enokida (University of Miyazaki), Masato Enokizono (Oita University)
- 1B32 **Double Electrostatic Suspension System Using Variable Capacitor**
Takaaki Kato (Saitama University), Takeshi Mizuno (Saitama University), Yuji Ishino (Saitama University), Masaya Takasaki (Saitama University)
- 1B33 **Measurement and Comparison of Electromechanical Coupling Factors in Magnetostrictive Materials**
Hiroyuki Wakiwaka (Shinshu University), Kunihisa Tashiro (Shinshu University), Masaki Unno (Shinshu University), Kazuyuki Tsuchiya (Shinshu University), Takahiro Igarashi (Topy Industries, Limited), Tomohito Ishikawa (Topy Industries, Limited), Akito Murata (Topy Industries, Limited), Akihiro Makino (Touhoku University)
- 1B34 **Effect of the Orifice Inner-Diameter on Damping Characteristic of MR Fluid under Shock Loading**
Hiromichi Ohba (Keio University), Ahmad Isnikurniawan (Keio University), Yoshitaka Moroka (Keio University), Hiro Kaneko (Keio University), Tatsuo Sawada (Keio University)

1B35 Measurement Barkhausen Signal Depending on Tensile Stress of Silicon Steel Sheet
Takashi Okamoto (Oita University), Yuji Tsuchida (Oita University), Masato Enokizono (Oita University)

15:20 - 17:00 Motor Design (Room C)

Chairperson: *Daiki Ebihara (Tokyo City University)*

1C31 A MEMS Linear Motor Utilizing a Thin Film Permanent Magnet
Tadahiko Shinshi (Tokyo Institute of Technology), Masato Ishibashi (Tokyo Institute of Technology), Minoru Uehara (Hitachi Metals, Ltd.)

1C32 Development of Electromagnetic Bellows-Type Spring Actuator with Frequency Dependent Rigidity
Kosuke Nagaya (Oita Prefectural Organization for Industry Creation), Naoya Sakamoto (Gunma University), Yoshihisa Yamanaka (Gunma University), Iwanori Murakami (Gunma University), Yoshinori Ando (Gunma University)

1C33 Fundamental Study on a Vernier Motor
Kenji Okada (Osaka University), Noboru Niguchi (Osaka University), Katsuhiro Hirata (Osaka University)

1C34 Design and Development of Switched Reluctance Motors by the Experimental Design Method
Takeo Ishikawa (Gunma University), Yoshinori Hashimoto (Gunma University), Nobuyuki Kurita (Gunma University)

1C35 A Study on Thrust Improvement of Permanent Magnet Linear Synchronous Motor
Ryoma Yoshimine (Tokyo City University), Hideo Dohmeki (Tokyo City University)

17:00 - 18:00 Break

18:00 - 20:00 Reception (Hoya Restaurant)

November 15th (Tue.)

8:40 - 10:00 Young Award VII (Room A)

Chairperson: *Takuo Nagamine (Saitama University)*

- 2A11 **Miniaturized Axial Gap Maglev Motor with Vector Control for Pediatric Artificial Heart**
Masahiro Osa (Ibaraki University), Toru Masuzawa (Ibaraki University), Eisuke Tatsumi (National Cardiovascular Center Research Institute)
- 2A12 **Torque and Loss Characteristics Analysis of Matrix-Rotor Induction Motor Using 3-D Finite Element Method**
Yoshihiro Kawase (Gifu University), Tadashi Yamaguchi (Gifu University), Ken Tanaka (Gifu University), Naotaka Toida (Toyota Industries Corporation), Koichi Sato (Toyota Industries Corporation)
- 2A13 **Examination of the Stator Winding Method for Iron Loss Evaluation in an Actual Stator Core**
Makoto Kawano (Oita National College of Technology), Mohachiro Oka (Oita National College of Technology), Kazunori Shimada (Oita National College of Technology), Masato Enokizono (Oita University)
- 2A14 **A Low-Speed High-Torque Permanent Magnet Synchronous Motor - Reducing Cogging Torque and Eddy Current Loss -**
Taichi Nakamura (University of Tokyo), Takafumi Koseki (University of Tokyo), Yasuaki Aoyama (Hitachi, Ltd.)

8:40 - 10:00 Young Award X (Room B)

Chairperson: *Yoshinori Ando (Gunma University)*

- 2B11 **Study of Ultrasonic Transmission System Using a Long Wave Guide**
Masayuki Kobayashi (Fukuoka Institute of Technology), Ryo Kimura (Fukuoka Institute of Technology), Keishi Hiraoka (Fukuoka Institute of Technology), Riichi Murayama (Fukuoka Institute of Technology), Makiko Kobayashi (National Research Council Canada), Cheng Kuei Jen (National Research Council Canada)
- 2B12 **Ultrasonic Propagation Attenuation of MR Fluid under an External Magnetic Field**
Ahmad Isnikurniawan (Keio University), Jun Kuroiwa (Keio University), Shunnosuke Abell (Keio University), Tatsuo Sawada (Keio University)
- 2B13 **Dual Frequency Excitation System Using Magnetic Current Boosters for Soft-Heating Hyperthermia**
Kentaro Furiya (Tohoku University), Kei-Ichiro Aoki (Tohoku University), Tatsuhiko Esaki (Tohoku University), Tadakuni Sato (Tohoku University), Tetsuya Takura (Tohoku University), Fumihiro Sato (Tohoku University), Hidetoshi Matsuki (Tohoku University), Toshiaki Yanada (Tohoku Bunka Gakuen University)
- 2B14 **Bounded Compressed Sensing in Magnetoencephalography Inverse Problem**
Jong-Ho Choi (Seoul National University), Min-Hyuk Kim (Seoul National University), Hyun-Kyo Jung (Seoul National University)

8:40 - 10:00 FEM analysis for Motor Design (Room C)

Chairperson: *Hideo Dohmeki (Tokyo City University)*

- 2C11 **Cogging Torque Reduction Method of a Magnetic-Geared Motor**
Noboru Niguchi (Osaka University), Katsuhiro Hirata (Osaka University)
- 2C12 **Optimum Arrangement of Permanent Magnets for Compact-Size Actuator with Clutch Mechanism Using MR Fluid**
Yorihiko Yano (Nara National College of Technology), Katsuhiro Hirata (Osaka University)
- 2C13 **3-D Soft Magnetic Composite Core Superior in the Downsizing of Motors**
Shigeyoshi Sato (Nippon Piston Ring Co., Ltd.), Syunsuke Takeguchi (Nippon Piston Ring Co., Ltd.), Akira Matsuo (Nippon Piston Ring Co., Ltd.), Takeo Ishikawa (Gunma University)
- 2C14 **Study on Cogging Torque Reduction Method of an EPS Motor Using Protrusion on the Teeth**
Kensuke Matsunaga (Osaka University), Noboru Niguchi (Osaka University), Katsuhiro Hirata (Osaka University)

10:00 - 10:20 Break

10:20 - 12:00 Young Award VIII (Room A)

Chairperson: *Tomoaki Yano (National Institute of Advanced Industrial Science and Technology)*

2A21 Dynamic Pressure Change of a Magnetic Fluid in a Lateral Oscillating Container

Shunsuke Kaneko (Keio University), Jean Klingler (Keio University), Takayoshi Ishiyama (Keio University), Tatsuo Sawada (Keio University)

2A22 Levitation Characteristics of the Lorentz Force Type Magnetic Bearing.

Nobuyuki Kurita (Gunma University), Takeo Ishikawa (Gunma University), Yuu Shinohara (Gunma University), Yohji Okada (Ibaraki University)

2A23 Research of the Remote Drive by the Piezoelectric Vibrator Using an Electromagnetic Induction Coil

Shinichi Kondo (Fukuoka Institute of Technology), Riichi Murayama (Fukuoka Institute of Technology), Makiko Kobayashi (National Research Council Canada), Cheng-Kuei Jen (National Research Council Canada)

2A24 Analysis of Vector Magnetic Properties in a Three-Phase Three-Leg Transformer Model Core

Kyohei Miyamoto (Oita University), Takashi Todaka (Oita University), Masato Enokizono (Oita University)

2A25 A Use of Classical Algebraic Multigrid Method in Finite Edge-Element Analysis

Ryosuke Namba (Kyoto University), Takeshi Mifune (Kyoto University), Takeshi Iwashita (Kyoto University), Tetsuji Matsuo (Kyoto University)

10:20 - 12:00 Young Award XI (Room B)

Chairperson: *Yoshihiro Kawase (Gifu University)*

2B21 A Method of Reducing Energy-Loss on Biped Robot Landing Process

Nozomu Imanishi (Kochi University of Technology), Yoshio Inoue (Kochi University of Technology), Kyoko Shibata (Kochi University of Technology), Taichiro Shimasaki (Kochi University of Technology), Tomohiro Moriki (Kochi University of Technology)

2B22 Loss Measurement in Power Conditioning Module for Power-Line Magnetic Noise Energy Harvesting Device

Kunihisa Tashiro (Shinshu University), Hiroyuki Wakiwaka (Shinshu University), Yu Uchiyama (Shinshu University)

2B23 Active Flow Control of Ferrofluids Using External Magnetic Fields

Yuhiro Iwamoto (Doshisha University), Hidenori Ishizuka (Doshisha University), Xiao Dong Niu (Doshisha University), Hiroshi Yamaguchi (Doshisha University), Takuya Kuwahara (Osaka Prefecture University)

2B24 Application of Unbalance Compensation to Totally Active Magnetically Suspension Gyro

Kyosuke Obara (Saitama University), Takeshi Mizuno (Saitama University), Yuji Ishino (Saitama University), Masaya Takasaki (Saitama University)

2B25 Parametric Optimization of the Precision Positioning Device Using a Monolithic Module of Combined Piezo-VCM Actuator

Yung-Tien Liu (National Kaohsiung First University of Science and Technology), Bo-Jheng Li (National Kaohsiung First University of Science and Technology)

10:20 - 12:00 Control Technology (Room C)

Chairperson: *Mochimitsu Komori (Kyushu Institute of Technology)*

2C21 Multi-Axis Cross-Coupling Adaptive Control for CNC Machining

Chen-Jung Li (National Kaohsiung First University of Science and Technology), Hao-Chun Mo (National Kaohsiung First University of Science and Technology)

- 2C22 **Improvement of Transient Characteristics of Negative Stiffness Control System by Feedforward Control**
Mhia Md. Zaglul Shahadat (Saitama University), Takeshi Mizuno (Saitama University), Yuji Ishino (Saitama University), Masaya Takasaki (Saitama University)
- 2C23 **Adaptive Sliding Mode Control for a Servo Motor System**
Yu-Ting Kuo (National Kaohsiung University of Applied Sciences), Sheng-Yuan Chen (National Kaohsiung First University of Science and Technology), Yung-Tien Liu (National Kaohsiung First University of Science and Technology), Kuo-Ming Chang (National Kaohsiung University of Applied Sciences)
- 2C24 **Characteristic Comparison Sensorless Control at Low-Speed Region of IPMSM**
Hideaki Kobayashi (Tokyo City University), Hideo Dohmeki (Tokyo City University)
- 2C25 **Design of Genetic Algorithms Based Zero Phase Error Tracking Controller for Contour Following Accuracy Improvement**
I-Chen Lin (National Cheng Kung University), Ke-Han Su (National Cheng Kung University), Chao-Yun Chen (National Cheng Kung University), Chun-Ming Wen (National Cheng Kung University), Ming-Yang Cheng (National Cheng Kung University)

12:00 - 13:00 Lunch Break

13:00 - 14:00 Young Award IX (Room A)

Chairperson: *Tadahiko Shinshi (Tokyo Institute of Technology)*

- 2A31 **Development of a Small-Sized and High Energy Density Axial Gap Generator Utilizing Magnetic Flux Concentration Arrangement Magnets**
Katsuyuki Shiota (Oita University), Takashi Todaka (Oita University), Masato Enokizono (Oita University)
- 2A32 **Design and Modeling of Gripper and Cutting Tool System for Sweet Pepper Harvesting Robot Hand**
Shivaji Bachche (Kochi University of Technology), Koichi Oka (Kochi University of Technology), Hideto Sakamoto (Kochi University of Technology)
- 2A33 **Evaluation of Equal Error Rate in Document Authentication System Using Magnetically Labeled Pattern**
Takayuki Yajima (Yokohama National University), Syunji Sonoda (Yokohama National University), Tsutomu Yamada (Yokohama National University), Yasushi Takemura (Yokohama National University)

13:00 - 14:00 Young Award XII (Room B)

Chairperson: *Daigo Yonetsu (Kansai University)*

- 2B31 **Development of Local Magnetic Property Measurement by means of a Miniature Transducer**
Shoichiro Nagata (University of Miyazaki), Genki Nagasaka (University of Miyazaki), Masato Enokizono (Oita University)
- 2B32 **Preliminary Study of MCG Measurement with Induction Gradiometer**
Kunihisa Tashiro (Shinshu University), Hiroyuki Wakiwaka (Shinshu University), Shin-Ichiro Inoue (Shinshu University)
- 2B33 **Distributions of Local Vector Magnetic Property in a Three-Phase Induction Motor Model Core by using a Small-Sized Vector Hysteresis Sensor**
Takayuki Kai (Oita University), Shigeru Aihara (Oita University), Takashi Todaka (Oita University), Masato Enokizono (Oita University)

13:00 - 14:00 Characteristic Analysis (Room C)

Chairperson: *Takayuki Suzuki (National Institute of Advanced Industrial Science and Technology)*

- 2C31 **Magneto-Optical Studies on Rare-Earth Ion Immersed Glasses in Pulsed High Fields up to 33T**
Koji Yamada (Saitama University)
- 2C32 **Improvement of Magnetic Properties of Fe-Mn-Si Based Ferromagnetic Shape Memory Ribbons with Heat-Treatment under Tensile Stress**
Takashi Todaka (Oita University), Masato Enokizono (Oita University)

2C33 A Study on the Iron Loss Curve of Electrical Steel Sheet

Tsugunori Kanada (Oita Prefectural Organization for Industry Ceation), Akifumi Kutsukake (Oita Prefectural Organization for Industry Ceation), Yukihito Kido (Oita Prefectural Organization for Industry Ceation), Tetsu Ikeda (Oita Prefectural Organization for Industry Ceation), Masato Enokizona (Oita University)

14:00 - 14:20 Break

14:20 - 15:20 Keynote Speech II (Room C)

Chairperson: *Yung-Tien Liu (National Kaohsiung First Univ. of Science and Technology)*

2K1

Expanding Electromagnetic Horizon- Electric Motor Technology Research and Development
Shyh-Jier Huang (National Cheng Kung University)

15:20 - 15:50 Award Ceremony (Room C)

15:50 - 16:00 Break

16:00 - 17:30 Award Presentation (Room C)

17:30 - 18:30 Break

18:30 - 20:30 Conference Dinner (Banquet Hall No. 1)

November 16th (Wed.)

8:40 - 10:00 Sensor Technology (Room A)

Chairperson: *Masaya Takasaki (Saitama University)*

3A11 Method for Identifying Type of Eddy-Current Displacement Sensor Probe based on Output of Self Excited Oscillator

Tsutomu Mizuno (Shinshu University), Sho Goto (Shinshu University), Yoshinori Kitamura (Shinshu University), Yuichi Asato (Shinshu University), Takashi Watanabe (Shinshu University), Shigemi Enoki (Shinkawa Sensor Technology), Hiroki Shinagawa (Shinkawa Sensor Technology)

3A12 Sensitive Fluxgate Sensors with Small Emitting Field

Koji Yamada (Saitama University)

3A13 Consideration of Inductive Proximity Sensor with Hartley Oscillator

Tsutomu Mizuno (Shinshu University), Eiki Amemiya (Shinshu University), Nobuhiro Maeda (Shinshu University)

3A14 Magnetic Property Distribution in a Magnetic Circuit Model Core Measured with a Very Small Two-Dimensional Vector Magnetic Sensor

Shigeru Aihara (Nishi Nippon Electric Wire and Cable), Hiroyasu Shimoji (Oita Prefectural Organization for Industry Creation), Takashi Todaka (Oita University), Masato Enokizono (Oita University)

8:40 - 10:00 Dynamical Analysis (Room B)

Chairperson: *Toshiro Higuchi (University of Tokyo)*

3B11 Review on Electromagnetic Force Acting on Vacuum Chamber in Fusion Reactor

Tomoaki Hino (Hokkaido University)

3B12 Cleaning Device for Lunar Dust Adhering to Spacesuits Utilizing Magnetic and Electrostatic Forces

Hiroyuki Kawamoto (Waseda University)

3B13 Effect of Both Materials and Surface Shape of Micron-Size Magnetic Particles on Damping Force of the Damper Utilizing Magnetic Compound Fluids

Yasushi Ido (Nagoya Institute of Technology), Koichi Hayashi (Nagoya Institute of Technology), Ryuji Takagi (Mazda Motor Corporation)

3B14 Influence of Magnetic Field on Velocity Distribution of Rectangular Duct Flow of a Magnetic Fluid

Masaaki Motozawa (Tokyo University of Science), Jia Chang (Zhengzhou University), Tsukasa Sekine (Tokyo University of Science), Tatsuo Sawada (Keio University), Yasuo Kawaguchi (Tokyo University of Science)

8:40 - 10:00 Design of Electromagnetic Device (Room C)

Chairperson: *Takeo Ishikawa (Gunma University)*

3C11 Reengineering a Piston-Casting Foundry

Albert W. L. Yao (National Kaohsiung First University of Science and Technology), C. M. Chang (Metal Industries Research And Development Center)

3C12 Simple Design Method for Magnetic Shield Room

Keisuke Fujisaki (Nippon Steel Corporation), Masahiro Fujikura (Nippon Steel Corporation), Jirou Mino (Nippon Steel Engineering Co., Ltd.)

3C13 Design and Fabrication of Planar Rotary Electromagnetic Dynamo Using LTCC for Bike Lighting

C. T. Pan (National Sun Yat-Sen University), Y. J. Chen (National Sun Yat-Sen University), Z. H. Liu (National Sun Yat-Sen University)

3C14 Design of Small Electric Generator by Free CAD and Analysis Software

Kunihiko Tachibana (Kochi University of Technology), Koichi Oka (Kochi University of Technology)

10:00 - 10:20 Break

10:20 - 12:00 Nondestructive Evaluation (Room A)

Chairperson: *Keisuke Fujisaki (Toyota Technological Institute)*

3A21 Inverse Analysis of Multiple Cracks Using Magnetic Flux Leakage Considering the Size of Flux Gate Sensor

Shogo Nakasumi (AIST), Takayuki Suzuki (AIST), Tokuo Teramoto (University of Tsukuba)

3A22 Microcharacterization of Creep Damage for Energy Structural Materials Using Magnetic Force Microscope

Takayuki Suzuki (Agency of Industrial Science and Technology), Ryuta Hashidate (University of Tsukuba), Tomofumi Toide (University of Tsukuba), Yoshihisa Harada (Agency of Industrial Science and Technology)

3A23 Remote Sensing of an Ultrasonic Sensor Using Giant Magnetostrictive Materials

Riichi Murayama (Fukuoka Institute of Technology), Zyunji Yamaji (Fukuoka Institute of Technology), Witsarut Sriratana (Fukuoka Institute of Technology), Makiko Kobayashi (National Research Council Canada), Cheng Kuei Jen (National Research Council Canada)

3A24 Nondestructive Testing of Actually Used Rail Using Eddy Current

Zenglu Song (Yokohama National University), Tsutomu Yamada (Yokohama National University), Hideki Shitara (Railway Technical Research Institute), Yasushi Takemura (Yokohama National University)

3A25 Fatigue Evaluation of Low Carbon Steel by means of the Inductance Method Using a Pancake-Type Coil

Mohachiro Oka (Oita National College of Technology), Terutoshi Yakushiji (Oita National College of Technology), Yuji Tsuchida (Oita University), Masato Enokizono (Oita University)

10:20 - 12:00 Magnetic Bearings (Room B)

Chairperson: *Chen-Jung Li (National Kaohsiung First University of Science and Technology)*

3B21 Experimental Comparison of Rotor Side Versus Stator Side Permanent Magnet Biased (Hybrid Type) Axial Magnetic Bearings

Yohji Okada (Ibaraki University), Ken-Ichi Matsuda (Ibaraki University), Hironari Suzuki (Ibaraki University), Tomoya Takenaka (Oita Industrial Research Institute), Masato Enokizono (Oita University)

3B22 Improvement Methods of Zero Suspension Force Performance of Variable Flux Path Control Device

Feng Sun (Shenyang University of Technology), Koichi Oka (Kochi University of Technology), Junjie Jin (Shenyang University of Technology)

3B23 BIVACOR - A Magnetically Levitated Biventricular Artificial Heart

Daniel L Timms (Bivacor Pty Ltd), Nobuyuki Kurita (Gunma University), Nicholas Greatrex (RWTH Aachen University), Toru Masuzawa (Ibaraki University)

3B24 Magnetically Levitated Conveyer Using High Tc Superconducting Levitation and Its Evaluations

Bumpei Nakaya (Kyushu Institute of Technology), Mochimitsu Komori (Kyushu Institute of Technology), Ken-Ichi Asami (Kyushu Institute of Technology), Nobuo Sakai (Kyushu Institute of Technology)

3B25 Frequency Response of Vibration Control with Linear Actuator and Permanent Magnet

Phaisarn Sudwilai (Kochi University of Technology), Koichi Oka (Kochi University of Technology), Yuta Hirogawa (Kochi University of Technology)

10:20 - 12:00 Generator and Transformer (Room C)

Chairperson: *Albert W. L. Yao (National Kaohsiung First University of Science and Technology)*

3C21 Development of a Generator Using Self-Excited Vibration of Flat Plate Wings in a Wind

Takuo Nagamine (Saitama University), Hiroki Mori (Saitama University), Keitaro Ogawa (Saitama University), Yuichi Sato (Saitama University)

3C22 An Experimental Study of a Submerged Power Generator that Uses Flexible Power Generation Devices

Yoshikazu Tanaka (Hiroshima University), Yoshikazu Michinaka (Hiroshima University), Hidemi Mutsuda (Hiroshima University)

3C23 Characteristics of a MHD Power Generator Using a Low-Melting-Point-Gallium Alloy

Xiaodong Niu (Doshisha University), Hiroshi Yamaguchi (Doshisha University), Yuhiro Iwamoto (Doshisha University)

3C24 Performance Comparison of Maximum Power Point Tracking Control of the Wind Power System by Direct Torque Control and Vector Control

Shoya Maruyama (Tokyo City University), Hideo Dohmeki (Tokyo City University)

3C25 Transformer Using Magnetoplated Wire for Resonant Type Converter

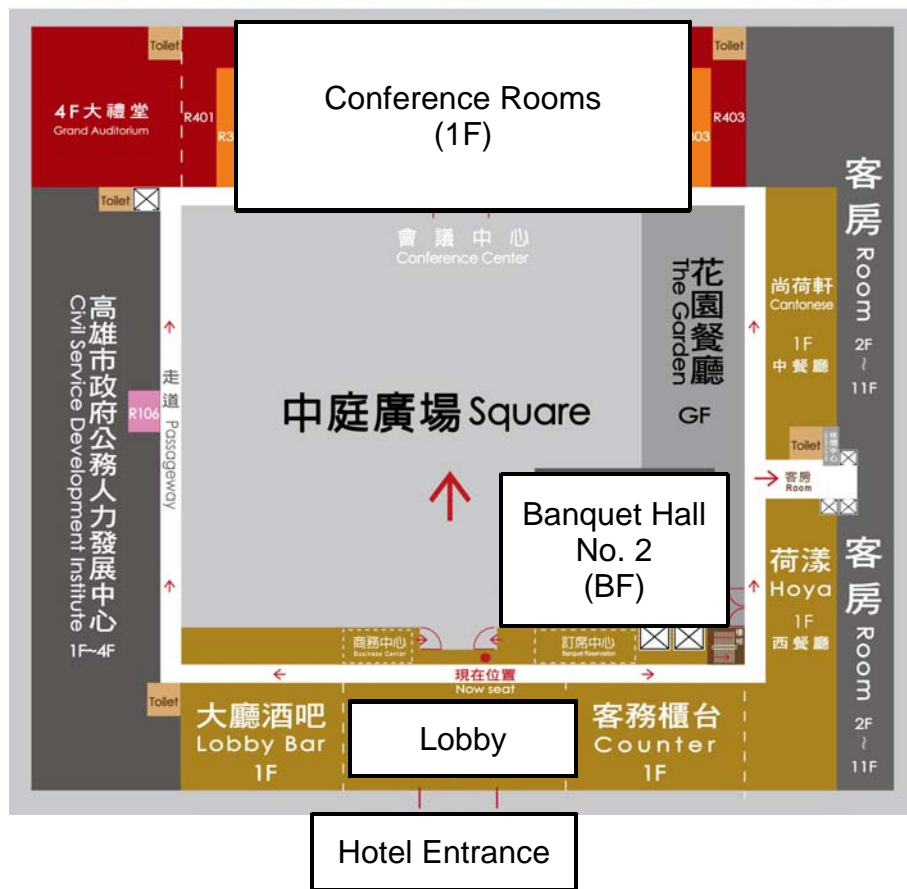
Tsutomu Mizuno (Shinshu University), Shintaro Yachi (Shinshu University), Takuto Ueda (Shinshu University), Ryuhei Ohtomo (Shinshu University), Yoshihito Goto (Shinshu University), Norio Koike (Ichikawa Co., Ltd), Masayuki Sakurada (Ichikawa Co., Ltd), Toshio Takeda (Ichikawa Co., Ltd), Satoshi Yasumoto (Ichikawa Co., Ltd)

12:00 - 13:00 Lunch Break

13:00 - 20:00 Tour

Floor Layout

蓮潭國際會館平面圖



Conference Room Layout

