Oral Presentation

Control Systems, Robotics and Mechatronics (RB-1)
Feb. 27, 2014 (Thu.)

RB-1 (Control Systems, Robotics and Mechatronics 1)  
Chairs: Prof. George Foulas (Technological Educational Institute (T.E.I) of Central Greece, Greece)  
Prof. Seul Jung (Chungnam National University, Korea)  
09:00-10:20

RB-472  
Modeling, Attitude Estimation, and Control of Hexarotor Micro Aerial Vehicle (MAV)  
Dafizal Dorawi¹, Nurul Dayana Salim¹, Hairi Zamzuri², Mohd Azizi Abdul Rahman¹, Saiful Amri Mazlan¹  
¹Malaysia-Japan International Institute of Technology, Universiti Teknologi Malaysia, ²UTM-PROTON Active Safety Laboratory, Universiti Teknologi Malaysia

RB-223  
Application of Momentum-Exchange-Impact-Damper to a Horizontal Collision Problem  
Zhenyu Gan¹, Tsubasa Watanabe², Susumu Hara³  
¹University of Michigan, ²Nagoya University

RB-310  
Robust Stabilization of Self Erecting Cart Pendulum System with Periodic Controller  
Arindam Chakraborty, Jayati Dey, Tapas Kumar Saha  
NIT Durgapur

RB-440  
Power Assisting Control for Electric Bicycles using an Adaptive Filter  
Kazuyoshi Hatada¹, Kentaro Hirata²  
¹Fukuoka University, ²Nara Institute of Science and Technology

Control Systems, Robotics and Mechatronics (RB-2)
Feb. 27, 2014 (Thu.)

RB-2 (Control Systems, Robotics and Mechatronics 2)  
Chairs: Dr. Kazuyoshi Hatada (Fukuoka University, Japan)  
Prof. Dong-Hee Lee (Kyungsung University, Korea)  
10:40-12:00

RB-626  
A Method to Derive on Time Mechanical Power Factor  
Takahiro Mizoguchi, Takahiro Nozaki, Kouhei Ohnishi  
Keio University

RB-220  
Non-linear Modelling and Identification of a Coagulant Dosage System for Water Treatment Plants  
Oladipupo Bello, Yskandar Hamam, Djouani Karim  
Tshwane University of Technology
Time Delay Compensation for Tendon-driven Bilateral Control using Modal Decomposition and Communication Disturbance Observer
Keita Shimamoto, Yoshiki Ohno, Takahiro Nozaki, Kouhei Ohnishi
Keio University

PID Plus LQR Attitude Control for Hexarotor MAV in Indoor Environments
Nurul Dayana Salim¹, Dafizal Dorawi¹, Hairei Zamuri², Shahrum Shah Abdullah¹, Saiful Amri Mazlan¹
¹Malaysia-Japan International Institute of Technology, Universiti Teknologi Malaysia, ²UTM-PROTON Active Safety Laboratory, Universiti Teknologi Malaysia

Control Systems, Robotics and Mechatronics (RB-3)
Feb. 27, 2014 (Thu.)

RB-3 (Control Systems, Robotics and Mechatronics 3)
Chair: Prof. Seul Jung (Chungnam National University, Korea)

Model based Actuator Fault Diagnosis for a Mobile Robot
George K. Fourlas¹, Stavros Karkanis¹, George C. Karras², Kostas. J. Kyriakopoulos²
¹Technological Educational Institute (TEI) of Central Greece, ²National Technical University of Athens (NTUA)

Motion Reproduction using Time-Scaling for Adaptation to Difference in Environmental Location
Takahiro Nozaki, Takahiro Mizoguchi, Kouhei Ohnishi
Keio University

Algebraic Approach to Control Car Suspension System by using Spectral Factorization and Sum of Roots
Aghil Shaivalipour, Sallehuddin Mohamed Haris
Universiti Kebangsaan Malaysia

Line Tracking Control of a Two-wheel Balancing Mobile Robot
Taehwa Jung, Seul Jung
Chungnam National University

Eigenvalue Structure of the Predictor Feedback for Discrete-time LTI Systems
Lorlynn Asuncion Mateo, Kentaro Hirata
Nara Institute of Science and Technology

An High Performance Direct Torque Control Method with PWM Approach of PMSMs
YunChang Kwak, Jin-Woo Ahn, Dong-Hee Lee
Kyungsung University
Engineering of Automated Facilities (AF)

Feb. 27, 2014 (Thu.)

AF (Engineering of Automated Facilities)  Dong-Won

Chairs: Dr. Matthias Foehr (Siemens AG, Germany)
Mr. Tobias Jaeger (Siemens AG, Germany)  09:00-10:00

AF-682  Benefits of Process Modeling within the Engineering of Automated Facilities
09:00-09:20  T. Jäger
Siemens AG

AF-561  Use of Performance Measurement Methods in Engineering Organizations – An Empirical Study
09:20-09:40  Michael Amberg¹, Michael Gepp¹, Tomas Kozik¹, Matthias Foehr², Jan Vollmar²
¹University Erlangen-Nuremberg, ²Siemens AG

AF-431  The Best Practices of Engineering Regionalization
09:40-10:00  Thomas Schaeffler¹, Matthias Foehr¹, Tobias Jaeger¹, Rudolf Kodes¹, Andreas Müller-Martin¹, Arndt Lüder²
¹Siemens AG, ²Otto-von-Guericke University

Special Environment Navigation and Localization (EN)

Feb. 27, 2014 (Thu.)

EN (Special Environment Navigation and Localization)  Dong-Won

Chair: Prof. Jang-myung Lee (Pusan National University, Korea)  10:40-12:00

EN-854  Cornering Stability Enhancement Algorithm for In-wheel Electric Vehicle
10:40-11:00  Hyunuk Ha¹, Jongmoo Kim¹, Jangmyung Lee²
¹KERI (Korea Electrotechnology Research Institute), ²Pusan National University

EN-337  3D Map Building for Slopes based on Modeling of Mobile Robot
11:00-11:20  Yo-Seop Hwang, Hyun-Woo Kim, Jang-Myung Lee, Dong-Ju Lee
Pusan National University

EN-334  Sound Signal following Control of a Mobile Robot with the Estimation of the Sound Source Location by a Microphone Array
11:20-11:40  Jang-Myung Lee, Jong-Ho Han, Uk-In Lee
Pusan National University
A Guide-dog Robot System Research for the Visually Impaired
Yuanlong Wei, Mincheol Lee
Pusan National University

Power Systems and the Smart Grid (PS)
Feb. 27, 2014 (Thu.)

PS (Power Systems and the Smart Grid)  Dong-Won

Chairs: Dr. Mansour Ojaghi (University of Zanjan, Iran)
        Prof. Honnyong Cha (Kyungpook National University, Korea)

13:00-15:00

PS-650  Energy Indicators of Reliability Power System using Fuzzy Numbers
13:00-13:20  Nadheer A. Shalash, Abu Zaharin Ahmad
              University Malaysia Pahang

PS-580  Voltage Stability Modeling and Analysis of Unbalanced Distribution Systems with Wind
        Turbine Energy Systems
13:20-13:40  Mamdouh Abdel-Akher¹, Mohamed M. Aly¹, Zakaria Ziadi², Hassan El-kishky³, Mohamed A. Abdel-Warth¹
              ¹Aswan University, ²University of the Ryukyus, ³University of Texas at Tyler

PS-406  Robust UVLS Scheme to Improve Transmission Line Performance Considering Interruption
        Cost and Voltage Stability Index
13:40-14:00  Mansour Ojaghi¹, Ahmad Cheraghi Valujerdi², Mehdi Azari¹
              ¹University of Zanjan, ²Shahid Bahonar University of Kerman

PS-364  Parallel PCS Interconnection Current Surge Elimination Technique using Coupled Inductor
14:00-14:20  Jung-Muk Choe, Sun-Gi Ra, Byeng-Joo Byen, Gyu-Ha Choe
              Konkuk University

PS-560  Optimal Scheduling and Real Time Voltage Control Method for Unbalanced Distribution
        Systems
14:20-14:40  Zakaria Ziadi¹, Mamdouh Abdel-Akher²
              ¹University of the Ryukyus, ²Aswan University

PS-788  Compensation of Phase Voltage Error in Unbalanced 3-Phase at Integrated ESS and UPS
        System
14:40-15:00  Min-Gi Kim¹, Bong-yuen Choi¹, Jun-Gu Kim¹, Chung-yuen Won¹, Yong-chae Jung²
              ¹Sungkyunkwan University, ²Namseoul University
**Technology Management (TM)**

Feb. 27, 2014 (Thu.)

**TM (Technology Management)**

**TM-827**

**Assessment of Internet Usage amongst Nigerian Students - A Case Study Approach**

09:00-09:20

Ojo Adejare Akintunde, Ilbugiyin Olalekan Ayodeji

Nnamdi Azikiwe University

**TM-160**

**Green Logistics Management and Performance for Thailand’s Logistic Enterprises**

09:20-09:40

Kittipong Tissayakorn, Fumio Akagi

Fukuoka Institute of Technology

**TM-444**

**A Relocation Simulation Model for One-way Carsharing Service**

09:40-10:00

Ganjari Alfian, Jongtae Rhee, Byungun Yoon

Dongguk University

**TM-206**

**Skill Level Evaluation of Taijiquan based on 3D Body Motion Analysis**

10:00-10:20

Hiroshi Hashimoto¹, Mizuki Nakajima¹, Seiichi Kawata¹, Sang-Gyu Shin¹, Toshiyuki Murao²

¹Advanced Institute of Industrial Technology, ²Waseda University

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**Engineering of Industrial Software Products (IS)**

Feb. 27, 2014 (Thu.)

**IS (Engineering of Industrial Software Products)**

**IS-605**

**A Colored Petri Net Model for NFP Driven Web Service Composition**

10:40-11:00

Moityreey Dasgupta, Debarpita Santra, Adrija Bhattacharya, Sankhayan Choudhury

University of Calcutta

**IS-600**

**A Graph based Meta-model for Speed-up Service Composition on Web**

11:00-11:20

Adrija Bhattacharya, Sankhayan Choudhury

University of Calcutta

**IS-634**

**Time and Location based Summarized PageRank Calculation of Web Pages**

11:20-11:40

Partha Ghosh, Soumya Sen

University of Calcutta
Materialized View Replacement using Markov’s Analysis
Partha Ghosh, Soumya Sen
University of Calcutta

Industrial Automation, Communication & Informatics (IA)
Feb. 27, 2014 (Thu.)

IA (Industrial Automation, Communication & Informatics) Seo-Won

Chairs: Prof. László Horváth (Óbuda University, Hungary) Prof. Kang-Hyun Jo (University of Ulsan, Korea)

13:00-15:00


IA-563 Improving Fault Diagnosis and Accessibility in Manufacturing Automation Systems using X3DOM Young Saeng Park¹, Robert Harrison¹, Daniel Vera¹, JeongHee Lee²
¹University of Warwick, ²Loughborough University

IA-230 Modeling of Power Consumption in Manufacturing Gross and Detailed Planning in Consideration of all Forms of Energy as Planning Resources including Load Management during Runtime Heiko Meyer¹, Josef Plössnig¹, Benedikt Weißenberger², Birgit Vogel-Heuser²
¹Gefasoft AG, ²Technische Universität München

IA-499 Challenges and Opportunities of Automation System for Water and Waste Water Applications Pradnya Gaonkar, Mallikarjun Kande ABB Corporate Research Centre

IA-732 Multilevel Abstraction based Self Control Method for Industrial PLM Model László Horváth, Imre J. Rudas Óbuda University

IA-797 Migration from RS-485 to EtherCAT for Closed Loop Step Motor Drive Jin Ho Kim¹, Jae Wook Jeon¹, Jae Hak Lee², Bok Sun Yeom²
¹Sungkyunkwan University, ²Fastech Corporation
MD-1 (Electrical Machines & Drives 1)
Chairs: Prof. Kiyoshi Ohishi (Nagaoka University of Technology, Japan)
        Prof. Jin-Woo Ahn (Kyungsung University, Korea)

09:00-10:20

MD-726 Fault Diagnostics of Induction Motors based on Internal Flux Measurement
Khalid Saad, Galina Mirzaeva
University of Newcastle

MD-510 Characteristic Analysis of a Novel Segmental Rotor Axial Field Switched Reluctance
Motor with Single Teeth Winding
Bo Wang, Dong-Hee Lee, Jin-Woo Ahn
Kyungsung University

MD-506 Can a High Efficiency MV Motor Be Repaired?
Henk de Swardt
ABB

MD-447 Winding Function Approach to Simulate Induction Motors under Sleeve Bearing Fault
Mansour Ojaghi, Nasser Yazdandoost
University of Zanjan

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MD-2 (Electrical Machines & Drives 2)
Chairs: Dr. Zhihui Chen (Nanjing University of Aeronautics and Astronautics, China)
        Dr. Tae-Hyoung Kim (Daegu Mechatronics & Material Institute, Korea)

10:40-12:00

MD-395 An Electromagnetic Model for Shaft Voltages in Synchronous Generators
W Doersamy, W A Cronje
University of the Witwatersrand

MD-225 A Frequency-based Approach to Detect Bearing Faults in Induction Motors using Discrete
Wavelet Transform
Amirhossein Ghods, Hong-hee Lee
University of Ulsan
**MD-673**  
Why on Earth Would I Want to Buy a New Electric Motor?  
Henk de Swardt  
*ABB*

**MD-261**  
Quick and Stable Speed Control of SPMSM based on Current Differential Signal for Voltage Saturation Region  
Jun Kitajima, Kiyoshi Onishi  
*Nagaoka University of Technology*

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**Electrical Machines & Drives (MD-3)**

*Feb. 28, 2014 (Fri.)*

**MD-3 (Electrical Machines & Drives 3)**  
Choong-Won

Chairs: Dr. Galina Mirzaeva (The University of Newcastle, Australia)  
Prof. Hong-Hee Lee (University of Ulsan, Korea)

13:00-15:00

**MD-816**  
Design and Characteristic Analysis of High Speed Slotless Permanent Magnet Sycchorous Motor for Surgical Hand-piece  
T.H. Kim¹, S.H. Lee¹, S.H. Lee², W.M. Kim³  
¹Daegu Mechatronics & Materials Institute, ²Jaewoo Tech. Co., Ltd, ³Saeyang Co., Ltd

**MD-257**  
Online Identification and Tuning Method of Static & Dynamic Inductance of IPMSM for Fine Position Sensorless Control  
Shintaro Tanpo¹, Kiyoshi Ohishi¹, Shingo Makishima², Keiichi Uezono²  
¹Nagaoka University of Technology, ²Toyo Denki Seizo K.K.

**MD-763**  
The Challenges of Meeting IE4 Efficiency Standards for Induction and Other Machines  
David G. Dorrell  
*University of Technology Sydney*

**MD-668**  
Electric Motor Efficiency Myths: Work vs. Waste  
Henk de Swardt  
*ABB*

**MD-331**  
An Experimental/Simulation Investigation to Mixed Eccentricity Fault Diagnosis of Induction Motors under DTC  
Mansour Ojaghi¹, Jawad Faiz²  
¹University of Zanjan, ²University of Tehran

**MD-195**  
A 2MW 6-phase BLDC Generator Developed from a PM Synchronous Generator for Wind Energy Application  
Zhihui Chen¹, Zhe Chen², Xiao Liu²  
¹Nanjing University of Aeronautics and Astronautics, ²Aalborg University
### Design and Control of Power Converters for Renewal Energy System (PC)

**Feb. 28, 2014 (Fri.)**

**PC (Design and Control of Power Converters for Renewal Energy System)**

Chair: Prof. Tae-Won Chun (University of Ulsan, Korea)

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Authors</th>
<th>Affiliations</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:00-09:20</td>
<td><strong>A Novel Single Stage, Transformerless PV Inverter</strong></td>
<td>Vasav Gautam, Ashok Kumar, Parthasarathi Sensarma</td>
<td><em>Indian Institute of Technology</em></td>
</tr>
<tr>
<td>09:20-09:40</td>
<td><strong>A Current Control Strategy for a Grid Connected PV System using Fuzzy Logic Controller</strong></td>
<td>Ammar Hussein Mutlag³, H. Shareef¹, A. Mohamed¹</td>
<td><em>Universiti Kebangsaan Malaysia, Foundation of Technical Education</em></td>
</tr>
<tr>
<td>09:40-10:00</td>
<td><strong>A Novel Dual Active Bridge Topology with a Tuned CLC Network</strong></td>
<td>R. Twiname¹, W. Malan², J. Minogue⁵, D. J. Thrimawithana², U. K. Madawala², Craig Baguley¹</td>
<td><em>Auckland University of Technology, The University of Auckland</em></td>
</tr>
<tr>
<td>10:00-10:20</td>
<td><strong>Grid Current Control Methods by using Compensation Voltages under Distorted and Unbalanced Grid Voltages</strong></td>
<td>Thanh-Vu Tran¹, Tae-Won Chun¹, Hong-Hee Lee¹, Heung-Geun Kim², Eui-Cheol Nho³</td>
<td><em>University of Ulsan, Kyungpook National University, Pukyong National University</em></td>
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### Power Electronics and Energy Conversion (EC-1)

**Feb. 28, 2014 (Fri.)**

**EC-1 (Power Electronics and Energy Conversion 1)**

Chairs: Prof. Parthasarathi Sensarma (IIT Kanpur, India)  
Prof. Tae-Won Chun (University of Ulsan, Korea)

<table>
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<th>Time</th>
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<th>Authors</th>
<th>Affiliations</th>
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<tbody>
<tr>
<td>10:40-11:00</td>
<td><strong>Loss Comparison of the 3 Level Topologies for Four-leg Voltage Converters</strong></td>
<td>Seung-Jun Chee¹, Seung-Ki Sul¹, Young Hoon Roh², Junyeong Lee²</td>
<td><em>Seoul National University, LG Electronics</em></td>
</tr>
<tr>
<td>11:00-11:20</td>
<td><strong>Robust Voltage Regulation of DC-DC PWM based Buck-boost Converter</strong></td>
<td>Jayati Dey, Tapas Kumar Saha, Sankar Narayan Mahato</td>
<td><em>NIT Durgapur</em></td>
</tr>
<tr>
<td>11:20-11:40</td>
<td><strong>Active Switched-Capacitor and Switched-Inductor Z-Source Inverters</strong></td>
<td>Anh-Vu Ho¹, Tae-Won Chun¹, Hong-Hee Lee¹, Heung-Geun Kim², Eui-Cheol Nho³</td>
<td><em>University of Ulsan, Kyungpook National University, Pukyong National University</em></td>
</tr>
</tbody>
</table>
Control of Inductive Power Transfer Systems: A Comparison

Achintha De Alwis, Zachary Harris, Duleepa J. Thrimawithana, Udaya K. Madawala
The University of Auckland

Power Electronics and Energy Conversion (EC-2)

Feb. 28, 2014 (Fri.)

EC-2 (Power Electronics and Energy Conversion 2)  Dong-Won

Chairs: Dr. Sankar Narayan Mahato (NIT Durgapur, India)
Dr. Tae-Hyoung Kim (Daegu Mechatronics & Material Institute, Korea)

EC-837  A Novel Series-Series-Parallel Resonant Converter Topology with Loosely Coupled Transformers
Isaac. Daniel Thenathayalan, Jounge-Hu Park
Soongsil University

EC-503  MOSFET based Multi-level Converter for IPT Systems
Hamid Reza Rahnamaee, Duleepa J. Thrimawithana, Udaya K. Madawala
The University of Auckland

EC-298  High-efficiency Boundary Conduction Mode Tapped-Inductor Boost LED Driver
Jeong-il Kang1, Sang-Kyoo Han2, Jonghee Han1
1Samsung Electronics Co., LTD., 2Kookmin University

EC-595  Novel Active Tuning Approach for Resonant-mode Wireless Charging System
Xiaoyin Bai1, Yen-Kheng Tan2, Zhi-Hui Kong1, Siek Liter1
1Nanyang Technological University, 2Energy Research Institute @ NTU (ERI@N)

EC-295  Lossless Snubber for Tapped-Inductor Boost Converter for High Step-up Application
Jeong-il Kang1, Sang-Kyoo Han2, Jonghee Han1
1Samsung Electronics Co., LTD., 2Kookmin University

EC-536  A Resonant Bi-Directional DC-DC Converter
Ross P. Twiname1, Duleepa J. Thrimawithana2, Udaya K. Madawala2, Craig Baguley1
1Auckland University of Technology, 2The University of Auckland
Control and Filtering for Networked Systems (NS)

Feb. 28, 2014 (Fri.)

NS (Control and Filtering for Networked Systems)  
Chair: Prof. Bao-Lin Zhang (China Jiliang University, China)

NS-342  
09:00-09:20  
H∞ Controller Design for a Class of Multirate Systems using a Switched Control Method  
Wei Bai, Dawei Zhang, Xinchun Jia  
Shanxi University

NS-363  
09:20-09:40  
Observer Design for Networked Control Systems  
Li-Na Tang, Hao Su, Gong-You Tang  
Ocean University of China

NS-356  
09:40-10:00  
Network-based Consensus of Nonlinear Multi-agent Systems with Markovian Switching Topologies  
Lei Ding¹, Qing-Long Han², Ge Guo³, Bao-Lin Zhang⁴  
¹Dalian Maritime University, ²Central Queensland University, ³China Jiliang University

NS-351  
10:00-10:20  
Network-based Active Control for Offshore Steel Jacket Platforms  
Bao-Lin Zhang¹,², Yu-Jia Liu¹, Qing-Long Han²  
¹China Jiliang University, ²Central Queensland University

Signal and Image Processing & Computational Intelligence (SI-1)

Feb. 28, 2014 (Fri.)

SI-1 (Signal and Image Processing & Computational Intelligence 1)  
Chair: Prof. Noboru Ito (Toho University, Japan)  
Prof. Eui-Cheol Nho (Pukyong National University, Korea)

SI-843  
10:40-11:00  
Patch-Wise Periodical Correlation Analysis of Histograms for Real-Time Video Smoke Detection  
Ibrahim Furkan Ince¹, Gyu-Yeong Kim¹, Geun-Hoo Lee¹, Jang-Sik Park²  
¹Hanuwul Multimedia Communication Co. Ltd., ²Kyungsung University

SI-435  
11:00-11:20  
A Bank of Classifiers for Robust Object Modeling in Wavelet Domain  
Thomas Andzi-Quainoo Tawiah¹, Robert Mike Lea²  
¹University of Education Winneba, ²Brunel University

SI-425  
11:20-11:40  
Free Road Space Estimation based on Surface Normal Analysis in Organized Point Cloud  
Laksono Kurnianguoro, Kang-Hyun Jo  
University of Ulsan
SI-2 (Signal and Image Processing & Computational Intelligence 2)

Feb. 28, 2014 (Fri.)

Chairs: Dr. Thomas Tawiah (University of Education Winneba, Ghana)
         Prof. Jang-Sik Park (Kyungsung University, Korea)

13:00-15:00

SI-426  A Comparative Study of Classification Methods for Traffic Signs Recognition
13:00-13:20
Wahyono, Kang-Hyun Jo
University of Ulsan

SI-247  Iterative SOCP Scheme for Designing Digital Phase-Networks
13:20-13:40
Noboru Ito
Toho University

SI-526  A Hardware Architecture Design for Real-time Gaussian Filter
13:40-14:00
Sunmin Song, SangJun Lee, Jae Pil Ko, Jae Wook Jeon
Sungkyunkwan University

SI-842  Patch-Wise Periodical Re-Occurrence Analysis of Motion for Real-Time Video Fire
14:00-14:20
Detection
Ibrahim Furkan Ince¹, Gyu-Yeong Kim¹, Jin-Kyu Do¹, Jang-Sik Park²
¹Hanwul Multimedia Communication Co. Ltd., ²Kyungsung University

SI-422  3D Map Building using the Kinect Mounted on a Mobile Robot
14:20-14:40
HaHyung Jung, Joon Lyou
Chungnam National University

SI-240  Toward Real-Time, Low-Power, Highly Parallel Decoding of the Golden Code in Mobile
14:40-15:00
WiMAX Base Stations
Elie Amani¹, Karim Djouani¹,², Anish Kurien¹
¹Tshwane University of Technology (TUT), ²Université Paris-Est Créteil (UPEC)
Design and Applications of Switched Reluctance Motor (SM-1)

Mar. 1, 2014 (Sat.)

SM-1 (Design and Applications of Switched Reluctance Motor 1)

Chair: Prof. Dong-Hee Lee (Kyungsung University, Korea)

09:00-10:20

SM-882 Performance Comparison of SRMs for Low Voltage Fan Drive
Guang-II Jeong, T. H. Pham, Dong-Hee Lee, Jin-Woo Ahn
Kyungsung University

SM-839 Self-Starting Analysis of a Novel 12/14 Type Bearingless Switched Reluctance Motor
Junfang Bao, Huijun Wang, Jianfeng Liu, Bingkun Xue
Beihang University

SM-876 Design of SRM Considering Dual Drive Modes
Guang-II Jeong, Zhenyao Xu, Jin-Woo Ahn
Kyungsung University

SM-328 Switched Reluctance Motor Converter Topologies: A Review
Omar Ellabban, Haitham Abu-Rub
1Texas A&M University at Qatar, 2Helwan University

Design and Applications of Switched Reluctance Motor (SM-2)

Mar. 1, 2014 (Sat.)

SM-2 (Design and Applications of Switched Reluctance Motor 2)

Chair: Prof. Dong-Hee Lee (Kyungsung University, Korea)

10:40-12:00

SM-578 Characteristics Analysis of a Novel Two-Phase SRM with T-Type Rotor Pole Surface
Zhenyao Xu, Dong-Hee Lee, Jin-Woo Ahn
Kyungsung University

SM-812 Torque Ripple Reduction of Switched Reluctance Motors Considering Copper Loss Minimization
M. Dowlatshahi, S.M. Saghaian Nejad, Jin-Woo Ahn, M. Moallem
1Isfahan University of Technology, 2Kyungsung University

SM-521 A Segmental Rotor Type 12/8 Switched Reluctance Motor: Concept, Design and Analysis
Hongtao Zhang, Dong-Hee Lee, Jin-Woo Ahn
Kyungsung University
Detection of Absolute Position of Robot Actuator with Two Incremental Encoders
11:40-12:00
Jae Sik Lim1, Young Jin Lee2
1Korea Electrotechnology Research Institute, 2Autopower Co., Ltd.

Real-time Wireless Communication for Industrial Applications (WC)

Mar. 1, 2014 (Sat.)

WC (Real-time Wireless Communication for Industrial Applications) Choong-Won
Chair: Prof. Jang-Sik Park (Kyungsung University, Korea) 13:30-15:30

WC-606 On the Role of Feedback for Industrial Wireless Networks using Relaying and Packet Aggregation
13:30-13:50
Svetlana Girs1, Andreas Willig2, Elisabeth Uhlemann1,2, Mats Björkman1
1Mälardalen University, 2University of Canterbury

WC-697 Wireless Communication for IEC61850:
13:50-14:10
A WirelessHART Gateway Proposal
Fernando Covatti, Jean Michel Winter, Ivan Muller, João C. Netto, Carlos Eduardo Pereira
Federal University of Rio Grande do Sul

WC-450 A Fault-tolerant Backbone for IEEE 802.15.4 based Networks
14:10-14:30
Lukas Krammer, Stefan Seifried, Wolfgang Kastner
Vienna University of Technology

WC-679 Automatic RF Power Adjustment for WirelessHART Field Devices
14:30-14:50
Ivan Müller1, Carlos E. Pereira1, João C. Netto1, Jean M. Winter1, Diego Eckard2
1Federal University of Rio Grande do Sul, 2Federal Institute of Education, Science and Technology of Rio Grande do Sul

WC-418 Implementation and Evaluation of Error Control Schemes in Industrial Wireless Sensor Networks
14:50-15:10
Yonas Hagos Yitbarek1, Kan Yu2, Johan Åkerberg3, Mikael Gidlund3, Mats Björkman2
1Chalmers University of Technology, 2Mälardalen University, 3ABB AB, Corporate Research

WC-705 WirelessHART and IEEE 802.15.4e
15:10-15:30
Deji Chen1, Mark Nixon1, Song Han2, Aloysius K. Mok2, Xiuming Zhu4
1Emerson Process Management, 2University of Connecticut, 3The University of Texas at Austin, 4Amazon
Power Electronics and Energy Conversion (EC-3)

Mar. 1, 2014 (Sat.)

EC-3 (Power Electronics and Energy Conversion 3)  Dong-Won
Chair: Prof. In-Dong Kim (Pukyong National University, Korea)  09:00-10:20

EC-585  Reduced Sampling Rate for Cell Voltage Sensing in High-level Modular Multilevel Converter
09:00-09:20  Jae-Jung Jung¹, Hak-Jun Lee², Jung-Ik Ha¹, Seung-Ki Sul¹
¹Seoul National University, ²LSIS

EC-372  A High Power and Multi-Outputs of AC-DC Power Supply Design to Meet 80 Plus Platinum and ErP Requirements
09:20-09:40  Po-Cheng Lu, S.-A. Liang, Ching Wen Huang
FSP Technology Inc. FSP Group.

EC-623  Input-Series-Output-Parallel Connected Converter with Single-Phase UPF Buck-Rectifier
09:40-10:00  Suvendu Samanta, Poonam Chaudhary, Parthasarathi Sensarma
Indian Institute of Technology Kanpur

EC-551  A New Current-type Magnetically Coupled T-source Inverter
10:00-10:20  Quang-Vinh Tran¹, Kay-Soon Low¹, Anh-Vu Ho², Tae-Won Chun²
¹Nanyang Technological University, ²University of Ulsan

Power Electronics and Energy Conversion (EC-4)

Mar. 1, 2014 (Sat.)

EC-4 (Power Electronics and Energy Conversion 4)  Dong-Won
Chair: Prof. Sung-Jin Choi (University of Ulsan, Korea)  10:40-12:00

EC-501  Design of High-Efficiency Power Conversion System for Low-Voltage Electric Vehicle Battery Charging
10:40-11:00  Min-Kwon Yang, Woo-Young Choi
Chonbuk National University

EC-374  Predictive Control of a Hybrid Asymmetric Multilevel Converter with Floating Cells
11:00-11:20  Marcelo Vasquez, Jorge Pontt, Juan Vargas
Universidad Tecnica Federico Santa Maria

EC-642  Reverse Current Control Method of Synchronous Boost Converter for Fuel Cell using a Mode Boundary Detector
11:20-11:40  Mi-jii Kim¹, Min-ho Shin¹, Sung-chon Choi¹, Kyeungchoel Bae¹, Yong-chae Jung², Chung-yoen Won¹
¹Sungkyunkwan University, ²Namseoul University
A SEPIC Derived Single Stage Buck-Boost Inverter for Photovoltaic Applications
Ashok Kumar, Vasav Gautam, Parthasarathi Sensarma
Indian Institute of Technology

Power Electronics and Energy Conversion (EC-5)
Mar. 1, 2014 (Sat.)
EC-5 (Power Electronics and Energy Conversion 5)  Dong-Won
Chair: Prof. Eui-Cheol Nho (Pukyong National University, Korea)  13:30-15:30

EC-539  An Interleaved Buck Converter with Reduced Reverse-Recovery Problems
Guoen Cao, Arsalan Ansari, Hee-Jun Kim
Hanyang University

EC-286  Partial Resonant AC-Link Converters— A Review
Omar Ellabban1,2, Gamal M. Doussoky1,3, Haitham Abu-Rub1
1Texas A&M University at Qatar, 2Helwan University, 3Minia University

EC-655  Selection of Covariance Functions in Gaussian Process-based Soft Sensors
Ali Abusnina1, Daniel Kudenko1, Rolf Roth2
1University of York, 2Evonik Industries AG

EC-646  Adaptive Current-Mirror LED Driver employing Super-diode Configuration
Sung-Jin Choi
University of Ulsan

EC-694  Capacitive Sensor Interface with Precision References
Ruimin Yang1, Michiel A. P. Pertijs1, Peter Haak2, Stoyan Nihitianov1
1Delft University of Technology, 2Independent Specialist for High Performance Sensors and Instrumentation

EC-638  LiFePO4 Dynamic Battery Modeling for Battery Simulator
Kyeung-cheol Bae1, Seong-chon Choi1, Ji-hwan Kim1, Yong-chae Jung2, Chung-yuen Won1
1Sungkyunkwan University, 2Namseoul University
Renewable Energy Systems (RE-1)

**Mar. 1, 2014 (Sat.)**

**RE-1 (Renewable Energy Systems 1)**  
Chairs: Prof. David Dorrell (University of Technology Sydney, Australia)  
Prof. Honnyong Cha (Kyungpook National University, Korea)  
09:00-10:20

**RE-183**  
On Design of a Robust Controller to Mitigate CPL Effect-A DC Micro-grid Application  
Suresh Singh, Deepak Fulwani  
*Indian Institute of Technology Jodhpur*

**RE-292**  
Cascaded Two Level Inverter based Grid Connected Photovoltaic System: Modelling and Control  
Nayan Kumar, Tapas Kumar Saha, Jayati Dey  
*NIT Durgapur*

**RE-152**  
A New Topology for a Photovoltaic based Range Extender  
M. Neuburger, G. Schmidt, N. Neuberger  
*University of Applied Sciences Esslingen*

**RE-643**  
Step-by-step Design and Control of LCL Filter based Three Phase Grid-connected Inverter  
Souvik Sen, Kalyan Yenduri, Parthasarathi Sensarma  
*Indian Institute of Technology Kanpur*

Renewable Energy Systems (RE-2)

**Mar. 1, 2014 (Sat.)**

**RE-2 (Renewable Energy Systems 2)**  
Chairs: Prof. Martin Neuburger (University of Applied Sciences Esslingen, Germany)  
Prof. Jonghoon Kim (Chosun University, Korea)  
10:40-11:40

**RE-777**  
Implementation of Improved Direct Torque Control Method of Brushless Doubly-Fed Reluctance Machines for Wind Turbine  
William K Song, David G. Dorrell  
*University of Technology Sydney*

**RE-274**  
Wind Speed Estimation based Control of Stand-Alone DOIG for Wind Energy Conversion System  
K. Kaur¹, T. K. Saha², S. N. Mahato³, S. Banerjee⁴  
¹*Bengal College of Engg. and Tech. Durgapur, ²National Institute of Technology Durgapur*
Small Scale Battery Charger Application (BC)

BC (Small Scale Battery Charger Application)  Seo-Won

Chair: Prof. Seong Mi Park (Korea Lift College, Korea)  13:30-15:30

BC-776  The Only CC Mode Charger using Estimation of Battery Internal Voltage
13:30-13:50  Jae-Ha Ko¹, Seong-Mi Park², Sung-Jun Park¹
¹Chonnam National University, ²Korea Lift College

BC-766  The Novel MEPT Algorithm Development in the Battery Parallel System
13:50-14:10  Sun-pil Kim¹, Jung-ku Hwang¹, Hwa-chun Lee¹, Jung-pil Park², Sang-taek Han², Sung-jun Park¹
¹Chonnam National University, ²Samsung SDI

BC-752  Duty Ratio Compensator Techniques for Bi-Directional Charger
14:10-14:30  Jung-Goo Hwang¹, Sun-Pil Kim¹, Hwa-Chun Lee¹, Sang-Taek Han², Jung-Pil Park², Sung-Jun Park¹
¹Chonnam National University, ²Samsung SDI

BC-771  A New Topology of Flyback Converter with Active Clamp Snubber for Battery Application
14:30-14:50  Woo-Seok Choi¹, Jin-Wook Park¹, Sung-Jun Park¹, Chun-Feng Jin², Dae-Sung Jo²
¹Chonnam National University, ²LG INNOTEK

BC-767  High Power Factor Soft-Switching PFC Power Converter for Battery Charger
14:50-15:10  Woo-Seok Choi¹, Sung-Jun Park¹, Hae-Kon Nam¹, Chun-Feng Jin², Bum-Su Shin²
¹Chonnam National University, ²LG INNOTEK

BC-748  The Battery Balancing Circuit using Multi-exciters Method
15:10-15:30  Seong-mi Park¹, Jae-Ha Ko², Sung-Jun Park²
¹Korea Lift College, ²Chonnam National University
Poster Presentation

12:00-15:20, Feb. 27, 2014 (Thu.)

Chairs: Dr. Susumu Hara (Nagoya University, Japan)
Dr. Young Saeng Park (University of Warwick, United Kingdom)

Control Systems, Robotics and Mechatronics (RB)

RB (Control Systems, Robotics and Mechatronics) 
Grand Ballroom Lobby
12:00-15:20

RB-142 Fuzzy-Neural-Network Inherited Backstepping Control for Robot Manipulator
Rong-Jong Wai, Rajkumar Muthusamy
Yuan Ze University

RB-162 Design of Unknown Input Observer for a Class of Nonlinear Systems
Yongming Yang¹, Yaqiang Li², Yong Feng²
¹Chongqing University, ²RMIT University

RB-400 A Diverse Path Set Planning Algorithm with a Path Set Fitness Function
Joon-Hong Seok, Yeon-Jae Kim, Ju-Jang Lee
Korea Advanced Institute of Science and Technology

RB-773 Tuningless Servo Controller using Variable Structure Control and Disturbance Compensation
Wook Bahn¹, Sang-Hoon Lee², Sang-Sub Lee², Dong-II (Dan) Cho¹
¹Seoul National University, ²RS Automation Co., Ltd.

Bong Keun Kim, Yasushi Sumi, Yoshio Matsumoto
National Institute of Advanced Industrial Science and Technology (AIST)

Power Systems and the Smart Grid (PS)

PS (Power Systems and the Smart Grid) 
Grand Ballroom Lobby
12:00-15:20

PS-384 Parameter Estimation of the Synchronous Generator Exciter based on PSO
HyungJoo Choi, HeungHo Lee
ChungNam National University

PS-399 Soil Structure Effect on Transformer DC Bias
Yongming Yang, Xingmou Liu, Fan Yang
Chongqing University
PS-477  A Study for Parallel Operation of a Synchronous Generator
In-Soo Kim, Jeong-Ho Chang, Heung-Ho Lee
Chung Nam National University

PS-483  A Study on Analysis of Defects for Hydro Generator Power Transmission Cables using VLF Testing and Diagnostic Measurements
Jeong-Ho Chang, In-Soo Kim, Heung-Ho Lee
Chung Nam National University

Industrial Automation, Communication & Informatics (IA)

IA (Industrial Automation, Communication & Informatics)  Grand Ballroom Lobby
12:00-15:20

IA-244  Planning Virtual Organization in Partner Network
Taivo Kangilaski
Tallinn University of Technology

IA-291  Low Cost Smart Phone Controlled Car Security System
Hammad Afzal, Vrajesh D. Maheta
Middle East College

Sensors, Actuators and Micro-/Nanotechnology (SA)

SA (Sensors, Actuators and Micro-/Nanotechnology)  Grand Ballroom Lobby
12:00-15:20

SA-822  A Conclusive Role of Ordinary Transmission for an Effective FTIR Touch Screen
Won Heum Han¹, Kwang-Hee Lee², Ji Heum Han²
¹Korea University, ²Sehwa High School

Electronic System on Chip & Real Time Embedded Control (ER)

ER (Electronic System on Chip & Real Time Embedded Control)  Grand Ballroom Lobby
12:00-15:20

ER-428  Water Correction Algorithm to Increase the Signal Strength of Oxy and Deoxy-Hemoglobin in NearInfrared Spectroscopy Signals
Muhammad Raheel Bhatta, Keum-Shik Hong
Pusan National University
Variable Structure Control of Double-Motors-Double-Screws Drive System
Hai-Peng Ren, Bin He, Jie Li
Xi’an University of Technology

Electromagnetic Analysis for Multiple Hybrid HTS Electromagnets Interfaced with LSM Propulsion System in EMS Maglev Model
Yoon Do Chung1, Chang Young Lee2, Mi Hye Jang3
1Suwon Science College, 2Korea Railroad Research Institute, 3Yonsei University

Diagnosis of Inter-Turn Short-Circuit Stator Winding Fault in PMSM based on Stator Current and Noise
Yongchun Liang
Hebei University of Science and Technology

A Study on Braking System using Fully Electric Brake System
Hanmin Lee
Korea Railroad Research Institute

SPMSM Sensorless Control for Wide Speed Range using Full-Order Flux Observer
Kyoung-Gu Lee, June-Seok Lee, Kyo-Beum Lee
Ajou University

A Novel MPC-SVM Strategy for Direct Torque Flux Control of an Induction Motor Drive System using a Matrix Converter
Woo Jin Choi, Eunsil Lee, Kyo-Beum Lee
Ajou University

Model Predictive Control using a Three-Level Inverter for Induction Motors with Torque Ripple Reduction
Yongssoo Cho, Woo Jin Choi, Kyo-Beum Lee
Ajou University

Novel Temperature Acquisition Method for Active Thermal Control using MOS-FET in GEO Satellite
Joo Ho Won1, Hyunho Ko2
1Korea Aerospace Research Institute, 2Chungnam National University
Power Electronics and Energy Conversion (EC-1)

EC-495  Experimental Performance Evaluation of SiC BJT and Si MOSFET for 1.2 kW 300 kHz Boost Converter as a Solar PV Pre-regulator
Taekyun Kim, Minsoo Jang, Vassilios G. Agelidis
The University of New South Wales (UNSW)

EC-707  Design of Variable Output Voltage Power Supply for Power Amplifier of Underwater Acoustic Sensor
Seung-Soo Choi¹, Jae-Hyek Shim¹, Jin-Yung Kim¹, In-Dong Kim¹, Eui-Cheol Nho¹, Won-Kyu Moon², Won-Ho Kim³
¹Pukyong National University, ²Pohang Univ. of Science and Technology, ³Agency For Defence Development

EC-791  Convenient Thermal Modeling for Loss Distribution of 3-Level Active NPC using Newton’s Low
Bong-Gyu Lee¹, Hee-Jun Lee¹, Soo-Cheol Shin¹, Seung-Wook Hyun¹, Chung-Yoen Won¹, Taek-Gi Lee²
¹Sungkyunkwan University, ²Hankyong University

EC-834  Power Loss Analysis of 3-phase Voltage Disturbance Generator with Variation of Series Transformer Turn-Ratio
H. S. Kim¹, J. H. Jung¹, E. C. Nho¹, I. D. Kim¹, T. W. Chun², H. G. Kim³
¹Pukyong National University, ²University of Ulsan, ³Kyungpook National University

EC-858  An Improved Bridgeless Interleaved Boost PFC Rectifier with Optimized Magnetic Utilization and Reduced Sensing Noise
Guoen Cao, Hee-Jun Kim
Hanyang University

Signal and Image Processing & Computational Intelligence (SI)

SI-541  FPGA Design and Implementation of Edge Enhancement by using 3x3 Mask Filter
Hee Duk Park¹, Jae Wook Jeon²
¹SamsungThales Co., Ltd., ²Sungkyunkwan University
A Study on Bayesian Spectrum Estimation based Diagnostics in Electrical Rotating Machines
W. Doorsamy, W. A. Cronje
University of the Witwatersrand

Infrared Small Target Discrimination using Sequential Forward Feature Selection with AUC Metric
Sungho Kim¹, Kyung-Tae Kim², Sohyun Kim³
¹Yeungnam University, ²POSTECH, ³Agency for Defense Development

Dynamic Tree Map for Video Analysis
J. H. Kim, S. W. Ha
RealHub Co., Ltd.

Control and Filtering for Networked Systems (NS)

NS (Control and Filtering for Networked Systems)  Grand Ballroom Lobby
12:00-15:20

Research on Dynamic Impedance Characteristics of Hybrid Vehicle Battery
Yongming Yang, Mo Yao, Cuandi Wang
Chongqing University
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<td>EC-140</td>
<td>Design of High-Efficiency Dual-Input Converter with Internal Charge Circuit</td>
<td>Rong-Jong Wai, Lian-Sheng Hong, Yuan Ze University</td>
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<td>EC-266</td>
<td>A Single Phase Grid Integration Scheme for Battery-Supercapacitor AC Line Hybrid Storage System</td>
<td>Damith B. Wickramasinghe Abeywardana, Branislav Hredzak, Vassilios G. Agelidis, The University of New South Wales (UNSW)</td>
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<td>EC-269</td>
<td>Design of High-Efficiency Dual-Input Interleaved DC-DC Converter</td>
<td>Rou-Yong Duan, Bo-Han Chen, Rong-Jong Wai, Hungkung University, Yuan Ze University</td>
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<td>EC-321</td>
<td>Ultra-small Transformer using Insulated Hybrid Structure for AC Adapters of Smart Devices</td>
<td>Heung Gyoong(Harry) Choi, Kyu-Sun Chung, Ge Li, Tae won Heo, Hanyang University, Samsung Electro-Mechanics Co.</td>
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<td>EC-512</td>
<td>Analysis and Design of Two-Phase Zero-Voltage Switching Bidirectional DC-DC Converter using Coupled Inductor</td>
<td>Junyoung Chae, Honnyong Cha, Heung-Geun Kim, Kyungpook National University</td>
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<td>EC-741</td>
<td>Design of a Wideband Signal for Comparison based Harmonic Elimination</td>
<td>Sri Nikhil Gupta Gourisetti, Hirak Patangia, University of Arkansas</td>
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<td>EC-798</td>
<td>New Interleaved Three-Level ZVS Converter</td>
<td>Bor-Ren Lin, Yu-Bin Nian, Chien-Hung Liu, National Yunlin University of Science and Technology</td>
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<td>EC-802</td>
<td>New Series Half-Bridge Converters with the Balance Input Split Capacitor Voltages</td>
<td>Bor-Ren Lin, Yu-Bin Nian, Huann-Keng Chiang, Shang-Lun Wang, National Yunlin University of Science and Technology</td>
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**RE (Renewable Energy Systems)**  
Grand Ballroom Lobby

**RE-217**  
**Cascaded H-bridge Converter with Multiphase Isolated DC/DC Converter for Large-Scale PV System**  
Hyuntae Choi, Mihai Ciobotaru, Vassilios G. Agelidis  
*The University of New South Wales*

**RE-476**  
**Fuzzy Logic-Controlled Online State-of-Health (SOH) Prediction in Large Format LiMnO4 Cell for Energy Storage System (ESS) Applications**  
Jonghoon Kim  
*Chosun University*

**RE-479**  
**The Study of Output Increasing of the Straight Type Turbine Generator**  
In-Soo Kim, Heung-Ho Lee  
*Chung Nam National University*

**RE-485**  
**Large-Scale PV Systems with Energy Storage Utilizing High-Gain DC/DC Converters**  
Hyuntae Choi, Mihai Ciobotaru, Vassilios G. Agelidis  
*The University of New South Wales (UNSW)*

**RE-621**  
**A Study of Grid-connected PV-AC Module with Active Power Decoupling and ESS**  
Dong-Jo Won1, Moo-Young Ryu1, Yong-Su Noh1, Hong-woo Lim2, Chung-Yuen Won1  
1*Sungkyunkwan University, 2*Korea Testing Certification*

**RE-631**  
**Control Method of Grid-connected PV-AC Module with Decoupling and Energy Storage**  
Moo-young Ryu1, Yong-su Noh1, Min-gi Kim1, Yong-chae Jung2, Chung-yuen Won1  
1*Sungkyunkwan University, 2*Namseoul University*

**RE-793**  
**Isolated Bi-directional DC/DC Converter using Quasi-Resonant ZVS**  
Yong-Su Noh, Min-Seuk Oh, Moo-Young Ryu, Jun-Gu Kim, Chung-Yuen Won  
*Sungkyunkwan University*

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**Photovoltaic Converter Topologies and Control (PV)**  
Grand Ballroom Lobby

**PV (Photovoltaic Converter Topologies and Control)**  
Grand Ballroom Lobby

**PV-517**  
**The Design of a Solar Array Regulator with Power Limitation Function**  
Heesung Park1, Hanju Cha2  
1*Korea Aerospace Research Institute, 2*Chungnam National University
SM-887  A Novel Integrated Switched Reluctance Motor Drive with Bi-directional Inverter
Jianing Liang$^{1,2}$, Guoqing Xu$^{2}$, Bangming Wang$^{1,3}$, Junfang Bao$^{4}$, Huijun Wang$^{4}$
$^{1}$Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, $^{2}$The Chinese University of Hong Kong, $^{3}$University of Chinese Academy of Sciences, $^{4}$Beihang Univ.