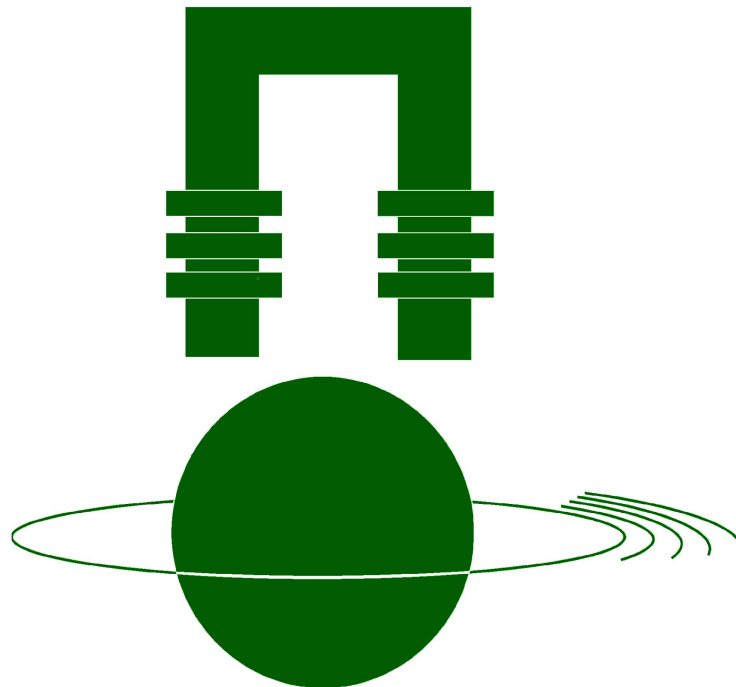


**Ecole Polytechnique de Lausanne
Politecnico di Torino**

Tenth International Symposium on Magnetic Bearings



Conference Program

**Edited by:
Hannes Bleuler
Giancarlo Genta**

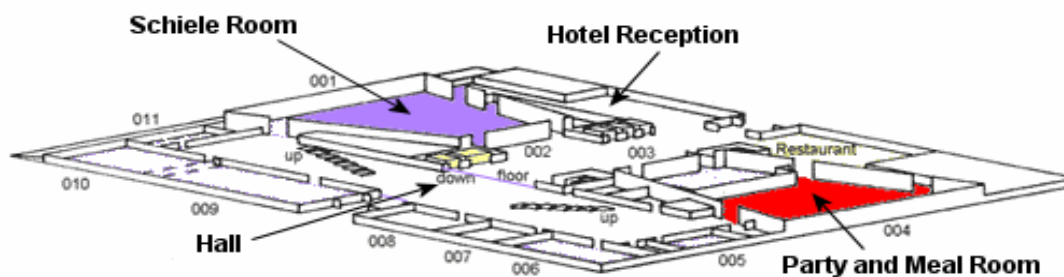
August 21-23, 2006, Martigny Switzerland

ISMB10 - 2006 - Martigny - Switzerland

The Ecole Polytechnique Federale de Lausanne and the Politecnico di Torino welcome you in Martigny, Switzerland, to the tenth International Symposium on Magnetic Bearings.

In this book the participants can find a detailed program of the ISMB10 conference as well as some indications about the hotel and meals.

The Conference Room Organization



All conference rooms are located on the ground floor of the hotel.

Plenary sessions will be held in the "Schiele" room.

Posters will be hung in the hall situated on the ground floor.

Lunches and conference dinners will be held in the "party and meal" room.

Lunches are not included in the conference fees; the participants who wish to have their lunches at the Hotel du Parc can buy lunch vouchers at the Hotel reception.

The Conference Program

Keynote	Keynote presentations.
Orals	20 minutes oral presentations in plenary session.
Posters	3 minutes poster presentations in plenary session.
Meals	Registration, Excursions, Meals, Parties and Coffee Breaks.

	Sunday
Time	Hotel du Parc
17:00-20:00	Registration
20:00	Welcome Party

Monday Morning	
Time	Hotel du Parc
7:45-8:15	Registration
8:15-8:20	Opening
8:20-8:50	Keynote: Application and Research of the AMB in the Nuclear Power Plant of HTR, Prof. Yu Suyuan, Tsinghua University, P.R. of China.
8:50-9:10	Active and Passive Magnetic Bearings Development of a Lorentz-Force-Type Slotless Active Magnetic Bearing, <i>Satoshi Ueno and Shinichi Uematsu</i> , Ritsumeikan University, Japan.
9:10-9:30	Active and Passive Magnetic Bearings Rotational Test of Flexible Rotor Supported by Active Magnetic Bearings, (Passing the 3rd Bending Critical Speed), <i>Makoto Ito, Hiroyuki Fujiwara and Osami Matsushita</i> , Shinkawa Sensor Technology Inc., Japan.
9:30-9:50	Active and Passive Magnetic Bearings Shape Dependency in Levitation System Using HTS and Soft Magnetic Material, <i>Mojtaba Ghodsi, Toshiyuki Ueno and Toshiro Higuchi</i> , University of Tokyo, Japan. <i>Hidekazu Teshimab and Hosei Hiranob</i> , Nippon Steel Corporation, Japan.
9:50-10:10	Active and Passive Magnetic Bearings The Simulation of Novel Bearingless Consequent-Pole Slice Motor, <i>Wang Xiaolin, Deng Zhiquan, Liao Qixin and Qiu Zhijian</i> , Nanjing University of Aeronautics and Astronautics, P.R. of China.
	Active and Passive Magnetic Bearings Investigations of an Active Magnetic Bearing-Flexible Rotor System for Pass through Two Bending Mode Frequencies, <i>Lei Zhao, Yang Xu, Huidong Gu, Suyuan Yu and Hongbin Zhao</i> , Tsinghua University, P.R. of China.
	Active and Passive Magnetic Bearings A new Magnetic Bearing-Rotor System, <i>Honglei Sha, Yang Xu, Lei Shi and Lei Zhao</i> , Tsinghua University, P.R. of China.
	Active and Passive Magnetic Bearings Magnetic Suspension System with Variable Flux Path Mechanism using Rotary Actuator, <i>Koichi Oka, Noriaki Ninomiya and Yusuke Fujiwara</i> , Kochi University of Technology, Japan.
	Active and Passive Magnetic Bearings Design of Permanent Magnet Bearings with High Stiffness, <i>Matthias Lang and Torbjörn A. Lembke</i> , Royal Institute of Technology, Sweden.
	Active and Passive Magnetic Bearings An Effective Way to Combine Radial and Axial Magnetic Bearings in a Unit, <i>Ha-Yong Kim</i> , Samsung Electronics Co., Ltd., Korea. <i>Seung-Jong Kim</i> , Korea Institute of Science and Technology, Korea.
	Active and Passive Magnetic Bearings A Self-Bearing Motor with a Passively Levitated Rotor, <i>Ho-Seong Kwak and Seung-Jong Kim</i> , Korea Institute of Science and Technology, Korea.
	Active and Passive Magnetic Bearings Design of Very High Speed Friction Spindle using Passive Magnetic Bearings, <i>R. Moser, J. Sandtner, A. Schorderet, J. Giovanola and H. Bleuler</i> , École Polytechnique Fédérale de Lausanne, Switzerland.
10:10-10:40	Coffee break
10:40-11:00	Active and Passive Magnetic Bearings Position Controlled Diamagnetic Linear Conveyor, <i>F. Barrot, B. Burns, D. Chapuis, T. Bosgiraud and H. Bleuler</i> , École Polytechnique Fédérale de Lausanne, Switzerland.
11:00-11:20	Active and Passive Magnetic Bearings Active Repulsive Magnetic Bearing Using Three- Segment Magnets, <i>Takeshi Mizuno, Yuzo Hirai, Yuji Ishino and Masaya Takasaki</i> , Saitama University, Japan.
11:20-11:40	Active and Passive Magnetic Bearings Active Magnetic Bearings combined with Active Balancing Devices for Overcritical Operated Rotors, <i>Kai Adler, Christoph Schalk and Rainer Nordmann</i> , Darmstadt University of Technology, Germany <i>Beat Aeschlimann</i> , Mecos Traxler AG, Switzerland.
11:40-12:00	Active and Passive Magnetic Bearings Proto-Model of Novel Contact-Free Disk Suspension System Utilizing Diamagnetic Material, <i>Haruhiko Suzuki, Atsushi Suzuki, Syuhei Sasaki and Atsushi Ito</i> , Fukushima National College of Technology, Japan. <i>F. Barrot, D. Chapuis, T. Bosgiraud, R. Moser, J. Sandtner and H. Bleuler</i> , École Polytechnique Fédérale de Lausanne, Switzerland.
12:00-13:30	Lunch break

Monday Afternoon	
Time	Hotel du Parc
12:00-13:30	Lunch break
13:30-13:50	Sensors and Self Sensing Magnetic Bearings Capacitive Sensing System Design for a Rotating AMB with Sub-Nanometer Positioning Accuracy, <i>P.M. Overschie, L. Jabben, J.P. van Schieveen, J.W. Spronck and J. van Eijk</i> , Delft University of Technology and Philips Applied Technologies, The Netherlands.
13:50-14:10	Sensors and Self Sensing Magnetic Bearings Rotor Dynamics Analysis and Experiments of AMB for HTR-10GT, <i>Xu Yang, Yang Guojun, Shi Zhengang and Gu Huidong</i> , Tsinghua University, P.R. of China.
14:10-14:30	Sensors and Self Sensing Magnetic Bearings Displacement Self-Sensing of Permanent Magnet Biased Magnetic Bearing, <i>Fan Yahong and Fang Jiancheng</i> , Beijing University of Aeronautics and Astronautics, P.R. of China.
14:30-15:00	Sensors and Self Sensing Magnetic Bearings Low-Cost Magnetic Displacement Sensor for Active Magnetic Bearings, <i>Marco Schramm and Wilfried Hofmann</i> , Chemnitz University of Technology, Germany.
	Sensors and Self Sensing Magnetic Bearings Formal Parameter Estimation for Self-Sensing, <i>Eric H. Maslen, Tetsuya Iwasaki and Roza Mahmoodian</i> , University of Virginia, USA.
	Sensors and Self Sensing Magnetic Bearings Sensor Design and Application for Active Magnetic Bearings of 10MW High Temperature Gas-Cooled Reactor, <i>Zhengang Shi, Jingjing Zhao, Lei Zhao, Yang Xu and Meisheng Zha</i> , Tsinghua University, P.R. of China.
	Sensors and Self Sensing Magnetic Bearings A New Integrated Radial and Axial Sensor Design Based on Self-Induction for Active Magnetic Bearings, <i>Yan Zhou, Zhengang Shi, Jingjing Zhao, Zhuo Sun and Meisheng Zha</i> , Tsinghua University, P.R. of China.
	Control of Active Magnetic Bearings Nonlinear Analysis of an AMB System in the Harmonic Domain, <i>Josu Jugo, Ibone Lizarraga and Iñigo Arredondo</i> , University of the Basque Country, Spain.
	Control of Active Magnetic Bearings Configuration and Control for AC-DC Three Degrees of Freedom Hybrid Magnetic Bearings, <i>Huangqiu Zhu, Huaixiang Chen, Zhiyi Xie and Yang Zhou</i> , Jiangsu University, P.R. of China.
	Control of Active Magnetic Bearings Decoupling Control for Bearingless Induction Motor with α -th Order Inverse System Theory, <i>Yang Zhou, Huangqiu Zhu, Jinghua Ji and Xianxing Liu</i> , Jiangsu University, P.R. of China.
	Control of Active Magnetic Bearings PD Control Strategy for 3 Coils AMB, <i>Adam Pilat</i> , AGH University of Science and Technology, Poland.
	Control of Active Magnetic Bearings New Modeling and Control Methods for Flexible Rotors with Magnetic Bearings toward Passing through Critical Speed Caused by Elastic Modes, <i>M. Murata, H. Tajima, T. Watanabe and K. Seto</i> , Nihon University, Japan.
	Control of Active Magnetic Bearings Study on Nonlinear Dynamics of Rotor System Equipped with AMB, <i>Gang Zhang, Songsheng Li, Ning Liu, Gang Gao, Zhifeng Zhao and Gao Cheng</i> , Shanghai University, UBC Precision Bearing Manufacturing Co., Ltd, P.R. of China.
	Control of Active Magnetic Bearings <i>Lie Yu</i> , Xi'an Jiaotong University, P.R. of China.
	15:00-15:30
15:30-15:50	Sensors and Self Sensing Magnetic Bearings Thick-Film Radial Position Sensor for High Temperature Active Magnetic Bearings, <i>Luc Burdet, Thomas Maeder and Roland Siegwart</i> , Ecole Polytechnique Fédérale de Lausanne, Switzerland. <i>Phillip Buehler and Beat Aeschlimann</i> , Mecos Traxler AG, Switzerland.
15:50-16:10	Sensors and Self Sensing Magnetic Bearings High-Speed Video Analysis of Rotor-Retainer-Bearing-Contacts Due to Failure of Active Magnetic Bearings, <i>Marlene Helfert, Martin Ernst and Rainer Nordmann</i> , Darmstadt University of Technology, Germany. <i>Beat Aeschlimann</i> , Mecos Traxler AG, Switzerland.
16:10-16:30	Sensors and Self Sensing Magnetic Bearings More Electric Aero Engines: Tradeoff between Different Electromagnetic Dampers and Supports, <i>Genta G., Tonoli A., Amati N., Macchi P., Silvagni M. and Carabelli S.</i> , Politecnico di Torino, Italy.
17:00-19:30	Visit of the Pierre Gianadda Foundation or Visit of a wine cellar
20:30	Conference Dinner at the Hotel du Parc

Tuesday Morning		
Time	Hotel du Parc	
8:15-8:45	Keynote: Development of Superconducting Bearings for Industrial Application, Dr. Peter Kummeth, Siemens AG, Germany.	
8:45-9:05	New Fields in Magnetic Bearings and Industrial Applications	A Foil-Magnetic Thrust Bearing Using LCR Circuit, <i>H. Ming Chen and Thomas J. Walter</i> , Foster-Miller, Inc., USA.
9:05-9:25		Structural Design and Dynamical Analysis of Auxiliary Bearing for HTR-10GT, <i>Yang Guojun, Xu Yang, Wan Li, Zhao Lei and Yu Suyuan</i> , Tsinghua University, P.R. of China.
9:25-9:45		A Magnetic Bearing Actuator for Detection of Shaft Cracks in Rotating Machinery Supported in Conventional Bearings, <i>M.E. Kasarda, D. Inman and R.G. Kirk</i> , Virginia Tech, USA. <i>D. Quinn and G. Mani</i> , University of Akron, USA. <i>T. Bash</i> , Caterpillar, Inc., USA.
9:45-10:05		Design of a Novel High Speed Milling Spindle Concept using Active Magnetic Bearings and Gyroscopic Stabilization, <i>Maarten Kimman, Hans Langen and Jan van Eijk</i> , Delft University of Technology, The Netherlands.
10:05-10:30	New Fields in Magnetic Bearings and Industrial Applications	Experiment Study on a High Speed Motor Supported by Active Magnetic Bearings, <i>Kai Zhang, Xingjian Dai, Xiaozhang Zhang and Xingjian Jiang</i> , Tsinghua University, P.R. of China.
		Determination of Forces on a Completely Active Magnetic Suspended Coolant Pump in a Power Station, <i>Frank Worlitz and Torsten Rottenbach</i> , University of Applied Sciences Zittau/Görlitz, Germany.
		Thermally Induced Synchronous Vibration Instability in a Magnetic Bearing Supported Highspeed Rotor, <i>Naohiko Takahashi, Haruo Miura and Yasuo Fukushima</i> , Hitachi Plant Technologies, Ltd., Japan.
		Passive Electrodynamics Magnetic Thrust Bearing Especially Designed for Constant Speed Applications, <i>Jan Sandtner and Hannes Bleuler</i> , Ecole Polytechnique Fédérale de Lausanne, Switzerland.
		Neural Network's Implementation to Control an Active Magnetic Bearing, <i>Roger Achkar and Chaiban Nasr</i> , Lebanese University, Lebanon. <i>Jerôme De Miras and Ali Charara</i> , Université de Technologie de Compiègne, France.
		Combination of Electromagnet and Magnetostrictive/Piezoelectric Materials Composite for Zero Power Levitation, <i>Toshiyuki Ueno and Toshiro Higuchi</i> , University of Tokyo, Japan.
		Optimized Design for a Hybrid Magnetic Bearing for the Artificial Heart, <i>Ayako Katoh and Toru Masuzawa</i> , Ibaraki University, Japan.
		Basic Study on Gyroscopic Sensor using Active Magnetic Bearing, <i>Yutaka Maruyama, Masaya Takasaki, Yuji Ishino and Takeshi Mizuno</i> , Saitama University, Japan. <i>Takayuki Ishigami and Hironori Kameno</i> , JTEKT Corporation, Japan.
Manufacturing of Hybrid (Permanent Magnetic + Hydrodynamic) Bearing by Powder metallurgy Process, <i>P. Samanta and H. Hirani</i> , Indian Institute of Technology, India.		
10:30-11:00	Coffee break	
11:00-11:20	Control of Active Magnetic Bearings	Position Controller with Hysteresis Compensation for Magnetic Bearings, <i>Ralf Volkert, Oliver Radler, Erik Weißenborn and Tom Ströhla</i> , Technische Universität Ilmenau, Germany. <i>Veit Zöppig</i> , STZ Mechatronik Ilmenau, Germany.
11:20-11:40		Experiments on ROLAC to Recover Rotor Position Following Contact, <i>Abdul-Hadi Abulrub, M. Necip Sahinkaya, Patrick S. Keogh and Clifford R. Burrows</i> , University of Bath, United Kingdom.
11:40-12:00		Smooth Stabilizing Controllers for a 3-Pole Active Magnetic Bearing System, <i>Shyh-Leh Chen</i> , National Chung-Cheng University, Taiwan, Republic of China.
12:00-12:20		Experimental Evaluation on H^∞ DIA Control of Magnetic Bearings with Rotor Unbalance, <i>Hiroki Seto and Toru Namerikawa</i> , Kanazawa University, Japan. <i>Masayuki Fujita</i> , Tokyo Institute of Technology, Japan.
12:20-13:50	Lunch	

Tuesday Afternoon	
Time	Hotel du Parc
12:20-13:50	Lunch
13:50-14:10	Automatic Initial Levitation with Active Magnetic Bearings, <i>Matthias Glauser and Dorsa Sanadgol</i> , University of Virginia, USA.
14:10-14:30	A Note on ISO AMB-Rotor System Stability Margin, <i>Guoxin Li, Eric H. Malsen and Paul E. Allaire</i> , University of Virginia, USA.
14:30-14:50	Intrinsic Placing Behavior in Zero-Power Controlled Magnetic Levitation Object Handling, <i>Ewoud van West, Akio Yamamoto and Toshiro Higuchi</i> , University of Tokyo, Japan.
14:50-15:10	Novel Robust and Adaptive Vibration Control for Active Magnetic Bearing System, <i>Yunheng Ren and Kenzo Nonami</i> , Chiba University, Japan.
15:10-15:50	Modal Control Method for Rotors Supported by Active Magnetic Bearings based on a Condensed Reduced Model, <i>Xavier De Lépine, Johan Der Hagopian and Jarir Mahfoudh</i> , INSA de Lyon, France.
	Comparison of Stability Criteria for Rotor Levitated by Active Magnetic Bearing, <i>Kanemitsu Yoichi, Yong Xiao-Bing, Kijimoto Shinya and Matsuda Koichi</i> , Kyushu University, Japan.
	Adaptive Linear and Extended KALMAN Filter applied to AMB with Collocated Position Measuring, <i>Thomas Schuhmann and Wilfried Hofmann</i> , Chemnitz University of Technology, Germany. <i>Ralf Werner</i> , Mittweida University of Applied Sciences, Germany.
	Trajectory Tracking for a Magnetically Levitated Shaft with Three-Phase AMBs in Y-Connection, <i>St. Eckhardt and J. Rudolph</i> , Technische Universität Dresden, Germany.
	Modeling and Control of an Axial Bearing Generating Forces and Torques, <i>C. Klaucke, St. Eckhardt and J. Rudolph</i> , Technische Universität Dresden, Germany.
	The Control of Sheet Motion in a Hot-Dip Galvanizing Line by Electromagnetic Actuator, <i>Zhou Jin, Xu Long Xiang and Chen Pu Hui</i> , Nanjing University of Aeronautics and Astronautics, P.R. of China. <i>Chen Pei Lin, Wang Ze Ji and Zhang Yong Jie</i> , Shanghai Baosteel Group Corporation, P.R. of China.
	Coupled Electro-thermal Modeling of Magnetic Bearing Systems, <i>Shuqin Liu</i> , Shandong University, P.R. of China. <i>Chris Mi</i> , University of Michigan-Dearborn, USA.
	Uncertainty Classification of Rotor-AMB Systems, <i>Guoxin Li, Zongli Lin and Paul E. Allaire</i> , University of Virginia, USA.
	Notch Filter Design Based on Two-Frequency Bode Diagram for Elastic Vibration Depression of Magnetically Suspended High-Speed Rotor, <i>Wei Tong and Fang Jiancheng</i> , Beijing University of Aeronautics and Astronautics, P.R. of China.
	A Complete Model for a Non-Laminated Cylindrical Magnetic Actuator, <i>Lei Zhu, Carl Knospe and Eric Maslen</i> , Calnetix and University of Virginia, USA.
	Vectorial Speed Control using a Flux Estimator for Bearingless Machines with Divided Windings, <i>José Álvaro de Paiva</i> , Centro Federal de Educação Tecnológica do Rio Grande do Norte, Brasil <i>Jossana M. S. Ferreira, Andrés O. Salazar and André L. Maitelli</i> , Universidade Federal do Rio Grande do Norte, Brasil.
	Unfalsified PID Controller Design Method using Support Vector Machine with Gap Metric and its Application for Active Magnetic Actuator Systems, <i>Michihiro Kawanishi and Masanori Ukibune</i> , Kobe University, Japan.
	Nonlinear Compensation of Zero Power Magnetic Suspension for High-Performance Vibration Isolation Systems, <i>Takeshi Mizuno, Yuji Ishino and Masaya Takasaki</i> , Saitama University, Japan.
	Control of a Magnetically Levitated Slider with nm-Precision, <i>D. Laro, T. Porck, J. Spronck and J. van Eijk</i> , Delft University of Technology, The Netherlands. <i>A. Lebedev</i> , Technical University of Eindhoven, The Netherlands.
The Use of Wavelet Analysis for the Closed Loop Control of Vibration in Magnetic Bearing Systems, <i>Patrick S. Keogh, Iain S. Cade and M. Necip. Sahinkaya</i> , University of Bath, United Kingdom.	
16:30	Departure for the Eموsson Dam Conference Dinner at the Eموsson Dam

Wednesday Morning		
Time	Hotel du Parc	
8:15-8:45	Keynote: Status and Prospects of Self-Sensing Magnetic Bearing Technology, <i>Prof. Eric Maslen, University of Virginia, USA.</i>	
8:45-9:05	Bearingless and Electrodynamic Drives	Design of a Bearingless Segment Motor, <i>Wolfgang Gruber and Wolfgang Amrhein</i> , Institute of Electrical Drives and Power Electronics, Austria.
9:05-9:25		Basic Characteristics of an Outer Rotor Consequent-pole Bearingless Drive, <i>Akira Chiba, Kazuyoshi Asami and Tomohiro Yamada</i> , Tokyo University of Science, Japan. <i>Atsushi Nakajima and Takeshi Hoshino</i> , Japan Aerospace Exploration Agency, Japan. <i>Tadashi Fukao and Masatsugu Takemoto</i> , Musashi Institute of Technology, Japan. <i>Osamu Ichikawa</i> , Polytechnic University, Japan.
9:25-9:45		Spherical Actuation Using the Displaced Trapezoidal Winding, <i>Lyndon Scott Stephens</i> , University of Kentucky, USA. <i>David J. Carroll</i> , Airex Corporation, USA.
9:45-10:05		Understanding Electrodynamic Dampers, <i>Torbjörn A. Lembke</i> , Royal Institute of Technology, Sweden.
10:05-10:35	Bearingless and Electrodynamic Drives	Lorentz Type Self-Bearing Motor using Halbach Magnets, <i>Yohji Okada, Takuro Jinbu, Naoto Yamashiro and Kouji Sagawa</i> , Ibaraki University, Japan.
		Studies on Coil-less Reluctance Force Actuators, <i>Marcus Herrmann and Heinz Ulbrich</i> , Technical University Munich, Germany.
		A Magnetic Suspension Control Strategy of Bearingless Motors with 2-phase Brushless DC Structure, <i>Masahide Ooshima</i> , Tokyo University of Science, Japan.
		Self-Bearing Motor with DSP Based Control System, <i>Rafael R. Gomes and Richard M. Stephan</i> , Universidade Federal do Rio de Janeiro, Brasil. <i>José A. Santisteban</i> , Universidade Federal Fluminense, Brasil.
		The Analysis of Bearingless Motor with Rectifier Circuits, <i>Chen Li, Hironobu Aratani, and Koichi Oka</i> , Kochi University of Technology, Japan.
		Determination of Electrodynamic and Aerodynamic Resistance for Maglev Train with an Electrodynamic Suspension System, <i>Arkadij Lascher</i> , Technische Universität Dresden, Germany. <i>Evgeni Frishman</i> , Jerusalem College of Technology, Israel. <i>Mark Umanov</i> , National University of Railway, Ukraine. <i>Helen Prishedko</i> , National Academy of Sciences of Ukraine, Ukraine.
10:35-11:00	Flywheel	Control for Passing Through Critical Speeds of an Energy Storage Flywheel System by Bias Current Control, <i>Yajun Zhang and Nobuyuki Kobayashi</i> , Aoyama Gakuin University, Japan.
		Model and Control of Energy Storage Flywheel System Used in an Electric Vehicle, <i>Yajun Zhang and Nobuyuki Kobayashi</i> , Aoyama Gakuin University, Japan.
		Development of Low Loss Active Magnetic Bearing for the Flywheel UPS, <i>Gen Kuwata, Noriyasu Sugitani and Osamu Saito</i> , Ishikawajima-Harima Heavy Industries Co., Ltd., Japan.
		Design of Magnetic Bearing Reaction Wheel for High Precision Attitude Control of Spacecraft, <i>Han Bangcheng and Fang Jiancheng</i> , Beijing University of Aeronautics and Astronautics, P.R. of China.
		Zero Bias H_{∞} Control of Flexible Rotor Magnetic Bearing Flywheel System with Gyroscopic Effect Using Singular Value Decomposition, <i>Ming Ren and Kenzo Nonami</i> , Chiba University, Japan. <i>Atsushi Kubo and Hironori Kameno</i> , JTEKT Corporation, Japan.
10:35-11:00	Coffee break	
11:00-11:20	Flywheel	Flywheel Energy Storage System with Homopolar Electrodynamic Magnetic Bearing, <i>Alexei Filatov and Patrick McMullen</i> , Calnetix Inc., USA. <i>Kent Davey and Richard Thompson</i> , University of Texas, USA.
11:20-11:40		PD Control and Sliding Mode Control Using Feedback Linearization for 3-Pole Radial Magnetic Bearings of an Energy Storage Flywheel, <i>David Cantero Burgos, Gabriel Mihai Sirbu, Fernando Martín Porres, Javier Vadillo Landajuela and Luis Fontán Agorreta</i> , University of Navarra, Spain.
11:40-12:00		Flywheel Energy Storage System with Active Magnetic Bearings and Hybrid Backup Bearings, <i>Patrick McMullen and Vinh Vuong</i> , Vycon Inc., USA. <i>Lawrence Hawkins</i> , Calnetix Inc., USA.
12:00-13:30	Lunch	

Wednesday Afternoon	
Time	Hotel du Parc
12:00-13:30	Lunch
13:30-13:50	Modelling and Analysis of Magnetic Bearings Analysis and Control of a Three Pole Radial Magnetic Bearing, <i>David C. Meeker</i> , Foster-Miller, Inc., USA. <i>Eric H. Maslen</i> , University of Virginia, USA.
13:50-14:10	Transient Simulation of AMB Supported Electric Motor during Rotor Drop on Retainer Bearings, <i>Antti Kärkkäinen, Jussi Sapanen and Aki Mikkola</i> , Lappeenranta University of Technology, Finland.
14:10-14:30	An Enhanced Dynamic Model for the Actuator/Amplifier Pair in AMB Systems, <i>Eric H. Maslen, Carl R. Knospe, C. Hunter Cloud, and Dorsa Sanadgol</i> , University of Virginia, USA. <i>Lei Zhu</i> , Calnetix, Inc., USA.
14:30-14:50	Transient Thermal Model for Radial Active Magnetic Bearing, <i>Riku Pöllänen, Janne Nerg, Marko Rilla and Olli Pyrhönen</i> , Lappeenranta University of Technology, Finland.
14:50-15:30	Identification of Active Magnetic Bearing System Based on Virtual Instruments, <i>Hangyu He, Lei Shi, Lei Zhao and Liangju Zhang</i> , Tsinghua University, P.R. of China.
	Real Time Digital Control of an Active Magnetic Bearing Using Open Source Software, <i>Harland Alpaugh, Denis Fermental and Frederick Nelson</i> , Tufts University, USA.
	The Mathematical Model of Bearingless Switched Reluctance Motors with Two-Phase Excitation, <i>Cao Xin and Deng Zhiquan</i> , Nanjing University of Aeronautics and Astronautics, P.R. of China.
	Magnetic Force of Radial Magnetic Bearing Considering Eddy Currents Effect, <i>Yanhua Sun and Yick-Sing Ho</i> , The Hong Kong Polytechnic University, P.R. of China. <i>Lie Yu</i> , Xi'an Jiaotong University, P.R. of China.
	AMB Controller Design for a Machining Spindle Using μ -Synthesis, <i>Jerzy T. Sawicki</i> , Cleveland State University, USA. <i>Eric H. Maslen</i> , University of Virginia, USA.
	Control and Dynamics of a 2-Degree Rigid Rotor-Magnetic Bearing System with Time Delay, <i>K. Zheng, H. Liu and L. Yu</i> , Xi'an Jiaotong University, P.R. of China.
	The Power Dissipation Models of AMB and its Computational Methods, <i>Quan Biao, Yang Xiaoyong, Shi Zhengang and Zhao Lei</i> , Tsinghua University, P.R. of China.
	Sliding Mode Control for Active Magnetic Bearings, <i>Zdzislaw Gosiewski</i> , Bialystok Technical University, Poland. <i>Mariusz Zokowski</i> , Technical University of Koszalin, Poland.
	Vibration Compensation and Precision Tracking of a Rotating Shaft by Nonlinear State Feedback, <i>Thomas R. Grochmal and Alan F. Lynch</i> , University of Alberta, Canada.
	Induced Currents in Magnetic Bearings: Dynamical Electromechanical Model, <i>V. Kluyskens and B. Dehez</i> , Université Catholique de Louvain, Belgium.
Identification and Control of Control Delay for Digital Control Magnetic Bearing System, <i>M. Q. Jing, W. J. Su, H. Liu and L. Yu</i> , Xi'an Jiaotong University, P.R. of China.	
15:30-16:00	Coffee break
16:00-16:20	Modelling and Analysis of MB Application of Tracking Solver for Active Magnetic Bearing Controller Design, <i>Hiroyuki Fujiwara, Makoto Ito and Osami Matsushita</i> , National Defense Academy, Japan.
16:20-16:40	Modeling and Implementation of Active Magnetic Bearing Rotor System for FPGA-based Control, <i>Rafal Jastrzebski, Riku Pöllänen, Olli Pyrhönen and Antti Kärkkäinen</i> , Lappeenranta University of Technology, Finland. <i>Jussi Sapanen</i> , South Carelia Polytechnic, Finland.
16:45-17:30	Round Table: "Are Active Magnetic Bearings a mature field or are there emerging research topics?"
17:30	Closing Ceremony and Farewell Party at the Hôtel du Parc