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General information

General program overview

Welcome reception

*Sunday July 3 / 17:00-19:00*
DAF Museum, Tongelresestraat 27, Eindhoven

The welcome reception will be held at the DAF museum in Eindhoven. The Museum is located in the center of Eindhoven at about a fifteen-minute walk from the Central Railway station. The city council has signposted the route to the Museum. A symposium registration desk is present at the welcome reception for attendees which have already registered in advance and for those who still need to register for the symposium.

The welcome reception in the DAF museum provides an opportunity to meet other attendees and to learn about the industrial history of Eindhoven. In the museum visitors can taste the inventiveness that has been characteristic for DAF vehicles from 1928 till the present day.

Technical sessions

*Monday July 4 / 9:00 - Tuesday July 5 / 17:30*
Conference center Auditorium, Den Dolech 2, Eindhoven

Information about the Technical Sessions is found on page 15 and further.

Banquet

*Monday July 4 / 18:30 - 22:30*
Laan Van Henkenshage 3, Sint-Oedenrode.

*Busses leave at the Symposium site (Auditorium) at 17:45 and will return here around 23:00.*

The banquet (walking dinner) is held at castle Henkenshage which is located in Sint-Oedenrode, N-Brabant. This beautiful castle, which is surrounded by water, has a wonderful bailey and garden and most probably dates from the 14th century. Although some of its wall still dates from 1450, quasi-medieval constructions built in 1850 dominate its looks.
Technical tours

The technical tours are not included in the standard registration. Attendees should register separately through the website registration form, or by contacting conferences@tue.nl. Both tours have a limited number of seats.

Technical tour 1: Transport & Automation

Wednesday July 6 / 8:45 - 13:30 / Vanderlande Industries
http://www.vanderlande.com

Vanderlande Industries is a market leader in automated material handling solutions. In market segments like Baggage Handling, Parcel Sorting and Automated Warehouses they deliver complete solutions. When 15 years ago they installed a complete baggage handling system based on carts driven by linear asynchronous drives they felt pioneers that had to develop crucial elements. Nowadays they deliver systems to major airports based on this technology and synchronous and asynchronous drives are applied in all their market segments in various applications.

Technical tour 2: High precision

Wednesday July 6 / 8:45 - 15:30 / Assembléon (morning) and ASML (afternoon)
http://www.assembleon.com
http://www.asml.com

Assembléon is a global supplier of Surface Mount Technology (SMT) Pick & Place solutions for the electronics manufacturing industry. Their customers include some of the leading players in industries such as consumer, personal computer and automotive electronics, as well as more specialized fields like module manufacturing and semiconductor backend. The advanced technologies which are used in Assembléon's products and the integration of both rotating and linear drives into their designs make a visit to this company highly interesting for all symposium attendees.

ASML is the world leading provider of lithography systems for the semiconductor industry, manufacturing complex machines that are critical to the production of integrated circuits or microchips. Headquartered in Veldhoven, the Netherlands, ASML designs, develops, integrates, markets and services these advanced systems, which continue to help our customers - the major chipmakers - reduce the size and increase the functionality of microchips, and consumer electronic equipment.
Symposium site maps

All technical sessions are held in the Auditorium congress center of Eindhoven University of Technology. The address is Den Dolech 2, Eindhoven.
WIFI Internet

Symposium attendees who wish to use the TU/e wireless network via their own laptops, may obtain temporary guest accounts. To obtain such an account please refer to the registration desk during the symposium.

Please note that the guest network is not secure; encryption is not applied.

Symposium secretariat

Congress Office, Eindhoven University of Technology

address / Den Dolech 2, AUD 2.23
5612 AZ Eindhoven
the Netherlands

tel / +31 40 247 4000
fax / +31 40 245 8195
email / congressoffice@tue.nl

During LDIA 2011 the secretariat will be available at the registration desk.
# Technical program

## Timetable

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<thead>
<tr>
<th>Monday July 4</th>
<th>Blauwe zaal</th>
<th>Auditorium 4</th>
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<tbody>
<tr>
<td>9:00 - 9:50</td>
<td>Opening ceremony and plenary keynote session I</td>
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</tr>
<tr>
<td>9:50 - 11:30</td>
<td>Magnetic Levitation and Transport I (MLT-I)</td>
<td>Linear Induction Motors I (LIM-I)</td>
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<tr>
<td>11:30 - 12:30</td>
<td>Plenary poster Session I (PS-I)</td>
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<tr>
<td>12:30 - 14:00</td>
<td>Lunch</td>
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<tr>
<td>14:00 - 15:20</td>
<td>Linear Tubular Motors (LTM)</td>
<td>Actuators &amp; Special Machines I (ASM-I)</td>
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<tr>
<td>15:20 - 15:50</td>
<td>Coffee break</td>
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<tr>
<td>15:50 - 17:30</td>
<td>Linear Induction Motors II (LIM-II)</td>
<td>Modeling (MOD)</td>
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<tr>
<th>Tuesday July 5</th>
<th>Blauwe zaal</th>
<th>Auditorium 4</th>
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<tr>
<td>9:00 - 9:40</td>
<td>Plenary keynote session II</td>
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<tr>
<td>9:40 - 11:20</td>
<td>Magnetic Levitation and Transport II (MLT-II)</td>
<td>Linear Motors (LMO)</td>
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<tr>
<td>11:30 - 12:30</td>
<td>Poster Session II (PS-II)</td>
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<tr>
<td>12:30 - 14:00</td>
<td>Lunch</td>
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<tr>
<td>14:00 - 15:20</td>
<td>Control of Synchronous Motors (CSM)</td>
<td>Linear Transverse Flux Machines (LTF)</td>
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<tr>
<td>15:20 - 15:50</td>
<td>Coffee break</td>
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<tr>
<td>15:50 - 17:10</td>
<td>Linear Switched Reluctance and Stepper Machines (LSS)</td>
<td>Actuators and Special Machines II (ASM-II)</td>
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<tr>
<td>17:10 - 17:30</td>
<td>Plenary closing session</td>
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</table>
Plenary sessions

Opening ceremony

Date: Monday, Jul. 4, 9:00 - 9:10
Location: Blauwe Zaal
Session Chair: E.A. Lomonova

Opening speech

C.J. van Duijn
Rector Magnificus of Eindhoven University of Technology

Keynote Session I

Date: Monday, Jul. 4, 9:10 - 9:50
Location: Blauwe Zaal
Session Chair: E.A. Lomonova

Linear Drives: an enabling technology for cost effective continuation of Moore’s Law

Jos Benschop
Senior Vice President Technology at ASM Lithography, Veldhoven, The Netherlands

Abstract

Moore’s Law dictates that every 18 months the number of transistors on an integrated chip doubles. This is first and foremost enabled by optical lithography printing ever smaller transistor on an integrated circuit.

ASML is market and technology leader in this multi-billion euro industry. State-of-the art immersion scanners, using 193 nm light and immersion optics with numerical aperture of 1.35, print 40 nm wide lines on a 300mm resist coated silicon wafer. To enable a cost-effective continuation of Moore’s law the productivity of these optical lithography scanners have increased steadily over the last decades. Today’s pixel rate exceeds 2 Terapixel/second.

The combination of sub-nm precision and high acceleration continues to push the envelope of sensor-, actuator- and servo-technology as well as construction of linear drives.

After an introduction into IC fabrication, and the role of lithography, it will be explained how lithography, and linear drives used for lithography, have evolved over the years enabling a cost effective continuation of Moore’s law. Key challenges for lithography as well as linear drive technology will be shared.
**Keynote session II**

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<tr>
<td>Session Chair</td>
<td>J.C. Compter</td>
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**15 Years of heavy duty linear drives in Material Handling**

Gert Bossink  
Vanderlande Industries BV, Veghel, The Netherlands

**Abstract**

Vanderlande Industries is a market leader in automated material handling solutions. In market segments like Baggage Handling, Parcel Sorting and Automated Warehouses we deliver complete solutions. When we installed 15 years ago a complete baggage handling system based on carts driven by linear asynchrone drives we felt pioneers that had to develop crucial elements. Nowadays we deliver systems to major airports based on this technology and synchrone and asynchrone drives are applied in all our market segments in various applications.

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**Closing Ceremony**

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<tr>
<td>Session Chair</td>
<td>J.W. Jansen</td>
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</table>
**Oral & Poster sessions / Monday July 4**

**Magnetic Levitation & Transport I (MLT-I)**

**Session type** Oral  
**Date** Monday, Jul. 4, 9:40 - 11:20  
**Location** Blauwe Zaal  
**Chair(s)** D. Ebihara

**MLT-I.1** Stator Arrangement and Thrust Force Analysis of LSM with Disconnected Long Stator  
(Page 36)  
L. Shi  
*Institute of Electrical Engineering, Chinese Academy of Sciences, China*

**MLT-I.2** Development of Robust Electromagnetic Position Sensor for Linear Synchronous Motor in General Atomics Urban Maglev  
(Page 38)  
S Borowy and S Gurol  
*General Atomics, United States of America*

**MLT-I.3** The deformation of the moving magnet plate of a commutated magnetically levitated planar actuator  
(Page 40)  
*Eindhoven University of Technology, The Netherlands*

**MLT-I.4** Structure and Characteristics Analysis of a Novel Detent-force-based Magnetic Suspension System  
(Page 42)  
X. Xu  
*Henan Polytechnic University, China*

**MLT-I.5** Numerical Analysis of the Basic Levitation Characteristics of the Magnetically Levitated System using Two Phase Linear Motor  
(Page 44)  
S. Ohashi  
*Kansai University, Japan*

---

**Linear Induction Motors I (LIM-I)**

**Session type** Oral  
**Date** Monday, Jul. 4, 9:40 - 11:20  
**Location** Auditorium 4  
**Chair(s)** J.F. Gieras

**LIM-I.1** Novel FaultTolerant Concept for Linear Induction Drives  
(Page 46)  
J. Zentner, I. Odnokopylov, K. Obraztsov and G. Odnokopylov  
*TU Braunschweig, Germany*  
*Tomsk Polytechnic University, Russian Federation*
LIM-I.2  An Analytical Method for Predicting Cogging Forces in Linear Induction Motors  
(Page 48)  
M. Rusli, D. Cook, D. Platt and W. Moscrop  
University of Wollongong, Australia

LIM-I.3  Optimal design of a Double-Sided Linear Induction Motor using an Efficient Global Optimization  
(Page 50)  
J. Gong, A.C. Berbecea, F. Gillon, X. Cimetiere and P. Brochet  
Université Nord de France-Ecole Centrale de Lille, France

LIM-I.4  Study of Pulse Drive Linear Induction Motor as the all Aluminum Motor  
(Page 52)  
D. Zohda and S. Torii  
Tokyo City University, Japan

LIM-I.5  Investigation of active spherical wheels based on induction motor principle  
(Page 54)  
J. Zentner, T. Kochubey, K. Shaposhnikov and V. Astakhov  
TU Braunschweig, Germany  
South Russia State Technical University, Russian Federation

Poster Session I (PS-I)

Session type  Poster  
Date  Monday, Jul. 4, 11:30 - 12:30  
Location  Poster Room  
Chair(s)  F. Sahin

PS-I.1  Winding and Mover Arrangement of Doubly Salient Permanent Magnet Linear Synchronous Motor for Reduction of Force Ripple and Magnetic Unbalance  
(Page 56)  
KERI, South-Korea

PS-I.2  Outlet edge Cogging Force Verification using Auxiliary teeth and pole at the Stationary Discontinuous Armature Linear Synchronous Motor  
(Page 58)  
Y.-J. Kim  
Chosun University, South-Korea

PS-I.3  Study of the Velocity Ripple Suppression for Intermittent Stator Permanent Magnet Linear Synchronous Motor  
(Page 60)  
S. Kohno, H. Dohmeki and K. Suzuki  
Japan

PS-I.4  Analysis of Thrust Constant, Electrical and Mechanical Time Constant of a Tubular Linear Permanent Magnet Motor in Spray Application  
(Page 62)  
A.K.M. Iqbal, I. Aris, N. Misron, M.H. Marhaban and A. Waqar  
University Industri Selangor, Malaysia  
University Putra Malaysia, Malaysia  
International Islamic University, Malaysia
<p>| PS-I.5 | Design of Safe Protection System for Rope-less Elevator Driven by Permanent Magnet Linear Synchronous Motor |
|       | Henan Polytechnical University, China |
|       | Henan Polytechnic University, China |
| PS-I.6 | Analysis on Rotor Eddy Current Loss of Cylindrical Linear Oscillatory Actuator with Halbach Array Permanent Magnet Mover according to Driving Method |
|       | K.J. Ko, S.M. Jang, J.Y. Choi and S.S. Jeong |
|       | Chungnam National University, South-Korea |
|       | LG Electronics Incorporated, South-Korea |
| PS-I.7 | The Dynamics Simulation of Air Levitation PM-LSM |
|       | M. Morimoto, H. Dohmeki and T. Takahashi |
|       | Japan |
| PS-I.8 | Optimal Design for 4 Pole 3 Slot Structure of the Intermittent Stator Permanent Magnet Type Linear Synchronous Motor |
|       | A. Ishikawa, K. Suzuki and H. Dohmeki |
|       | Tokyo City University, Japan |
|       | Aida Engineering Co. Ltd., Japan |
| PS-I.9 | Design and characterization of a fractional slots tubular linear permanent magnet machine |
|       | R. Di Stefano and F. Marignetti |
|       | University of Cassino, Italy |
| PS-I.10 | Influence of design parameters and DC Link Voltage on Dynamic Performance of Slotless Double-sided PM Linear Synchronous Motor |
|       | J.H. Choi, S.M. Jang, D.J. You, S.C. Han and J.P. Lee |
|       | Chungnam national university, South-Korea |
|       | Chungnam provincial Cheongyang College, South-Korea |
|       | Korea electric power research institute, South-Korea |
| PS-I.11 | New Topology for High Force Linear Actuators with Tooth Windings |
|       | C. Bode and W.R. Canders |
|       | TU Braunschweig, Germany |
| PS-I.12 | Efficiency Improvement of Single-Side Linear Induction Motor with optimized secondary overhang length |
|       | Y.S. Park |
|       | Chungnam National University, South-Korea |
|       | J.H. Lee and S.C. Lee |
|       | South-Korea |
| PS-I.14 | Model of the Elliptec Resonant Piezoelectric Motor |
|       | C. Kreischer, T.S. Kulig and M. Schlüter |
|       | TU Dortmund University, Germany |
|       | HRW University of Applied Sciences, Germany |</p>
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<tr>
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SMC Co, Ltd, Japan |
| PS-I.16 | A compact linear ultrasonic motor using H-Shape sandwiched stator     | C. Li, J. Zhang, H. Yao and S. Bao                                      | Shanghai University, China                        |
| PS-I.18 | Comparison of different topologies for a magnetically levitated planar actuator | J.M.M. Rovers, J.W. Jansen, J.C. Compter and E. Lomonova                | Eindhoven University of Technology, The Netherlands |
| PS-I.19 | A Planar Linear Generator Mounted in Shoes for Energy Harvesting     | C.F. Wang                                                                | China                                             |
| PS-I.20 | Performance of Magnetic Actuator Capable of Linear Movement in a Pipe | Y.H. Yaguchi                                                             | Tohoku Gakuin University, Japan                   |
| PS-I.21 | Oscillatory Actuator for Optical Scanner Using Tortion Spring Made of Silicon Rubber | T. Horio, T. Mizuno, Y. Terameae and K. Oyaizu                          | Shinshu University, Japan                         |
| PS-I.22 | An innovant linear pulsatile pump for heart assistance circulatory    | J.F. Llibre, N. Martinez, P. Leprince and B. Nogarede                    | Laboratory LAPLACE - Université de Toulouse, France  
Institut de cardiologie APHP Pitie-Salpetriere, France |
| PS-I.23 | Proposal of Two-Dimensional Linear Oscillatory Actuator for Self-Propelled Mechanism | Y. Uematsu and S. Torii                                                 | Tokyo City University, Japan                       |
## Linear Tubular Motors (LTM)

**Session type**  Oral  
**Date**  Monday, Jul. 4, 14:00 - 15:20  
**Location**  Blauwe Zaal  
**Chair(s)**  D.H. Kang

**LTM.1**  
**Cogging Force Analysis of a Slotless Tubular Linear Motor with Finite Stator**  
(Page 102)  
P.A. Commins, J. Moscrop and C. Cook  
*University of Wollongong, Australia*

**LTM.2**  
**Design of a Single-phase, Flux-switching, Tubular Permanent Magnet Machine for Refrigerator Applications**  
(Page 104)  
J. Wang  
*University of Sheffield, United Kingdom*

**LTM.3**  
**Overview of a Special Developed Linear Drive Concept with integrated Hydraulic Cylinder for Clutch-Brake-Combinations in Eccentric Presses**  
(Page 106)  
S. Gruber, C. Junge, R. Wegener and S. Soter  
*University of Wuppertal, Germany*  
*Ortlinghaus-Werke GmbH, Germany*

**LTM.4**  
**Direct-drive electromagnetic active suspension system with integrated eddy current damping for automotive application**  
(Page 108)  
B.L.J. Gysen, J.J.H. Paulides and E.A. Lomonova  
*Eindhoven University of Technology, The Netherlands*

## Actuators and Special Machines I (ASM-I)

**Session type**  Oral  
**Date**  Monday, Jul. 4, 14:00 - 15:20  
**Location**  Auditorium 4  
**Chair(s)**  Y. Perriard

**ASM-I.1**  
**Design study on magnetic springs with low resonance frequency**  
(Page 110)  
J.L.G. Janssen, J.J.H. Paulides, E.A. Lomonova, B. Delinchant and J.P. Yonnet  
*Eindhoven University of Technology, The Netherlands*  
*Laboratoire d'Electrotechnique de Grenoble (LEG), Domaine Universitaire, France*  
*Laboratoire de Génie Electrique de Grenoble, France*

**ASM-I.2**  
**Experimental validation for the drive design of a linear driven total artificial heart**  
(Page 112)  
*Institute of Electrical Machines / RWTH Aachen University, Germany*  
*Chair of Applied Medical Engineering / RWTH Aachen University, Germany*
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<tbody>
<tr>
<td>ASM-I.3</td>
<td>Examination of the Permanent Magnet Placement for Side Wall Type Superconductive Magnetic Levitation Device Realization</td>
<td>Y. Tachikawa and S. Torii</td>
<td>Tokyo City University, Japan</td>
</tr>
<tr>
<td>ASM-I.4</td>
<td>Genetic Algorithm Design of EDS Hovering Coil</td>
<td>S. Coene, J. Verveckken, W. Deprez and J. Driesen</td>
<td>Kuleuven, Belgium</td>
</tr>
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</table>

### Linear Induction Motors II (LIM-II)

**Session type**: Oral  
**Date**: Monday, Jul. 4, 15:50 - 17:30  
**Location**: Blauwe Zaal  
**Chair(s)**: J. Shen

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<tr>
<td>LIM-II.1</td>
<td>Vector Control for Linear Induction Machine Considering End Effects</td>
<td>M. Hajji, M.A. Nasr Khoidja and B. Ben Salah</td>
<td>ENIT, Tunisia</td>
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<td>ESSTHS, Tunisia</td>
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<tr>
<td>LIM-II.3</td>
<td>Over-Phase Control of Inverter Multiphase AC Linear Drives</td>
<td>A.V. Brazhnikov and I.R. Belozyorov</td>
<td>Siberian Federal University, Russian Federation</td>
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<tr>
<td>LIM-II.4</td>
<td>The measurement of the dynamic characteristics of LIM with experimen-</td>
<td>T. Morizane</td>
<td>Osaka Institute of Technology, Japan</td>
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<tr>
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<td>tal equipment using disc-shaped secondary side</td>
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<td>LIM-II.5</td>
<td>Low cost sector machine to emulate a linear induction machine</td>
<td>A.M. Tavares, A.F. Flores and Y.B. Blauth</td>
<td>Brazil</td>
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<td></td>
<td></td>
<td></td>
<td>Federal University of Rio Grande do Sul, Brazil</td>
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Modeling (MOD)

Session type  Oral
Date         Monday, Jul. 4, 15:50 - 17:30
Location     Auditorium 4
Chair(s)     P. Brochet

MOD.1  Forces Analysis in A Large Linear Synchronous Motor
(Page 128)  M. Mirzaei, A. Binder, B. Funieru, B. Zamzow and R. Waidhauser
             Darmstadt University of Technology, Germany
             MAX BOEGL, Germany

MOD.2  Analytical Modeling of Planar and Tubular Linear PM Machines with
        Surface Mounted Magnets and Semi-Closed Slots
(Page 130)  Y. Amara and G. Barakat
             GREAH (University of Le Havre), France

MOD.3  Analytical Computation of Asymmetrical Magnetic Circuits of Surface-
        Mounted Permanent-Magnet Linear Motors with Distributed and
        Concentrated Winding
(Page 132)  J. Jimenez, J.A. Malumbres Ruiz and M. Martinez-Iturralde
             CEIT, Spain
             TECNUN University, Spain

MOD.4  Real-time 3D Thermal Modeling of a Magnetically Levitated Planar
        Actuator
             The Netherlands
             Eindhoven University of Technology, The Netherlands
             Ecole Polytechnique Federale de Lausanne, Switzerland

MOD.5  Coulombian Model for the 3D Analytical Calculation of the Torque
        Exerted on Cuboidal Permanent Magnets with Arbitrary Oriented
        Magnetizations
             Laboratoire de Génie Electrique de Grenoble, France
             Umm Al-Qura University,, Saudi Arabia
             Laboratoire dElectrotechnique de Constantine, Université de Constantine,,
             Algeria

Banquet

Monday, July 4. Busses leave at 17:45 in front of the symposium site.
Oral & Poster sessions / Tuesday July 5

Magnetic Levitation & Transport II (MLT-II)

Session type: Oral  
Date: Tuesday, Jul. 5, 9:40 - 11:20  
Location: Blauwe Zaal  
Chair(s): S. Ohasi

MLT-II.1  
Combination of a Contactless Power Supply with an Electromagnetic Guiding for a Vertical Transportation System  
(Page 138)  
R. Appunn  
Institute of Electrical Machines, Germany

MLT-II.2  
Development of Magnetically Levitated LCD Glass Conveyor  
(Page 140)  
Korea Institute of Machinery and Materials, South-Korea

MLT-II.3  
A New Active Position Sensing Method For Ropeless Linear Motor Elevators  
(Page 142)  
C. Gurbuz and A. Onat  
Turkey  
Sabanci University, Turkey

MLT-II.4  
Laser interferometer measurements on a six-Degree-of-Freedom controlled moving-magnet planar actuator  
(Page 144)  
Eindhoven University of Technology, The Netherlands

MLT-II.5  
2 DOF Suspension System by Variable Flux Control Using a Rotary Disk Magnet  
(Page 146)  
K. Oka  
Kochi University of Technology, Japan

Linear Motors (LMO)

Session type: Oral  
Date: Tuesday, Jul. 5, 9:40 - 11:20  
Location: Auditorium 4  
Chair(s): A. Cassat

LMO.1  
Research and Development of Linear Motor Technology in China During Recent Decade  
(Page 148)  
Y. Ye and Q.F. Lu  
Zhejiang university, China

LMO.2  
A Novel High Force Density Linear Electromagnetic Actuator  
(Page 150)  
J. Wang  
University of Sheffield, United Kingdom
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<td>100G Linear Motor and its Precision Positioning</td>
<td>K. Sato</td>
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<td></td>
<td>Tokyo Institute of Technology, Japan</td>
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*(Page 210)*  
*Korea Institute of Machinery and Materials, South-Korea*  
*Chungnam National University, South-Korea*

### PS-II.28
**Design and Analytical Representation of Linear Induction Motor for Urban Transportation**  
*(Page 212)*  
S.E. Abdollahi and M. Mirzaei  
*University of Tehran, Iran*  
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### Control of Linear Synchronous Motors (CSM)

**Session type**: Oral  
**Date**: Tuesday, Jul. 5, 14:00 - 15:20  
**Location**: Blauwe Zaal  
**Chair(s)**: W.R. Canders

#### CSM.1
**Controls of Long Stator Linear Motors - Application to Multi Mobile System**  
*(Page 214)*  
A. Cassat, B. Kawkabani and Y. Perriard  
*EPFL-STI-IMT-LAI, Switzerland*  
*EPFL-STI-IEL-LME, Switzerland*

#### CSM.2
**Robust control of a direct-drive electromagnetic active suspension system**  
*(Page 216)*  
T.P.J. Sande, van der, B.L.J. Gysen, I.J.M. Besselink, J.J.H. Paulides, E.A. Lomonova and N. Nijmeijer  
*Eindhoven University of Technology, The Netherlands*

#### CSM.3
**Mechanically linked, g-force free linear drives test bench**  
*(Page 218)*  
M. Rehm and H. Schlegel  
*TU Chemnitz, Germany*

#### CSM.4
**Permanent magnet linear motor driven by an industrial frequency converter using standard torque controller of permanent magnet synchronous motors**  
*(Page 220)*  
M. Huikuri, J. Jokinen, J. Niemelä and J. Pyrhönen  
*Lappeenranta University of Technology, Finland*
Linear Tranverse Flux machines (LTF)

Session type      Oral
Date              Tuesday, Jul. 5, 14:00 - 15:20
Location          Auditorium 4
Chair(s)          J.B. Wang

LTF.1
The design of flux concentrated type transverse flux cylindrical PMLSM for high thrust
(Page 222)
J.S. Shin, T. Koseki and H.J. Kim
Japan
The University of Tokyo, Japan
Sung-Jin Royal Motion Co. Ltd, South-Korea

LTF.2
Analysis of a Transverse-Flux LIM with Magnetically Suspended Reaction Plate
(Page 224)
J.F. Gieras, Z. Gientkowski, J. Mews and P. Splawski
University of Technology and Life Sciences, Poland

LTF.3
Design of a Novel Tubular Transverse Flux Reluctance Machine
(Page 226)
D.C. Popa, V.I. Gliga, V.I. Iancu and L. Szabo
Technical University of Cluj-Napoca, Romania

LTF.4
Investigation of a novel transverse-flux linear oscillating actuator with moving magnet
(Page 228)
Q.F. Lu, M.H. Yu, Y. Ye and Y.T. Fang
Zhejiang University, China

Linear Switched Reluctance and Stepper Machines (LSS)

Session type      Oral
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Location          Blauwe Zaal
Chair(s)          J. Zentner

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Direct Driven Conveyor
(Page 230)
J.-P. Jastrzembski and B. Ponick
Universität Hannover, Germany

LSS.2
Spherically Symmetric Characteristics of a Hexahedron and Octahedron Based Spherical Stepping Motor
(Page 232)
T. Yano
National Institute of Advanced Industrial Science and Technology, Japan

LSS.3
Study of Design Parameters Influence on Static and Dynamic Behaviors of Linear Step Actuators
(Page 234)
EAL El Amraoui, F. Gillon, P. Brochet and M. Benrejeb
Ecole Nationale d'Ingénieurs de Tunis, Tunisia
Université Lille Nord de France, France
LSS.4  Linearization of the reluctance force actuator based on the parametric hysteresis inverse and a 2D spline

A Katalenic, J. Boeij, de, C.M.M. Lierop, van and P.P.J. Bosch, van den
Eindhoven University of Technology, The Netherlands
TMC Mechatronics, The Netherlands

Actuators and Special Machines II (ASM-II)

Session type  Oral
Date  Tuesday, Jul. 5, 15:50 - 17:10
Location  Auditorium 4
Chair(s)  J.-P. Yonnet

ASM-II.1  Vibrating linear proportional actuators for shaver and hair-clipper applications

G. Loussert, M Delbaere and R. Arlot
Moving Magnet Technologies, France

ASM-II.2  Springless Resonant Linear PM Oscillomotors?

S.C. Agarlita, I. Boldea and L. N. Tutelea
Politehnica University of Timisoara, Romania

ASM-II.3  Contact-free Micro Displacement Characteristics of Diamagnetic Graphite Plate above Two Dimensional Halbach PM Array

H. Suzuki
Fukushima National College of Technology, Japan

ASM-II.4  Linear Hybrid Actuator for Active Force Cancellation

D.A.H. Laro, J. Dams and J. Eijk, van
MI-Partners BV, The Netherlands
Magnetic Innovations, The Netherlands
MICE BV, The Netherlands

Closing session

Tuesday, July 5, 17:10 - 17:30
Presentation guidelines

Oral presentation

A regular oral presentation is 20 minutes per speaker including discussion. This time limit should be strictly followed. The organization will provide a notebook, LCD projector, screen and microphone in each oral session room. Presentations should be prepared in MS-Powerpoint format in English.

Please bring your powerpoint presentation on USB stick or CD and upload it to the supplied notebook before the sessions starts. Each presenter is also asked to submit their short autobiography to the session chair before the beginning of the session.

Poster presentation

The maximum size of the posters is A0 portrait (85 x 120cm w x h). An author should set up the poster at least 15 minutes before the session starts, and MUST be present at his/her poster during the session. The conference provides a small sign designating the paper number to be posted on each board. Mounting materials will be provided.
Post symposium publication

After the conference, authors will be invited to resubmit their work to the IEEJ Transactions of Industry Applications or the IFAC Mechatronics Journal.

IEEJ Transactions of Industry Applications

The Transactions of the Institute of Electric Engineers of Japan (IEEJ) are an important source of information delivered monthly to the society members directly. They are a public forum for communicating expeditiously and extensively to the members, the results of new research, development and applications that contribute to the scientific research and technology in electric engineering.

IFAC Mechatronics Journal

A Journal of IFAC, the International Federation of Automatic Control Mechatronics is the synergistic combination of precision mechanical engineering, electronic control and systems thinking in the design of products and manufacturing processes. It relates to the design of systems, devices and products aimed at achieving an optimal balance between basic mechanical structure and its overall control.

The purpose of this journal is to provide rapid publication of topical papers featuring practical developments in mechatronics. It will cover a wide range of application areas including consumer product design, instrumentation, manufacturing methods, computer integration and process and device control, and will attract a readership from across the industrial and academic research spectrum. Particular importance will be attached to aspects of innovation in mechatronics design philosophy which illustrate the benefits obtainable by an a priori integration of functionality with embedded microprocessor control. A major item will be the design of machines, devices and systems possessing a degree of computer based intelligence. The journal seeks to publish research progress in this field with an emphasis on the applied rather than the theoretical. It will also serve the dual role of bringing greater recognition to this important area of engineering.