



MAGLEV 2024

MALMÖ / COPENHAGEN
SEPTEMBER 18 – 22
PROGRAM

The world leading
conference on
magnetically
levitated systems
and linear drives



The International Maglev Board

CLARION MALMÖ LIVE

Top floor



Main floor



- Plenum Malmö Live 1 & 2
- Track A (Room 4)
- Track B (Room 5)
- Track C (Room 6)



MAGLEV 2024

WE WOULD LIKE TO EXTEND A HEARTY WELCOME to all of you for participating the 26th International Conference on Magnetically Levitated Systems and Linear Drives (Maglev 2024). The first Maglev Conference was held in Boston, USA, in 1977 and has been held every couple of years recently. This year's Maglev 2024 is the 26th conference and held in Malmö, Sweden. This is the first Maglev Conference in Scandinavia. After the Maglev Conference in St. Petersburg, Russia in 2018, the next conference was planned to be held in Changsha, China in 2020, but was postponed due to the still unresolved COVID-19 pandemic, and the conference was eventually held in 2022 in a hybrid format in Changsha, China and online. This 2024 conference is the first time in six years that the conference is held in a fully face-to-face format.

The Maglev Conference focuses on maglev train systems and covers a wide range of linear motor and magnetic levitation technologies, as well as their applied systems, element technologies, and related technologies. The conference has contributed to the progress of these technologies, the realization of practical systems, and the promotion of academic and technological exchange. We hope that this conference will further promote these efforts and contribute to the strengthening of international cooperation and the deepening of friendship among participants and others.

Hiroyuki Ohsaki

Maglev 2024 International Steering Committee Chair

Professor, University of Tokyo

Steering Committee for Maglev 2024

Assoc. Prof. Henrik Ny – *Blekinge Institute of Technology*

Prof. Dr. Johannes Kluehspies – *The International Maglev Board*

Dr. Roland Kircher – *The International Maglev Board*

Mr. Martin Prieto Beaulieu – *Blekinge Institute of Technology*

MAGLEV 2024

PROGRAM

SEPTEMBER 18-22, 2024

Clarion Malmö Live - Room Live 1+2

Chair: Assoc. Prof. Henrik Ny

Co-Chair: Prof. Dr. Hiroyuki Ohsaki

Prof. Dr. Johannes Kluehspies

Mr. Martin Prieto Beaulieu

Day 1 - Wednesday 18 September

Start	End	Duration	Activity
12:00	19:00	7:00:00	Registration at the hotel
19:00	22:00	3:00:00	Social gathering at "Terassen"

Day 2 - Thursday 19 September

08:00	09:00	1:00:00	Registration
09:00	09:10	0:10:00	Inauguration Speech 1
09:10	09:15	0:05:00	Inauguration Speech 2
09:15	09:20	0:05:00	Inauguration Speech 3
09:20	09:45	0:25:00	Keynote Speech 1
09:45	10:10	0:25:00	Keynote Speech 2
10:10	10:40	0:30:00	Coffee Break
10:40	11:00	0:20:00	Parallel Sessions 1 - Oral 1
11:00	11:20	0:20:00	Parallel Sessions 1 - Oral 2
11:20	11:40	0:20:00	Parallel Sessions 1 - Oral 3
11:40	12:00	0:20:00	Parallel Sessions 1 - Oral 4
12:00	13:30	1:30:00	Lunch & Talk
13:30	13:55	0:25:00	Keynote Speech 3
13:55	14:20	0:25:00	Keynote Speech 4
14:20	14:30	0:10:00	Short Break
14:30	14:50	0:20:00	Parallel Sessions 2 - Oral 1
14:50	15:10	0:20:00	Parallel Sessions 2 - Oral 2
15:10	15:30	0:20:00	Parallel Sessions 2 - Oral 3
15:30	16:00	0:30:00	Coffee Break
16:00	16:20	0:20:00	Parallel Sessions 3 - Oral 1
16:20	16:40	0:20:00	Parallel Sessions 3 - Oral 2
16:40	17:00	0:20:00	Parallel Sessions 3 - Oral 3
17:00	18:30	1:30:00	Poster Session 1 with refreshments
18:30	20:00	1:30:00	Free Time
20:00	23:00	3:00:00	Gala dinner and entertainment

Assoc. Prof. Dr. Henrik Ny

Prof. Dr. Hiroyuki Ohsaki

Prof. Dr. Johannes Kluehspies

A Strategic sustainability comparison model for countries considering investments in high speed land transport: The Swedish Case revisited by Prof. Dr. Karl-Henrik Robert and Assoc. Prof. Dr. Henrik Ny

Chuo Shinkansen with SCMaglev, the dawn of a new era of transportation by Mr. Shigeki Miyamoto

Track A - Room 4 Track B - Room 5 Track C - Room 6

Track A - Room 4 Track B - Room 5 Track C - Room 6

Track A - Room 4 Track B - Room 5 Track C - Room 6

Meeting for the The International Steering Committee (ISC) for Maglev Conferences

Day 3 - Friday 20 September

Start	End	Duration	Activity
09:00	09:25	0:25:00	Keynote Speech 5 Superconducting Magnetic Levitation (SML): a new generation of urban MagLev vehicles by Prof. Dr. Richard Stephan
09:25	09:50	0:25:00	Keynote Speech 6 50 Years of Transrapid Product and Company by Dr. Friedrich Loeser
09:50	10:00	0:10:00	Short Break
			Track A - Room 4 Track A - Room 5 Track B+A - Room 6
10:00	10:20	0:20:00	Parallel Sessions 4 - Oral 1
10:20	10:40	0:20:00	Parallel Sessions 4 - Oral 2
10:40	11:10	0:30:00	Coffee Break
			Track A - Room 4 Track A - Room 5 Track A - Room 6
11:10	11:30	0:20:00	Parallel Sessions 5 - Oral 1
11:30	11:50	0:20:00	Parallel Sessions 5 - Oral 2
11:50	12:10	0:20:00	Parallel Sessions 5 - Oral 3
12:10	13:40	1:30:00	Lunch & Talk
13:40	14:00	0:20:00	Photo Session, all participants together
14:00	15:00	1:00:00	Historical Session History development of Maglev by Kenji Eiler
15:00	15:25	00:25:00	Keynote Speech 7 The Current and Future Possibilities of Maglev Systems for Developing Contexts by M.Sc. Judith Oginga Martins / UN-Habitat
15:25	16:25	1:00:00	Poster Session 2 + Coffee Break
			Track A - Room 4 Track A - Room 5 Track A - Room 6
16:25	16:45	00:20:00	Parallel Sessions 6 - Oral 1
16:45	17:05	00:20:00	Parallel Sessions 6 - Oral 2
17:05	17:25	01:00:00	Parallel Sessions 6 - Oral 3
17:25	17:30	00:05:00	Short Break
17:30	17:40	00:10:00	Conclusions
17:40	18:00	00:20:00	Closing ceremony, awards, announcements
18:00	19:00	01:00:00	Refreshments + networking in the lobby
19:00	21:00	02:00:00	Post-Conference Party

Day 4 - Saturday 21 September

10:00	16:00	6:00:00	Scientific Excursion
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Day 5 - Sunday 22 September - TRAVEL DAY

TRACK A

TOPIC - MAGLEV TECHNOLOGICAL RESEARCH AND DEVELOPMENT

Thursday 2024-09-19

A1: Magnetic Levitation and Guidance

Malmö Live Room 4

Chair: Dr. Michael Witt

Time	Title	Presenter
10:40 - 11:00	A 1 Improvement of MPC Strategies for the Magnetic Levitation System	Anrim Kargl
11:00 - 11:20	A 1 Model Predictive Path-Following Control for the Lifting and Lowering of Maglev Vehicles	Mario Hermle
11:20 - 11:40	A 1 The Maglev Dynamic Simulator for Superconducting Maglev	Daisuke Iio
11:40 - 12:00	A 1 Effect of the Hysteresis Switching in Semi-Active Dampers for the Superconducting Maglev system	Shunsuke Ohashi
14:30 - 14:50	A 1 Dynamic Performance Simulation Analysis of 600 km/h Maglev Train Considering Skirt Board Aerodynamic Loads	Yang Feng
14:50 - 15:10	A 1 Research on damping characteristics of superconducting electric suspension system and active vibration reduction of damping coil	Xiaofang Ning
15:10 - 15:30	A 1 Magnetically Suspended linear actuator using E-shaped core for linear slider	Koichi Oka
16:00 - 16:20	A 1 Advancements in V-Shaped High-Temperature Superconducting Maglev System Design for Passenger Transportation Application	Gino D'ovidio
16:20 - 16:40	A 1 Software Suite for Simulation of MAGLEV Dynamics	Florian Dignath
16:40 - 17:00	A 1 Track irregularity and its impact on the vibration of high-speed electromagnetic suspension (EMS) vehicle systems	Shan Wang

Friday 2024-09-20

A1: Magnetic Levitation and Guidance A2: Guideway and Infrastructure

Malmö Live Room 4

Chair: Dr. Michael Witt

Time	Title	Presenter
10:00 - 10:20	A 1 Comparison of Permanent Magnet Configurations of an Electrodynamic Suspension Integrated in a Small-Scale Test Vehicle	Louis Beauloye
10:20 - 10:40	A 1 Impact of track geometric irregularities on the electromagnetic-dynamic coupled vibration characteristics of superconducting electrodynamic suspension train	Haitao Li
11:10 - 11:30	A1 Optimization of Electromagnetic Force in Double-sided Flux-concentrating Surface-mounted Permanent Magnet Linear Motor	Ying Wang
11:30 - 11:50	A1 Study on the Large Model of Maglev Vehicle with Multi-Electromagnetic Forces and Distribution Loads	Wen Ji
11:50 - 12:10	A 2 Overview of Automated Visual Inspection Method for SCMaglev	Ryuki Yoshida
16:25 - 16:45	A 2 Joints between modules of a magnetic levitation vehicle in a partial vacuum	Vincent Bourquin
16:45 - 17:05	A 2 Dynamic WPT system used in Yamanashi Maglev Line	Shogo Hiramatsu
17:05 - 17:25	A 2 Development of the guideway sidewall for the Superconducting Maglev	Takahiro Nishida

TRACK A

TOPIC - MAGLEV TECHNOLOGICAL RESEARCH AND DEVELOPMENT

Friday 2024-09-20

A2: Guideway and Infrastructure A3: Linear Motors A5: Reliability, Safety and Operational Control

Malmö Live Room 5

Chair: Prof. Dr. Rune Wigblad

Time	Title	Presenter
10:00 - 10:20	A 2 Analytical study on long-term deflection for designing ultra-high-speed SCMaglev rail bridges	Junichiro Kubo
10:20 - 10:40	A 2 Nonlinear Suspension Electromagnetic Force Model and Vehicle Dynamics Simulation Analysis of EMS High-speed Maglev Transportation	Feng He
11:10 - 11:30	A 3 Potential benefits of linear motor based traction boosters for reducing track construction costs in conventional railways	William Liu
11:30 - 11:50	A 3 Suspension Control of Variable-Airgap Doubly-Fed Linear Motor for High-speed Maglev Application	Yeqin Wang
11:50 - 12:10	A 3 Sensorless Control of High-Speed Maglev with High-frequency Signal Injection Considering Multi-order harmonics Disturbances	Wenbai Zhang
16:25 - 16:45	A 5 Integrated Classification of Partial Discharge Signals for Detecting Insulation Failures in Superconducting Maglev Ground Coils	Satoru Ota
16:45 - 17:05	A 5 Designing of the lithium battery charging controller for the high-speed maglev onboard power grid system	Dainan Zhao
17:05 - 17:25	A 5 Adaptive nonlinear control for maglev levitation system with flexible track via safe deep reinforcement learning approach	Su-Mei Wang

Friday 2024-09-20

A6: Magnetic Bearings and New Levitating Device Applications

Malmö Live Room 6

Chair: Prof. Dr. Johannes Kluehspies

Time	Title	Presenter
11:10 - 11:30	A 6 Conceptual design of Korean Hyperloop (Hypertube)	Chang-Young Lee
11:30 - 11:50	A 6 Design and fabrication of an axial self-bearing motor using self-stabilized AC magnetic suspension	Takeshi Mizuno
11:50 - 12:10	A 6 Comparison of iron and Joule losses in slotted and slotless homopolar hybrid active magnetic bearing considering unbalance	Guillaume Colinet
16:25 - 16:45	A 6 Application and progress of magnetic levitation technology in ground-based microgravity simulation	Da Lyu
16:45 - 17:05	A 6 Modeling and analysis of electromechanical active control permanent magnet suspension	Wenyue Zhang
17:05 - 17:25		

TRACK B

TOPIC - MAGLEV PROJECTS AND APPLICATION OF SUPERCONDUCTIVITY

Thursday 2024-09-19

Malmö Live Room 5

Chair: Prof. Dr. Johannes Kluehspies

Time	Title	Presenter
10:40 - 11:00	B 1 The Development Status and Prospect of HTS Pinning Maglev in SWJTU	Zigang Deng
11:00 - 11:20	B 1 Identifying and managing compromises for the engineering design of a new underground transport system in partial vacuum	Vincent Bourquin
11:20 - 11:40	B 1 Design Overview and Key Findings of the TUM Hyperloop Demonstrator	Domenik Radeck
11:40 - 12:00	B 1 Development of the Superconducting Maglev Vehicle for the Chuo Shinkansen	Soshi Kawakami
14:30 - 14:50	B 1 Development of high temperature superconducting magnets for SCMaglev	Ryosuke Aoyagi
14:50 - 15:10	B 1 Research on Track Irregularities of EMS High-speed Maglev Traffic System and its Dynamic Effects	Chunfa Zhao
15:10 - 15:30	B 1 Technical characteristics and engineering test status of embedded medium and low speed maglev system	Guobin Lin
16:00 - 16:20	B 1 The Potential of Dynamic Skip-stop to Address the Coverage Paradox in Urban Transport through Superconducting MagLev Rail Technology	Chris Davis
16:20 - 16:40	B 1 Technological readiness and operational concepts in specific use cases of Maglev derived systems to improve railway performance	Benedikt Scheier
16:40 - 17:00		

Friday 2024-09-20

Malmö Live Room 6

Chair: Prof. Dr. Johannes Kluehspies

Time	Title	Presenter
10:00 - 10:20	B 1 Applications of Maglev Derived Systems into European interoperable railway network: compatibility challenges, required interfaces, potential benefits	Stefano Ricci
10:20 - 10:40	B 1 Application Potential of Maglev Technology in Transport Systems	Roland Kircher

TRACK C

TOPIC - SUSTAINABILITY ASSESSMENTS AND SOCIETAL IMPACTS OF MAGLEV AND COMPETING TECHNOLOGIES

Thursday 2024-09-19

Malmö Live Room 6

Chair: Dr. Sven Borén

Time	Title	Presenter
10:40 - 11:00	C1 Proposal of reliability evaluation testing method for ground coils with electromagnets	Minoru Nakashima
11:00 - 11:20	C1 Applicability Analysis of Maglev Train for Different Passenger Demand	Hongliang Pan
11:20 - 11:40	C1 Some binocular views onto old and new maglev systems	Michael Dittmer
11:40 - 12:00	C1 SUSTAINABILITY OF MAGLEV SYSTEMS: Analysis and Modelling Performances	Milan Janić
14:30 - 14:50	C1 Maglev trains are enabling regional enlargement with socio-economic effects	Rune Wigblad
14:50 - 15:10	C1 Anthropotechnological aspects in defining and developing disruptive transportation technologies for implantation in Switzerland	Vincent Bourquin
15:10 - 15:30	C1 Applying new tools to evaluate the impacts in matter of performance, sustainability and affordability of new technological solutions for public transportation	Vincent Bourquin
16:00 - 16:20	C1 On the Suitability of Urban Maglev Transport Systems: The Perceptions of Transportation Experts	Roland Kircher
16:20 - 16:40	C1 Success Criteria and Related Design Characteristics for High-Speed Maglev Rail Lines	Owen Kelley
16:40 - 17:00	C1 Case for Maglev in the Netherlands connecting airports and stations	Kees Van Welsenis

OVERVIEW POSTER PRESENTATION

Thursday 17.00–18.30 and Friday 16.25–17.25

Malmö Live Main Hall

Chair: Assoc. Prof. Henrik Ny

Title	Presenter
Analysis of Vibration Test Standards and Measured Data for Maglev Vehicle Equipment	Chengzhi Qian
Mathematical Analysis of Higher Time and Space Harmonic Oscillations of a Linear Air-cored Synchronous Motor	Tim Hofmann
A Study of Structural Safety of Korean Hyperloop Carbody Structure	Jungseok Kim
A Linear Motor with Halbach Structure for Superconducting Electrodynamic Suspension System	Zhiming Liao
Study on the Section Changeover Method of the Long-Stator Linear Synchronous Motors Using Bi-directional Thyristors	Jungmin Jho
Research on the Magnetic Track Relationship and Optimization of Guidance Ability of Fast Maglev Trains	Wenyue Zhang
Scaling behavior of levitation and dragging force in electrodynamic suspension systems	Nan Shao
Modeling and research on thermal characteristics of magnetic pole for high-speed maglev train	Weitao Han
Research on Evacuation Measures and Running Capabilities of Urban Maglev Systems	Ying Yang
Defining an Optimal Urban Maglev for Future-Oriented Cities	Vincenzo Delle Site
Study on the Concentrated Forces Simplification of Maglev Distribution Loads	Wen Ji
Evaluation of Hyperloop Vehicle Dynamics based on Full-Scale Demonstrator Data	Oliver Kleikemper
Current controller design for high-speed maglev long stator linear synchronous motor with low carrier ratios based on a discrete-time complex-vector model	Yuanzhe Zhao
Parameter Optimization Study of Vibration Suppression by Fixed-point Theory for Superconducting Magnetic Levitation System with LCR Parallel Electromagnetic Shunt Damper	Koyo Kimura
Data-Driven Prediction of Nonlinear Resonance Occurrence in Superconducting Magnetic Levitation System	Taiga Miyahara
Effects of Potential Curves on Magnet Capturing Performance in Superconducting Magnetic Levitation Systems	Shinji Eto
COVID19 and the MagLev-Cobra Project	Richard M Stephan
Maglev Systems for Control Education	Hans Alvar Engmark
Some binocular views onto old and new maglev systems	Michael Dittmer
Sensorless Control of High-Speed Maglev with High-Frequency Signal Injection Considering Multi-Order Harmonics Disturbances	Wenyue Zhang
Using DFAM to optimise linear motors performances and improve their ability to adapt to their environment.	Armand Lang
History development of Maglev	Kenji Eiler



