Nordic Seminar on
Railway Technology
2024 | Stockholm, Sweden

22nd Nordic Seminar on Railway Technology
18-19 June 2024
at KTH Royal Institute of Technology

Preliminary programme

June 17, 2024		
15:00-18:00	**Registration**	**D-Ljusgård**

June 18, 2024					
9:00	**Registration**				**D-Ljusgård**
10:00	**Opening remarks** *Prof. Sebastian Stichel*, Director of KTH Railway Group *Prof. Annika Borgenstam,* KTH's Vice President for Research and recorded note from the Director General of Trafikverket				D1
10:30	**Plenary session 1:** Vision 2050 for the Swedish Railways *Gustaf Engstrand,* Tågföretagen and *Linda Thulin*, Trafikverket				D1
11:00	**Plenary session 2:** Greening Technologies, *Peter Mellberg*, Alstom				D1
11:30	**Lunch**				**Syster O Bror**
Room	**D32**	**D33**	**D34**	**D35**	**D42**
Session 1	**Infrastructure 1**	**Wheel/Rail Interaction 1**	**Laboratory Development & Education**	**Rolling Stock**	**Maintenance 1**
12:50	64: Deterioration Factors for Feasible Rail Track Solutions	83: Influence of track parameters on curve squeal	123: Making better use of railway research	76: Load collective design for fatigue analysis of railway vehicle components	94: Wheel Flat Detection and Length Estimation using Data from Multiple Wheel Impact Load Detectors

13:10	12: Global level assessments of track geometry quality along the Western Main Line in Sweden	118: Recent development of the multibody dynamics on the efficient modelling of train-track interaction	120: CHARMEC's novel brake roller test rig	13: An abnormal vibration phenomenon and the control strategies of vehicle-mounted motor cooling system in a high-speed train	98: Condition Monitoring of Railway Catenary System
13:30	41: Train Based Automated Inspection for Railway Track Components	60: The effect of freight wagon bogie on track loads – verification process of freight wagon models	3: The KTH Roller Rig	22: Life extension of a cracked tram carbody	18: Optimising wheel and rail economy by non-uniform rail grinding
13:50	89: Predicting Climatic Failures in Railway Infrastructure utilizing Machine Learning	42: Top-of-rail lubricants for the wheel-rail contact	106: Systems engineering applied in rail infrastructure – a systematic literature search	25: On the predictive capabilities of Hot-Box monitoring systems	127: Simulation-Based Assessment of Railhead Repair Welding Process Parameters
14:10	70: Economies of scale and scope in LCC for Switches & Crossings	72: Rail side wear of switch tip area and its effect on derailment risk	20: Understanding wheel damage during railway shoe-braking: insights from innovative small-scale testing	71: Long term on-track test with EPS wheel profile	57: Advancements in Railway Ballast Inspection Methodologies and Technologies: A Comprehensive Literature Review
14:30	**Fika**				**D-Ljusgård**
Room	**D32**	**D33**	**D34**	**D35**	**D42**
Session 2	**Infrastructure 2**	**Wheel/Rail Interaction 2**	**Signaling and Communication**	**Energy, Environment, and Climate 1**	**Maintenance 2**
15:00	68: Determination of the moment of inertia for different types of superstructures for track stability considerations	93: Comparison of optimisation algorithms for wheel profile design for a high-speed passenger train	8: Analyzing challenges and strategies in integrating ETCS with existing signaling systems in rail transport.	30: Cost modelling-based railway decarbonization schemes applicability analysis	23: A parallel high-capacity and fast calculation method for assessing track quality index in infrastructure maintenance

15:20	15: The dissertation about railway track drainage – What was learnt?	63: Field Testing of Laser Clad Rails	73: SDN-Based Telecommunication Infrastructure and Security for Railway Emergency Messages	40: Dynamic analysis of Swedish steel-post wood-panel noise barrier under aerodynamic load from high-speed train	110: A method for identifying and locating rail corrugation based on multi-source detection data feature fusion
15:40	35: Influence of particle arrangement and model dimensions on railway simulations in discrete element method	11: Optimisation of crossing panel design for reduced environmental footprint (WR contact/Environment)	2: Track circuit model validated against test-track data to explore impact of rail contamination on train detection	75: Survey on problem formulation for railway energy optimisation including OESS	27: RCF crack propagation predictions
16:00	**Leg stretcher**				
16:10	125: Assessing Finnish track health through in-service train-based track condition monitoring	54: A more data driven approach to friction management, using a new railhead tribometer	39: Train Localization During GNSS outages: Exploiting Track Geometry Constraints and IMU Sensor Data	59: Using sensor data to assist decision-making for energy saving and capacity increasing	29: Damage Detection for Aging Railway Bridges: A Monitoring and Machine Learning Approach
16:30	28: A camera shake correction method for optical measurements in railways based on IMU sensors	115: A Machine Learning Approach for Rail Friction Estimation	96: On the Plausibility of using Existing Cellular Networks as Bearers of Train Signalling	116: Energy efficient operations of Railway Switch heaters	103: Improved rules and regulations of damaged wheels
16:50	104: A framework for climate adaptation of railway infrastructure	81: Low Rail RCF Causes for Heavy Haul Operation	108: Railway Signal Digitalization with ERTMS and PTC, Industry 4.0 Expectations and Reality	61: A study on the metro train type influence on the particulate emissions and pollution cost on an underground platform	80: Remote monitoring of the Iron Ore Line with InSAR
17:10	**Demonstration of the KTH Roller Rig (Max 40 people)**				**Teknikringen 8**
19:00	**Boat cruise and dinner**				**Strandvägen kajplats 15**

June 19, 2024					
9:00	**Plenary Session 3:** Green field project for a fully integrated and environmentally friendly metro for the future Stockholm, *Jonas Westberg*				D1
9:30	**Plenary Session 4:** A new logistic system for intermodal transports, *Prof. Emeritus Bo-Lennart Nelldal*				D1
10:00	**Fika**				**D-Ljusgård**
Room	**D32**	**D33**	**D34**	**D35**	**D42**
Session 3	**Infrastructure 3**	**Traction and Braking 1**	**Vehicle Dynamics and Stability 1**	**Energy, Environment, and Climate 2**	**Operations and Traffic Planning 1**
10:30	58: Risk of derailment due to entrapped foreign objects in railway switches	130: Long-term performance of railway brake discs for high-speed postal wagons: wear and fatigue	4: Research on the impact of improved coupler structure on the dynamic performance of 20,000-ton heavy-haul train	10: Innovative Initiatives of Italian Railway State Group for Sustainable Mobility	117: Challenges related to data collection and availability for railway management
10:50	91: Estimating residual risks for rail breaks	1: Friction, wear and particle emissions from copper-based train brakes	44: Longitudinal Dynamics of Heavy-Haul Trains: Impact of Traction Rod Arrangements on Cyclic Braking Conditions	38: Evaluation of low-cost air quality sensors at underground train platforms.	7: Train Dispatcher in the Cloud: An efficient option for train operations
11:10	131: Whole System Modelling of Switches & Crossings	85: Modelling of traction motors and power electronics for passive cooling analysis	46: Improved control system of active wheelset steering in turnouts with preview	107: Railway curve squeal field measurements and tonal analysis	21: Learning from reliability and maintainability for predicting generation and propagation of trains' delays
11:30	105: Dynamic interaction between pantograph and catenary – possible applications for simulation tools	100: Compatibility Analysis of Rail Vehicle and Traction Power Systems Based on the European Infrastructure Environment	32: Running Dynamics of the Self-Steering Single-Axle Running Gear	36: Carbon footprint and possibilities of using recycled plastics in railway structures	50: Predicting train delay based on Random Forest

11:50	34: 3D DEM-based ballasted track and rail vehicle interaction: model construction verification and analysis	62: Braking performance of freight trains	77: Stability of Six-Axle Railroad Cars on Dedicated Freight Corridor of Indian Railway	111: A ground-borne noise prediction model for railway traffic in tunnels in bedrock	129: Integrated Yard and Terminal Departure Prediction
12:10	**Lunch**				**Syster O Bror**
Room	**D32**	**D33**	**D34**	**D35**	**D42**
Session 4	**Infrastructure 4**	**Data Analytics and Automation**	**Vehicle Dynamics and Stability 2**	**Energy, Environment, and Climate 3**	**Emerging Technologies 1**
13:30	95: Instrumenting steel-structure railway bridges towards improved maintenance decision support using multi-sensor data fusion	17: Data quality analysis of China high-speed rail inspection	43: Multidisciplinary Coupling Approach for Dynamic Response Analysis of Maglev Trains using Panel Aerodynamics	88: Predicting the sound radiation from track vibrations for auralisation	87: Metaverse for Maintenance in the Railway Industry
13:50	49: Development of a measuring method for determining the displacement and load distribution behaviour of expansion joints on bridges	92: Leveraging ISO Standard 81346 for Enhanced Railway Asset Management: A Cross-Organizational Approach for Big Data Analytics	101: Multi-Body Dynamic Fault Simulation in Primary Suspension Systems and Convolutional Neural Network based Diagnosis	47: RoboPV – Feasibility Study of a Track-Integrated Photovoltaic Power Plant	37: Real-Time Semantic Railway Point Cloud Acquisition via Deep Learning: A Camera-Based Approach
14:10	86: Investigating railway bridge dynamic factors through measurements	52: Virtual Ground Truth - Towards Reliable Obstacle Detection	119: Influence of Coupler System Degradation on Longitudinal Dynamics and Running Safety of Rakes	19: Grid-friendly high-power charging system for battery-electric rail vehicles	5: Development Process of a Sensor System for Obstacle Detection on Railways using Virtual Reality

14:30	31: Quantifying error in finite-element models of Lundamo railway bridge	53: A new testing method based on Model-Based Testing for the Railway Onboard Control System		67: Inclusion of rail and wheel roughness in noise mapping calculations with Nord2000	79: Game-based Cybersecurity: An Approach Towards Resilient Railway
14:50	**Fika**				**D-Ljusgård**
Room	**D32**	**D33**	**D34**	**D35**	**D42**
Session 5	**Infrastructure 5**	**Traction and Braking 2**	**Emerging Technologies 2**	**Maintenance 3**	**Operations and Traffic Planning 2**
15:10	51: Ballasted Track Simulator – a new tool for simulating dynamic loading behaviour of railway structures	16: Thermomechanics of the brake – wheel – rail system: Results from two tread brake roller rigs	99: FutuRe Innovative solutions for Regional rail services	24: Prediction of differential track settlement in a transition zone using a calibrated non-linear track model	74: Improving utilisation of rail freight routes by optimised routing method
15:30	102: Effect of FFU and UPS sleepers on low frequency vibration in soft soil areas	56: Experimental characterization of magnetic track brakes	33: Automation of Industrial Sidings by Using Road-Rail Vehicles as Automated Guided Vehicles	69: Project for rail head conditioning with AI	78: Evaluation of train integrity concepts based on various criteria
15:50	48: Simplified dynamic soil-structure interaction of a three-span and a single-span high-speed railway bridge with integrated retaining walls	109: Modelling the temperature development of a railway brake disc	84: Development and application of heavy-duty hydrogen energy hybrid shunting locomotive		82: Benefits and drawbacks of integrating Maglev-derived systems in the design phase of new railway lines
16:20	**Closing remarks**				**D1**

Venue

The seminar takes place at the D-building, an iconic courtyard building on the KTH main campus. The plenary sessions will be in D1. Registration and the coffee breaks will be in the D-ljusgård.

Address: Lindstedtsvägen 9, Stockholm, Sweden

Lunch: Syster O Bror
Lab visit: Teknikringen 8

Boat cruise and dinner

Departure: 19:00 at Strandvägen kajplats 15
Arrival: 23:00 at Strandvägen kajplats 15

Contact

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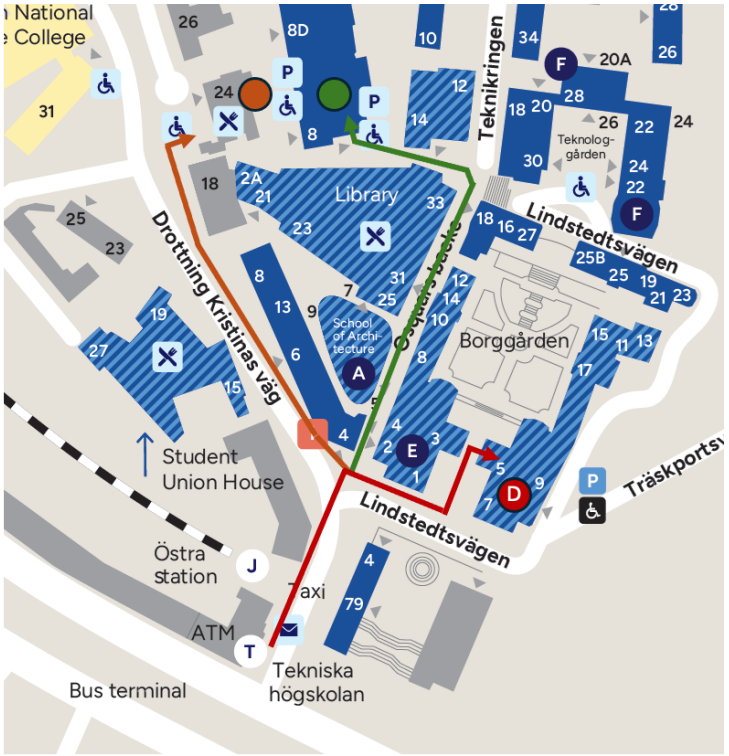
kth.se/railway-technology-2024



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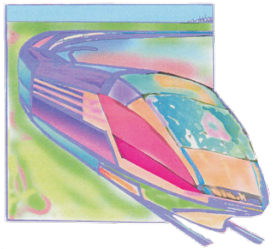

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