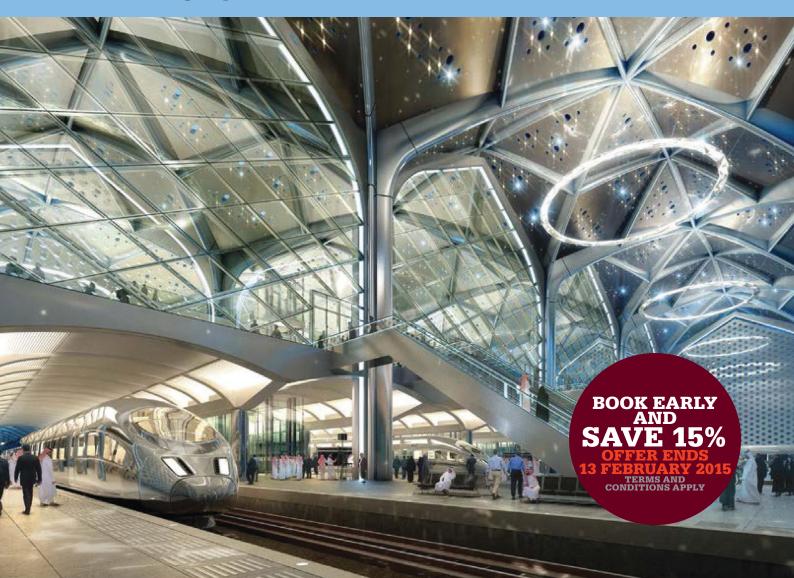
THE STEPHENSON CONFERENCE RESEARCH FOR RAILWAYS

Institution of MECHANICAL ENGINEERS

21-23 April 2015 One Birdcage Walk, London www.imeche.org/stephenson

Railway Division **Conference**



THE STEPHENSON CONFERENCE RESEARCH FOR RAILWAYS

21-23 April 2015, One Birdcage Walk, London

6677

THE STEPHENSON CONFERENCE IS AN INTERNATIONAL EVENT COVERING A WIDE RANGE OF CURRENT WORLDWIDE RESEARCH INTO ROLLING STOCK, RAILWAY INFRASTRUCTURE AND CONTROL SYSTEMS.

This major rail conference will bring together researchers to present, debate and develop their work at the birthplace of global railway engineering. High-quality research papers will be complemented by practical case studies, illustrating the value of what good rail research can bring to the competitive development of the railway industry.

BENEFITS OF ATTENDANCE:

- Learn about the latest technological developments in the global rail industry
- Network with senior industry experts and peers in an open forum
- Develop an understanding of research outputs and relevant emerging technologies
- Hear from specialist researchers and rail professionals who are planning for the future
- **Understand** the practical aspect of the latest thinking in rail

EVENT PARTNERS:























SPONSORSHIP & EXHIBITION OPPORTUNITIES

GET INVOLVED

Attending this event as either an exhibitor or sponsor will give you the opportunity to display your solutions, services and products to the right people at the right time.

This is an excellent way to enhance your company profile and communicate effectively to your target audience.

BENEFITS OF SPONSORING

- Showcase new products
- Raise awareness of your operation
- Improve perception of your brand
- Influence other organisations' spending plans

For more information please call +44 (0)20 7973 1309 or email sponsorship@imeche.org

PROGRAMME

DAY 1	TUESDAY 21 APRIL 2015	
13:00	REGISTRATION AND REFRESHMENTS	
13:30	KEYNOTE ADDRESS Chris Fenton, Chief Executive, Rail Safety and Standards Board (RSSB), UK	
14:00	CASE STUDY: TOMORROW'S RAILWAY AND CLIMATE CHANGE ADAPTATION J Lane & J Dora, RSSB, UK	
14:30	FROM RESEARCH TO RULE-MAKING IN THE FEDERAL RAILROAD ADMINISTRATION J Tunna, Federal Railroad Administration, Office of Research and Development, US Department of Transportation, USA	
	PARALLEL SESSIONS	
	I AMABBEL DEDDIVING	
15:00	STREAM A VIDEO MEASUREMENT TECHNIQUES FOR UNDERSTANDING WHEEL-INDUCED LATERAL FORCES AND TRACK COMPONENT DEFLECTIONS P Waterfall, University of Bristol; B Temple, C Hardwick, LB Foster, Rail Technologies; J Sharam, A Plumb, Imetrum, UK	
	STREAM B A 2D DEM ANALYSIS OF RAILWAY BALLAST VIBRATION UNDER CYCLIC LOADS X Zhang, C F Zhao, W M Zhai, State Key Laboratory of Traction Power, Southwest Jiaotong University, China	
	STREAM C RAILWAY BRIDGE MAINTENANCE MODELLING B Le, J Andrews, Nottingham Transportation Engineering Centre, University of Nottingham, UK	
	STREAM D MULTI-DOMAIN SIMULATION OF HYBRID DIESEL-DRIVEN RAILWAY VEHICLES AND COMPARISON OF ELECTRICAL ENERGY STORAGE SYSTEMS S Schmid, Voith Turbo GmbH & Co. KG, Research and Development, Germany; K Ebrahimi, University of Bradford, School of Engineering, Design and Technology, UK; W Commerell, UAS Ulm, Institute of Energy and Drive Technologies, Germany	
15:30	NETWORKING REFRESHMENT BREAK	
	STREAM A	
16:00	PREDICTION OF WHEEL-RAIL CONTACT FORCES BASED ON A LOCOMOTIVE DYNAMIC INVERSE MODELLING Y O Sun, M Spiryagin, C Cole, Central Queensland University, Centre for Railway Engineering, Australia	
16:30	OVERALL CONSIDERATION OF THE WHEEL/RAIL CONTACT: KEY FACTOR FOR RELIABLE PREDICTIONS OF VEHICLE TRACK INTERACTION K Six, A Meierhofer, G Trummer, C Marte, G Müller, B Luber, M Rosenberger, Virtual Vehicle Research Centre, Austria; P Dietmaier, Institute for Applied Mechanics, Graz University of Technology, Austria	
17:00	DEVELOPMENT OF A TRAM-TRAIN WHEEL PROFILE FOR DUAL-OPERATION RUNNING D Crosbee, P D Allen, University of Huddersfield, UK; R Carroll, Sheffield Supertram, UK	

	STREAM B
16:00	CASE STUDY: THE RAIL TRACKFORM STIFFNESS TESTER: FROM IDEA TO COMMERCIAL REALITY P Sharpe, C Govan, URS
16:30	AN EXPERIMENTAL STUDY OF DYNAMIC PERFORMANCE OF CRTS II SLAB TRACK USING A FULL SCALE TEST RIG W Mingze, Y Xuancheng, Z Shengyang, C Chengbiao, State Key Laboratory of Traction Power, Southwest Jiaotong University, China
17:00	THE INFLUENCE OF SUPPORT CONDITIONS ON SHORT AND LONG-TERM TRACK BEHAVIOUR I Grossoni, Y Bezin, Institute of Railway Research, University of Huddersfield, UK
	STREAM C
16:00	SCOPING PREDICTION OF RE-RADIATED GROUND-BORNE NOISE AND VIBRATION NEAR HIGH-SPEED RAIL LINES WITH VARIABLE SOILS D P Connolly, P K Woodward, O Laghrouche, B Suryanto, G Medero, Heriot-Watt University, UK; M C Forde, University of Edinburgh, UK; G Kouroussi, Department of Theoretical Mechanics, Dynamics and Vibrations, University of Mons, Belgium
16:30	STUDY ON RADIATION CONTRIBUTION OF WHEEL/RAIL SYSTEM NOISE Q Yin, C Cai, S Zhu, Z Chen, State Key Laboratory of Traction Power, Southwest Jiaotong University, China
17:00	MODELLING OF TRAIN-INDUCED VIBRATION E Ntotsios, S G Koroma, D J Thompson, ISVR, University of Southampton, UK; H E M Hunt, J P Talbot, W I Hamad, Engineering Department, University of Cambridge, UK; M F M Hussein, ISVR, University of Southampton, UK & Department of Civil and Architectural Engineering, Qatar University, Qatar
	STREAM D
16:00	DETERMINING SYSTEM-WIDE ENERGY USE IN AN ESTABLISHED METRO NETWORK J P Powell, A González-Gil, R Palacín, P Batty, Newcastle University, UK
16:30	VIABLE FLYWHEEL SYSTEM FOR RAIL J C Wheals, W To, J Dalby, M Vigar, J Hodgson, J Buchanan, Ricardo UK; A Robertson, J MacPherson, J Taylor, Artemis IP; W Lanoe, M Heaton, Bombardier Transportation, UK
17:00	METRO TRACTION AND POWER SYSTEM ENERGY OPTIMISATION N Zhao, Z Tian, S Hillmansen, C Roberts, The Birmingham Centre for Railway Research and Education, School of Electronic, Electrical and Computer Engineering, University of Birmingham, UK; M Yuan, J Li, Guangzhou Metro Corporation; H Shi, Guangzhou Metro Design & Research Institute Co, China
	All delegates to make their way back to the Lecture Theatre
17:30	KEYNOTE SPEAKER Keir Fitch, Deputy Head of Cabinet, European Commission
18:30	EVENING DRINKS RECEPTION
DAY 2	MEDNIECDAY 22 ADDII 2015
DAY 2	WEDNESDAY 22 APRIL 2015
08:30	REGISTRATION AND REFRESHMENTS
09:00	KEYNOTE SPEAKER

DAY 2	WEDNESDAY 22 APRIL 2015		
08:30 09:00	REGISTRATION AND REFRESHMENTS KEYNOTE SPEAKER Dr Norimichi Kumagai, Executive Director, Rail Technical Research Institute, Japan		
	PARALLEL SESSIONS		
09:30	STREAM A CRITICAL VELOCITIES EFFECTS ON HIGH-SPEED TRAIN AT LEDSGAARD, SWEDEN S Mezher, P K Woodward, O Laghrouche, G Kouroussis, G Medero, D P Connolly, Institute for Infrastructure and Environment, Heriot-Watt University, UK		
10:00	BAYESIAN RECONSTRUCTION OF THREE-DIMENSIONAL RAILWAY TRACK GEOMETRY: IMPROVEMENTS AND DEVELOPMENTS IN THE SYSTEM TOWARD PRACTICAL USE A Yoshimura, Tokyo University of Technology, School of Computer Science, Japan		

	_
	STREAM B
09:30	CASE STUDY: TRACK 21 Professor William Powrie, University of Southampton, UK
10:00	DESIGN, CONSTRUCTION AND OPERATION OF A REPOINT LABORATORY DEMONSTRATOR S D Bemment, R Dixon, R Goodall, C P Ward, N Wright, School of Electronic, Electrical and Systems Engineering, Loughborough University, UK
	STREAM C
09:30	IDENTIFICATION OF BRIDGE BEARING DAMAGE BASED ON RADIAL BASIS FUNCTION NEURAL NETWORK Z Chen, Q Yin, D Zhang, State Key Laboratory of Traction Power, Southwest Jiaotong University, China
10:00	DYNAMIC SIMULATIONS IN SUPPORT OF INSTALLATION OF LIGHT RAIL TRACKS ON THE HOMER H. HADLEY MEMORIAL FLOATING BRIDGE C Ketchum, Transportation Technology Centre; T Cooper, Parsons Brinckerhoff; R Joy, Transportation Technology Centre; H Sederat, SC Solutions, J Sleavin, Sound Transit, USA; A Foan, Andy Foan Ltd, UK
	STREAM D
09:30	CASE STUDY: CLOSED LOOP PANTOGRAPH FOR BETTER CURRENT COLLECTION Lee Brun, Brecknell Willis
10:00	TO BE CONFIRMED
10:30	NETWORKING REFRESHMENT BREAK
PARALLEL SESSIONS	
	CTDFAM A
	STREAM A
11:00	
11:00 11:30	STUDYING VARIATIONS OF SKYHOOK METHOD FOR COMFORT IMPROVEMENT A Oazizadeh, S Stichel, Division of Rail Vehicles, KTH Royal Institute of Technology; R Persson, Rolling Stock Central & Northern Europe and Asia, Bombardier Transportation, Sweden
	STUDYING VARIATIONS OF SKYHOOK METHOD FOR COMFORT IMPROVEMENT A Oazizadeh, S Stichel, Division of Rail Vehicles, KTH Royal Institute of Technology; R Persson, Rolling Stock Central & Northern Europe and Asia, Bombardier Transportation, Sweden HUNTING STABILITY AND IMPROVEMENT MEASURES FOR HIGH-SPEED VEHICLES J Zeng, L Wei, M Chi, J Wang, State Key Laboratory of Traction Power, Southwest Jiaotong University, China
11:3(STUDYING VARIATIONS OF SKYHOOK METHOD FOR COMFORT IMPROVEMENT A Oazizadeh, S Stichel, Division of Rail Vehicles, KTH Royal Institute of Technology; R Persson, Rolling Stock Central & Northern Europe and Asia, Bombardier Transportation, Sweden HUNTING STABILITY AND IMPROVEMENT MEASURES FOR HIGH-SPEED VEHICLES J Zeng, L Wei, M Chi, J Wang, State Key Laboratory of Traction Power, Southwest Jiaotong University, China THE SUSTRAIL FREIGHT VEHICLE S D Iwnicki, Institute of Railway Research, University of Huddersfield, UK; A Orlova, Petersburg State Transport University, Russia; P A Jonsson, Division of Railway Vehicles, KTH Royal Institute of Technology, Sweden; M Fartan, REARUL
11:3(STUDYING VARIATIONS OF SKYHOOK METHOD FOR COMFORT IMPROVEMENT A Oazizadeh, S Stichel, Division of Rail Vehicles, KTH Royal Institute of Technology; R Persson, Rolling Stock Central & Northern Europe and Asia, Bombardier Transportation, Sweden HUNTING STABILITY AND IMPROVEMENT MEASURES FOR HIGH-SPEED VEHICLES J Zeng, L Wei, M Chi, J Wang, State Key Laboratory of Traction Power, Southwest Jiaotong University, China THE SUSTRAIL FREIGHT VEHICLE S D Iwnicki, Institute of Railway Research, University of Huddersfield, UK; A Orlova, Petersburg State Transport University, Russia; P A Jonsson, Division of Railway Vehicles, KTH Royal Institute of Technology, Sweden; M Fartan, REARUL Engineering, Cluj, Romania
11:30 12:00	STUDYING VARIATIONS OF SKYHOOK METHOD FOR COMFORT IMPROVEMENT A Qazizadeh, S Stichel, Division of Rail Vehicles, KTH Royal Institute of Technology; R Persson, Rolling Stock Central & Northern Europe and Asia, Bombardier Transportation, Sweden HUNTING STABILITY AND IMPROVEMENT MEASURES FOR HIGH-SPEED VEHICLES J Zeng, L Wei, M Chi, J Wang, State Key Laboratory of Traction Power, Southwest Jiaotong University, China THE SUSTRAIL FREIGHT VEHICLE S D Iwnicki, Institute of Railway Research, University of Huddersfield, UK; A Orlova, Petersburg State Transport University, Russia; P A Jonsson, Division of Railway Vehicles, KTH Royal Institute of Technology, Sweden; M Fartan, REARUL Engineering, Cluj, Romania STREAM B EFFECT OF DISABLED CEMENT ASPHALT MORTAR LAYER ON DYNAMIC BEHAVIOUR OF SLAB TRACK J Han, L Ling, X B Xiao, Z F Wen, X S Jin, State Key Laboratory of Traction Power, Southwest Jiaotong University; G T Zhao, State Key Laboratory of Traction Power, Southwest Jiaotong University & China Railway Corporation, China
11:30 12:00	STUDYING VARIATIONS OF SKYHOOK METHOD FOR COMFORT IMPROVEMENT A Oazizadeh, S Stichel, Division of Rail Vehicles, KTH Royal Institute of Technology; R Persson, Rolling Stock Central & Northern Europe and Asia, Bombardier Transportation, Sweden HUNTING STABILITY AND IMPROVEMENT MEASURES FOR HIGH-SPEED VEHICLES J Zeng, L Wei, M Chi, J Wang, State Key Laboratory of Traction Power, Southwest Jiaotong University, China THE SUSTRAIL FREIGHT VEHICLE S D Iwnicki, Institute of Railway Research, University of Huddersfield, UK; A Orlova, Petersburg State Transport University, Russia; P A Jonsson, Division of Railway Vehicles, KTH Royal Institute of Technology, Sweden; M Fartan, REARUL Engineering, Cluj, Romania STREAM B EFFECT OF DISABLED CEMENT ASPHALT MORTAR LAYER ON DYNAMIC BEHAVIOUR OF SLAB TRACK J Han, L Ling, X B Xiao, Z F Wen, X S Jin, State Key Laboratory of Traction Power, Southwest Jiaotong University; G T Zhao, State Key Laboratory of Traction Power, Southwest Jiaotong University; G T Zhao, State Key Laboratory of Traction Power, Southwest Jiaotong University; G T Zhao, State Key Laboratory of Traction Power, Southwest Jiaotong University; G T Zhao, State Key Laboratory of Traction Power, Southwest Jiaotong University; G T Zhao, State Key Laboratory of Traction Power, Southwest Jiaotong University; G T Zhao, State Key Laboratory of Traction Power, Southwest Jiaotong University; G T Zhao, State Key Laboratory of Traction Power, Southwest Jiaotong University; G T Zhao, State Key Laboratory of Traction Power, Southwest Jiaotong University; G T Zhao, State Key Laboratory of Traction Power, Southwest Jiaotong University; G T Zhao, State Key Laboratory of Traction Power, Southwest Jiaotong University; G T Zhao, State Key Laboratory of Traction Power, Southwest Jiaotong University; G T Zhao, State Key Laboratory of Traction Power, Southwest Jiaotong University; G T Zhao, State Key Laboratory of Traction Power, Southwest Jiaotong University of The State Traction Power, Southwest Jiaotong University of The State Trac

	STREAM C
11:00	A FREQUENCY-DOMAIN FINITE ELEMENT APPROACH FOR MODELLING RAILWAY INDUCED VIBRATION IN SOILS N Hamdan, O Laghrouche, P K Woodward, D Connolly Institute for Infrastructure & Environment, Heriot-Watt University, UK
11:30	APPLICATION OF DYNAMIC VIBRATION ABSORBERS IN VIBRATION CONTROL OF FLOATING SLAB TRACK UNDER TRAIN-TRACK INTERACTION S Zhu, C Cai, L Zhang, State Key Laboratory of Traction Power, Southwest Jiaotong University; J Yang, H Yan, China Railway Eryuan Engineering Group Co, China
12:00	INVESTIGATION OF GROUND VIBRATION FROM CIRCULAR TUNNELS USING A 2.5D FE/BE MODEL OF TUNNEL AND GROUND O Jin, D J Thompson, Institute of Sound and Vibration Research, University of Southampton, UK
44.00	STREAM D
11:00	CASE STUDY: THE PRIZES OF MANAGING ADHESION Dr Alan Lawton, Independent Engineering Consultant
11:30	ADDRESSING NODAL CONSTRAINTS ON RAILWAY CAPACITY J Armstrong, University of Southampton, Civil, Maritime and Environmental Engineering and Science & Arup; J Preston, University of Southampton, Civil, Maritime and Environmental Engineering and Science; UK
12:00	INVESTIGATION INTO THE EFFECT OF MOISTURE ON RAIL ADHESION J Fisk, T Armitage, Arup; R Lewis, D Fletcher, M Evans, A Arnall, University of Sheffield, Department of Mechanical Engineering, UK
12:30	NETWORKING LUNCH
	PARALLEL SESSIONS
	STREAM A
13:30	DEVELOPMENT OF A METHODOLOGY FOR CO-SIMULATION OF TILTING TRAINS IN SIMPACK-SIMULINK N Kuka, Railway Dynamics/Engineering, ALSTOM Transport 23; C Ariaudo, R Verardi, Railway Dynamics/Engineering, ALSTOM, Italy
14:00	APPARENTLY INDEPENDENTLY ROTATING WHEELSET - A POSSIBLE SOLUTION FOR ALL NEEDS? A Bracciali, University of Florence & AB Consulting, Italy
14:30	HUNTING STABILITY AND IMPROVEMENT MEASURES FOR HIGH SPEED VEHICLES J Zeng, LWei, M Chi, J Wang, State Key Laboratory of Traction Power, Southwest Jiaotong University, China STREAM B
13:30	FAILURE ANALYSIS OF RAILROAD CONCRETE CROSSTIES IN CENTRE BINDING CONDITIONS USING FINITE ELEMENT METHOD H Yu, B P Marquis, D Y Jeong, Structures and Dynamics Division, Volpe National Transportation Systems Centre, USA
14:00	INSULATED RAIL JOINT ENHANCEMENT: TESTING AND ANALYSIS A E Beagles, P Beaty, D I Fletcher, R Lewis, Department of Mechanical Engineering, University of Sheffield, UK; B Temple, LB Foster Rail Technologies, UK
14:30	FORMALISED FINITE ELEMENT ANALYSIS AND DESIGN OF CAST MANGANESE CROSSINGS FOR SWITCH AND CROSSING LAYOUTS H Persson, J M Ritchie, Institute of Mechanical, Process and Energy Engineering, School of Engineering & Physical Sciences, Heriot-Watt University, UK; M Westoby, Progress Rail Services UK
	STREAM C
13:30	REAL-TIME ONBOARD MONITORING OF TRAIN WHEELS AND AXLE BEARING CONDITION I Corni, N Symonds, R J K Wood, National Centre for Advanced Tribology-Southampton Faculty of Engineering and the Environment, University of Southampton, UK; A Wasenczuk, D Vincent, Perpetuum, UK
14:00	CONDITION MONITORING OF ROLLER BEARINGS USING ACOUSTIC EMISSION TECHNIQUES M Entezami, L Saade, E Stewart, C Roberts, P Weston, The University of Birmingham, UK; R Lewis, TWI Ltd, UK
14:30	MODERN INNOVATIONS ON THE APPLICATION OF THE ROTATING ULTRASONIC PROBE TO IN-SERVICE INSPECTION OF FREIGHT SOLID AXLES: EXPERIMENTS AND MAPOD APPROACH M Carboni, Department of Mechanical Engineering, Politecnico di Milano; S Cantini, Lucchini RS SpA, Lovere (BG), Italy

	STREAM D
13:30	CASE STUDY: THE 'ON-TIME' PROJECT Meena Dasigi, Principal Engineer, Network Rail, UK
14:00	ROBUST MULTI-TRAIN TRAJECTORY OPTIMISATION FOR REAL WORLD CONDITIONS USING A 'NOISY' GENETIC ALGORITHM J Goodwin, D I Fletcher, Department of Mechanical Engineering, R F Harrison, Department of Automatic Control & Systems Engineering, University of Sheffield, UK
14:30	SAFECAP: THE TRAIN ADVISORY SYSTEM FOR REAL-TIME TRAFFIC MANAGEMENT A Iliasov, A Romanovsky, Newcastle University, School of Computing Science, UK
15:00	NETWORKING REFRESHMENT BREAK
	PARALLEL SESSIONS
	STREAM A
15:30	EVALUATION OF BOGIE ROTATIONAL RESISTANCE T Tanaka, K Iida, M Suzuki, T Iida, N Watanabe, T Miyamoto; Vehicle Mechanics Laboratory, Railway Dynamics Division, Railway Technical Research Institute, Japan
16:00	INVESTIGATION OF THE APPLICATION OF ADJUSTABLE AIR SUSPENSION UNDER TRACTION CONTROL FOR HEAVY HAUL LOCOMOTIVES M Spiryagin, YO Sun, C Cole, Central Queensland University, Centre for Railway Engineering; P Wolfs, Central Queensland University, Power and Energy Centre, Australia; V Spiryagin, Rostov Electric Locomotive Repair Plant, Russia; I Persson, AB DEsolver, Östersund, Sweden
	STREAM B
15:30	CONDITION MONITORING OF AUDIO FREQUENCY TRACK CIRCUITS L Saade, P Weston, C Roberts, University of Birmingham, UK
16:00	A 10GBIT/S ETHERNET INFRASTRUCTURE FOR FUTURE-PROOFED RAILWAY COMMUNICATIONS G Koczian, S Walker, University of Essex, UK; G Howell, B Simpkin, LPA Connect, UK
	STREAM C
15:30	APPLICATION OF FRA NEW VEHICLE-TRACK SYSTEM QUALIFICATION REQUIREMENTS B P Marquis, Structures and Dynamics Division, Volpe National Transportation Systems Centre; A Tajaddini, Office of Research and Development, Federal Railroad Administration; M Trosino, National Railroad Passenger Corporation, USA; H P Kotz, Siemens – Infrastructure and Cities, Rail Systems Division Locomotives & Components, BG EN SDS VD, Austria; W Breuer, Siemens – Infrastructure and Cities, Rail Systems Division Locomotives and Components, EN SC, Germany
16:00	CASE STUDY: IMPROVING TRACK TOLERANCES USING VIRTUAL HIGH FIXITY Peter Woodward, Heriot-Watt University, UK
	STREAM D
15:30	THE DEVELOPMENT AND APPLICATION OF A LEAN FUTURE STATE DESIGN METHODOLOGY TO THE RAILWAY POSSESSION AND ISOLATION AUTHORISATION PROCESS S Stiles, University of Nottingham, SHE Solutions, UK; W Garner, Coventry University, UK
16:00	MODERN COMMUNICATION TOOLS AND THE GENERALISED COST OF TRAVEL S Pani, F Schmid, Birmingham Centre for Railway Research and Education, School of Civil Engineering; N G Harris, Railway Consultancy, UK

	All delegates to make their way back to the Lecture Theatre
16:30	KEYNOTE SPEAKER Professor Manuel Seabra Pereira, Department of Mechanical Engineering, Instituto Superior Técnico, University of Lisbon, Portugal
19:00	CONFERENCE DINNER

DAY 3	THURSDAY 23 APRIL 2015	
08:30	REGISTRATION AND REFRESHMENTS	
09:00	KEYNOTE SPEAKER Professor Richard Parry-Jones CBE, Chairman, Network Rail, UK	
	DADALLEI CECCIONC	
	PARALLEL SESSIONS	
	STREAM A	
09:30	INFLUENCE OF VARYING INPUT PARAMETERS ON MODEL VALIDATION RESULTS G Götz, Technische Universität Berlin, Institute of Rail Vehicles, Germany; O Polach, Bombardier Transportation AG, Switzerland	
10:00	A COMPARISON OF FULL SCALE AND MODEL SCALE MEASUREMENTS OF TRAIN AERODYNAMIC CHARACTERISTICS C Baker, A Quinn, H Hemida, M Sterling, M Gallagher, J Morden, School of Civil Engineering, Birmingham Centre for Railway Research and Education, University of Birmingham, UK	
	STREAM B	
09:30	NEW ADVANCES IN WIRELESS MESH SENSORS ARE TRANSFORMING ASSET CONDITION MONITORING IN RAIL S Maddison, B Smith, Senceive, UK	
10:00	DEPLOYING A LOW ENERGY POWER MODEL WITHIN DATA LOGGERS AND SENSORS FOR THE REMOTE MONITORING OF ASSETS R J Preece, Arrowvale Electronics & University of Birmingham, UK; T M Hanif, R J Amos, Arrowvale Electronics; E J C Stewart, University of Birmingham, UK	
	STREAM C	
09:30	FATIGUE EVALUATION OF HIGH-SPEED CAR BODY UNDER RANDOM LOADING P B Wu, F S Li, State Key Laboratory of Traction Power, Southwest Jiaotong University; A Q Tian, X L Sun, CSR Qingdao Sifang Locomotive & Rolling Stock Co, China	
10:00	REVISING U.S PASSENGER RAILCAR OCCUPIED VOLUME STRENGTH REQUIREMENTS J Gordon, Federal Railroad Administration, Office of Research and Development, US Department of Transportation, USA	
	STREAM D	
09:30	EVALUATING OPTIONS FOR A FAULT TOLERANT RAILWAY SYSTEM C Fecarotti, J Andrews, R Remenyte-Prescott, Department of Civil Engineering, UK	
10:00	THE PAPER THAT ELIMINATES PAPER M Davies, Software Solutions, Interfleet, UK	
10:30	NETWORKING REFRESHMENT BREAK	

	PARALLEL SESSIONS
	STREAM A
11:00	THEORETICAL AND EXPERIMENTAL ANALYSIS OF THE HXN3 LOCOMOTIVE CAB VIBRATION ISOLATION SYSTEM C S Li, S H Luo, W H Ma, State Key Laboratory of Traction Power, Southwest Jiaotong University; T W Qu, Dalian Locomotive and Rolling Stock Co, CNR Group, China
11:30	VIBRATION ISOLATION DESIGN OF UNDER CHASSIS EQUIPMENTS FOR HIGH- SPEED EMU TRAINS D Gong, J Zhou, W Sun, Institute of Railway & Urban Mass Transit Research, Tongji University, China
12:00	FLEXIBLE CAR BODY VERTICAL VIBRATION CHARACTERISTIC OF A HIGH- SPEED TRAIN H Cao, Traction Power State Key Laboratory, Southwest Jiaotong University & Southwest University of Science & Technology; W Zhang, B Miao, Traction Power State Key Laboratory, Southwest Jiaotong University & Southwest University of Science & Technology, China
	STREAM B
11:00	ICE-S VEHICLE REACTION MEASUREMENT AND TRACK GEOMETRY MEASUREMENT ON THE SAME MEASURING TRAIN: RESULTS OF THE COMPARISON OF THE TWO DIFFERENT TRACK INSPECTION METHODS T Kolbe, R Kratochwille, Department for Vehicle Dynamic Tests, DB Systemtechnik GmbH Deutsche Bahn AG, Germany
11:30	DETECTION OF VERTICAL TRACK FAULTS USING AN INSTRUMENTED INSERVICE VEHICLE: CONSIDERING EFFICIENT REAL-TIME FAULT DETECTION G J Yeo, P F Weston, C Roberts, University of Birmingham, UK
12:00	DETERMINATION OF VERTICAL ALIGNMENT OF TRACK USING ACCELEROMETER READINGS E J O'Brien, School of Civil, Structural and Environmental Engineering, University College Dublin; C Bowe, Irish Rail, Technical Department, Engineering & New Works; P Quirke, School of Civil, Structural and Environmental Engineering, University College Dublin; I Eireann, Irish Rail, Technical Department, Engineering & New Works, Ireland STREAM C
	STREAM C
11:00	CRASHWORTHINESS RESEARCH ON DIESEL MULTIPLE UNIT FUEL TANKS K M Jacobsen, M E Carolan, Volpe National Transportation Systems Centre, US Department of Transportation, USA
11:30	LOCOMOTIVE CRASHWORTHINESS RESEARCH D C Tyrell, P Llana, Volpe National Transportation Systems Centre, US Department of Transportation, USA
12:00	SIMULATION AND VALIDATION OF RADIAL EXPANSION TUBES FOR ENERGY ABSORPTION C Moreno, D J Hughes, R Dashwood, WMG, University of Warwick; T Williams, OLEO International, UK

11:3

12:0

STREAM D

- LEAN PRINCIPLES AND SUSTAINABLE OPERATION OF HIGH-SPEED RAILWAYS D Hasegawa, G Nicholson, C Roberts, F Schmid, Birmingham Centre for Railway Research and Education, The University of Birmingham, UK; V Novak, Virginia Polytechnic Institute and State University, USA 11:00
- 11:30 CONSIDERATION OF THE POTENTIAL TRADE-OFFS BETWEEN OPERATIONAL **ENERGY CONSUMPTION AND EMISSIONS AND EMBEDDED ENERGY** CONSUMPTION AND EMISSIONS IN RAIL INFRASTRUCTURE J A Pritchard, Transportation Research Group, University of Southampton, UK
- **ADVANCED SYSTEMS INTEGRATION IN MAJOR RAIL PROJECTS** S Bhamra, G Georgiou, M Georgaras, Bechtel and Crossrail, UK 12:00

12:30 **NETWORKING LUNCH**

All delegates to make their way back to the Lecture Theatre

13:30	CASE STUDY: RAILWAY ACCIDENTS: RESEARCH CHALLENGES
20.00	Winston Rasaiah, Rail Accident Investigation Branch, UK
14:00	CASE STUDY: DIGITAL RAILWAY Jerry England, Group Asset Management Director, Network Rail, UK
14:30	KEYNOTE SPEAKER Chris Jackson, Railway Gazette, UK Following the close of Chris Jackson's presentation, Professor Simon Iwnicki, Chair of the Railway Division, will present the Best Paper Award
15:00	CLOSE OF CONFERENCE

Find out more about our speakers at www.imeche.org/stephenson

- This programme is subject to change.
- The Institution is not responsible for the views or opinions expressed by individual speakers.

STEPHENSON CONFERENCE SCIENTIFIC COMMITTEE:

Stefano Beretta, POLIMI, Italy Mats Berg, KTH, Sweden Andrew Broadbent, RSSB, UK

Mark Burstow, Network Rail, UK

Daniel Cadet, Alstom, France Sylvia Churba, GHD, UK

Andy Doherty, Network Rail, UK

Bridget Eickhoff, RSSB, UK **Mike Forde**, University of Edinburgh, UK

Pierre-Etienne Gautier, SYSTRA, France

Roger Goodall, Loughborough University, UK

 $\begin{array}{l} \textbf{Richard Gostling}, \ \text{Past RD Chair}, \\ \text{IMechE}, \ \text{UK} \end{array}$

Andreas Haigermoser, Siemens, Austria

Stuart Hillmansen, University of Birmingham, UK

Francis How, RIA, UK

Simon Iwnicki, University of Huddersfield, UK

David Johnson, DGauge, UK

Terry Johnson, Independent, UK

Rick Jones, Acoustics Consultant,

Andrew King, Alstom, UK

David Knights, RSSB, UK

Alan Lawton, ALEC Ltd, UK

Jon Leigh, Faiveley, UK

Brian Marquis, Volpe, USA

Manuel Pereira, IST Lisbon, Portugal

William Powrie, University of Southampton, UK

Clive Roberts, University of

Birmingham, UK

Rebeka Sellick, Interfleet, UK Helen Simpson, Porterbrook, UK

John Tunna, TTCI, USA

Alan Wickens, Loughborough University, UK

Peter Woodward, Herriot Watt University, UK

Tom Worsley, ITS Leeds, UK

Organising committee:

Francis How, RIA, UK

Simon Iwnicki, University of Huddersfield, UK

Andrew Broadbent, RSSB, UK

Richard Gostling, Past Chairman, Railway Division, UK

BOOKING FORM

EVENT CODE: C1408AB

THE STEPHENSON CONFERENCE

21-23 April 2015

One Birdcage Walk, London SW1H 9JJ

EARLY BIRD ENDS 13 FEBRUARY 2015

REGISTRATION Please complete in cap	oitals.
Family Name	Title (Mr, Mrs, Miss)
First Name	Job Title
Membership No	Institution
Name of Organisation (for name badge)	
Address for correspondence	
Town/City	
Postcode	
Contact Telephone	
Email	
Do you have any special requirements?	
How did you hear about this event? \Box D	oirect mail □ Website □ Colleague □ Other
We would like to keep you informed of replease tick the boxes below to let us known	elevant services that may be of benefit to you. www.hat you're interested in:
☐ Events and training opportunities	
\square News and updates from the Institution	on .
☐ Services and offers from our preferred	l partners
FEES AND CHARGES Please complete	the appropriate box.
Registration fees include entry to the sessions	, refreshments, lunch and a copy of the event proceedings.

	EARLY BIRD RATE Before 13 February 2015	STANDARD RATE	TOTAL
Member, Institution of Mechanical Engineers	£540.00+VAT	£640.00+VAT	£
Member, supporting organisation	£540.00+VAT	£640.00+VAT	£
Non-member	£690.00+VAT	£815.00+VAT	£
Student/retired	£230.00+VAT	£275.00+VAT	£
Presenting author rates	£360.00+VAT	£430.00+VAT	£
Conference Dinner	£35.00+VAT	£40.00+VAT	£

PAYMENT DETAILS

Order No

Tel

Contact Name

Payment must accompany this registration form. Registration will be confirmed only on receipt of full payment.

receipt and no alterations to these terms will be accepted.

Name and Address for Invoicing

P	PLEASE INDICATE METHOD OF PAYMENT:
	☐ Cheque Cheques should be made payable to IMechE and crossed. Please note international delegates may pay only by credit card, BACS or banker's draft. A copy of the draft must accompany this form. It is the delegate's responsibility to pay any bank charges.
	☐ Credit Card
	Card type: 🗆 Visa 🗖 MasterCard (please note we cannot accept American Express, Diners Club or Maestro
	Card No Valid From / Expiry Date /
	Name of Cardholder
	Billing Address of Cardholder (if different from above)
	Postcode
	Amount to be Deducted Signature
	BACS BACS bank transfers can be made to: IMechE Current Account, NatWest Charing Cross Branch. Sort Code: 60-40-05 Acc No: 00817767 Swift Code: NWBKGB2L IBAN Code: GB96NWBK60400500817767 A copy of the draft must accompany this form.
	Invoice (UK residents only) Delegates wishing to be invoiced must provide an order number. If your company does not use order numbers please include a formal request for invoicing on your company's letterhead. A charge of £10 +VAT will be made to cover additional administration costs. Invoices are payable on received and providents these terms will be accounted.

Postcode

Fax

FIVE WAYS TO BOOK

1 Online:

www.imeche.org/stephenson

Email:

eventenquiries@imeche.org

+44 (0)20 7973 1258

4 Post completed booking form to: **Event Registrations**

Institution of Mechanical **Engineers** 1 Birdcage Walk London SW1H 9JJ

+44 (0)20 7304 6845

Please read the information listed below as each booking is subject to the Institution's standard terms and conditions

CONDITIONS OF BOOKING

Completed application forms should be returned to the address above, along with the correct payment. Attendance at the event will be confirmed on receipt of the full balance. All participants are advised to bring a copy of their confirmation with them on the day, to ensure the fastest possible entry.

SPECIAL REQUIREMENTS

Please inform us of any special requirements, ie. dietary or access, on the relevant section of this form.

CANCELLATION

For a refund (minus £25 +VAT admin charge), cancellations must be received at least 14 days prior to the event. Replacement delegates are welcome at any time. The Institution reserves the right to cancel any event. In this case, the full fee will be refunded unless a mutually convenient transfer can be arranged. In the event that the Institution postpones an event for any reason and the delegate is unable or unwilling to attend on the rescheduled date, they will receive a full refund of the fee paid.

The Institution is not responsible for any loss or damage as a result of a substitution, alteration or cancellation/postponement of an event. The Institution shall assume no liability whatsoever if this event is cancelled, rescheduled or postponed due to a fortuitous event, Act of God, unforeseen occurrence or any other event that renders performance of this conference impracticable, illegal or impossible. For purposes of this clause, a fortuitous event shall include, but not be limited to: war, fire, labour strike, extreme weather or other emergency.

Please note that while speakers and topics were confirmed at the time of publishing, circumstances beyond the control of the organisers may necessitate substitutions. alterations or cancellations of the speakers and/or topics. As such, the Institution reserves the right to alter or modify the advertised speakers and/or topics if necessary without any liability to you whatsoever. Any substitutions or alterations will be updated on the event's webpage as soon as possible.

LIABILITY

The organisers do not accept liability for any injuries or losses of any nature incurred by delegates and/or accompanying persons, nor for loss or damage to their luggage and/or personal belongings

ACCOMMODATION

We have arranged special discounted rates at local hotels via the Corporate Team. Quote ID Number 8488ME

www.corporateteam.com/events/8488ME Tel: +44 (0)20 7592 3050 E-mail: events@corporateteam.com

ENQUIRIES

For event enquiries please call **+44 (0)20 7973 1258** or email eventenquires@imeche.org

The Institution of Mechanical Engineers is a registered charity (no 206882) VAT No GB299930493.

FORWARD THINKING

We are the market leader among professional engineering bodies. We've been supporting engineers since 1847 and have 111,000 members in over 140 countries, working in the world's most dynamic and important industries. Our comprehensive events programme brings you the latest research and best practice from industry and academia.

OTHER EVENTS TO LOOK FOR:



379 013 (C)



9 February 2015 London SUPPLYING THE 21ST CENTURY RAILWAY -STRATEGIC DEVELOPMENT OF RAILWAY COMPONENTS AND SYSTEMS

Supplying the 21st Century Railway - Strategic Development of Railway Components and Systems, will be presented by Terence Watson of the Supply Group.

9 March 2015 London

BEYOND THE WIRE -SOLUTIONS FOR BI-MODE RAILWAY TRACTION FOR FREIGHT AND PASSENGER

Solutions for Bi-Mode Railway Traction for Freight and Passenger, presented by James Ambrose, Network Rail and Andrew Martlew, Direct Rail Services.

13 March 2015
London
RAILWAY DIVISION ANNUAL
LUNCHEON

The Institution of Mechanical Engineers' Annual Luncheon is the must-attend event in the railway calendar, attracting over 1,100 people from all sectors of industry.

www.imeche.org/events/L6196

www.imeche.org/events/L6197

www.imeche.org/events/AL6161

INFORMATION AND BOOKINGS

CALL: **+44 (0)20 7973 1258**

 ${\tt EMAIL:}\ \textbf{eventenquiries@imeche.org}$

VISIT: www.imeche.org/events

JOURNALS

Professional Engineering Publishing

is the publisher for the Institution of Mechanical Engineers. For more information about our magazines, journals and conference proceedings visit

www.uk.sagepub.com/imeche

To find out more contact **Subscriptions** on +44 (0)1952 214050 or email **subscriptions@imeche.org**

MEMBERSHIP

Whether you're a student, apprentice, graduate, qualified engineer or just have an interest in engineering, Institution membership offers the highest professional prestige.

Professional registration is a valuable investment for any engineer who is serious about their career.

Find out which level you're best suited for at **www.imeche.org/membership** or email us on **membership@imeche.org**

GET INVOLVED

Whether you're new to the profession or well established, volunteering is a great way to gain new skills, knowledge and experience.

As an Ambassador you have the chance to represent your profession and give something back to the engineering community as well as inspiring the next generation.

See www.imeche.org/volunteering for more information or go to http://nearyou.imeche.org

Institution of MECHANICAL ENGINEERS

1 Birdcage Walk Westminster London SW1H 9JJ

T +44 (0)20 7222 7899

www.imeche.org



Continuing Professional Development (CPD)

Our online Career Developer tool can help you:

Plan Create an Action Plan and identify targets
 Record Download a record of your learning activities
 Review Reflect on your professional development

Register for Career Developer and get more from your career **www.imeche.org/careerdeveloper**

For tailored advice contact ${\bf cpd@imeche.org}$