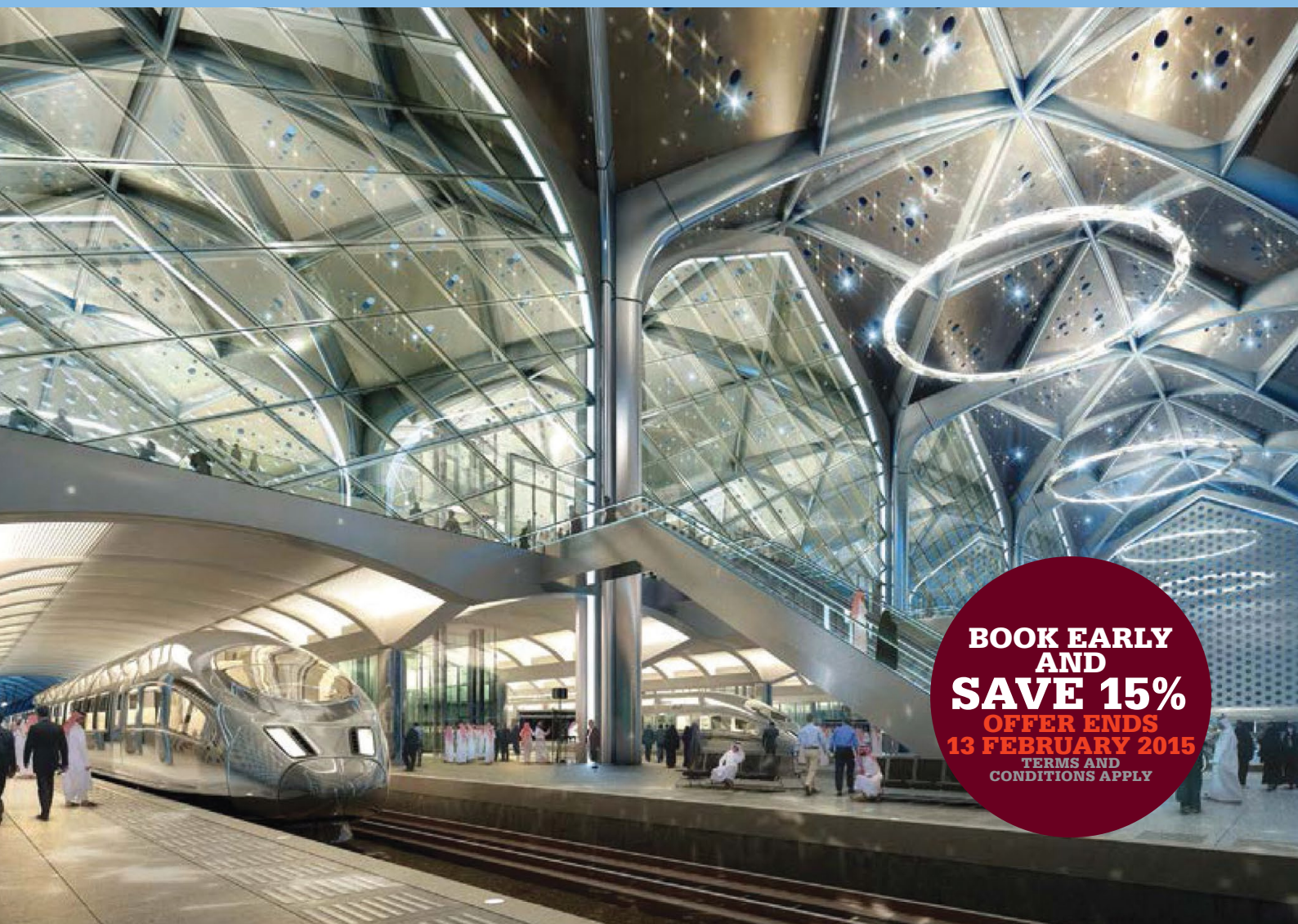


# THE STEPHENSON CONFERENCE RESEARCH FOR RAILWAYS

Institution of  
**MECHANICAL  
ENGINEERS**

21-23 April 2015  
One Birdcage Walk, London  
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# THE STEPHENSON CONFERENCE RESEARCH FOR RAILWAYS

21-23 April 2015, One Birdcage Walk, London



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

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# 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**
- 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 Q 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

WEDNESDAY 22 APRIL 2015

- 08:30 REGISTRATION AND REFRESHMENTS**
- 09:00 KEYNOTE SPEAKER**  
Dr Norimichi Kumagai, Executive Director, Rail Technical Research Institute, Japan

### PARALLEL SESSIONS

#### STREAM A

- 09:30 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

### STREAM A

**11:00 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

**11:30 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

**12:00 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

**11:00 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 THE EFFECTS OF RAILWAY TRAFFIC ON TRACKBED STABILITY AND DEFORMATION DUE TO CLAY FILL PERFORMANCE**  
G R Taylor, R Tan, A S O'Brien, Mott MacDonald Limited, UK

**12:00 ESTIMATING THE DAMAGE AND MARGINAL COST OF DIFFERENT VEHICLE TYPES ON RAIL INFRASTRUCTURE: A COMBINED ENGINEERING AND STATISTICAL APPROACH**  
A S J Smith, University of Leeds; A Kaushal, S D Iwnicki, University of Huddersfield; UK, K Odolinski, Swedish National Road and Transport Research Institute, Department of Transport Economics, Sweden

### 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**  
Q Jin, D J Thompson, Institute of Sound and Vibration Research, University of Southampton, UK

### 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 Ariardo, 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, YQ 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, Ostersund, 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

**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 Kratochville, Department for Vehicle Dynamic Tests, DB Systemtechnik GmbH Deutsche Bahn AG, Germany
- 11:30 DETECTION OF VERTICAL TRACK FAULTS USING AN INSTRUMENTED IN-SERVICE 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

- 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

### STREAM D

- 11:00 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
- 11:30 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
- 12:00 ADVANCED SYSTEMS INTEGRATION IN MAJOR RAIL PROJECTS**  
S Bhamra, G Georgiou, M Georgaras, Bechtel and Crossrail, UK
- 12:30 NETWORKING LUNCH**

All delegates to make their way back to the Lecture Theatre

<b>13:30</b>	<b>CASE STUDY: RAILWAY ACCIDENTS: RESEARCH CHALLENGES</b> Winston Rasaiah, Rail Accident Investigation Branch, UK
<b>14:00</b>	<b>CASE STUDY: DIGITAL RAILWAY</b> Jerry England, Group Asset Management Director, Network Rail, UK
<b>14:30</b>	<b>KEYNOTE SPEAKER</b> 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
<b>15:00</b>	<b>CLOSE OF CONFERENCE</b>

Find out more about our speakers at [www.imeche.org/stephenson](http://www.imeche.org/stephenson)

- This programme is subject to change.
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# BOOKING FORM

EVENT CODE: C1408AB

**EARLY BIRD ENDS 13 FEBRUARY 2015**

## THE STEPHENSON CONFERENCE

21-23 April 2015  
One Birdcage Walk, London SW1H 9JJ

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First Name	Job Title
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Registration fees include entry to the sessions, refreshments, lunch and a copy of the event proceedings.

	<b>EARLY BIRD RATE</b> Before 13 February 2015	<b>STANDARD RATE</b>	<b>TOTAL</b>
Member, Institution of Mechanical Engineers	£540.00+VAT	£640.00+VAT	£
Member, supporting organisation	£540.00+VAT	£640.00+VAT	£
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Student/retired	£230.00+VAT	£275.00+VAT	£
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#### 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 receipt and no alterations to these terms will be accepted.
- Order No \_\_\_\_\_  
Contact Name \_\_\_\_\_  
Name and Address for Invoicing \_\_\_\_\_  
Postcode \_\_\_\_\_  
Tel \_\_\_\_\_ Fax \_\_\_\_\_

## FIVE WAYS TO BOOK

- 1 Online:  
[www.imeche.org/stephenson](http://www.imeche.org/stephenson)
- 2 Email:  
[eventenquiries@imeche.org](mailto:eventenquiries@imeche.org)
- 3 Phone:  
**+44 (0)20 7973 1258**
- 4 Post completed booking form to:  
**Event Registrations  
Institution of Mechanical Engineers  
1 Birdcage Walk  
London SW1H 9JJ**
- 5 Fax:  
**+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](http://www.corporateteam.com/events/8488ME)  
Tel: +44 (0)20 7592 3050  
E-mail: [events@corporateteam.com](mailto:events@corporateteam.com)

#### ENQUIRIES

For event enquiries please call **+44 (0)20 7973 1258** or email [eventenquiries@imeche.org](mailto:eventenquiries@imeche.org)

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### SUPPLYING THE 21ST CENTURY RAILWAY - STRATEGIC DEVELOPMENT OF RAILWAY COMPONENTS AND SYSTEMS

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[www.imeche.org/events/L6196](http://www.imeche.org/events/L6196)



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.

[www.imeche.org/events/L6197](http://www.imeche.org/events/L6197)



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/AL6161](http://www.imeche.org/events/AL6161)

#### INFORMATION AND BOOKINGS

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