

THE STEPHENSON CONFERENCE: RESEARCH FOR RAILWAYS
Tuesday 25th to Thursday 27th April 2017
Institution of Mechanical Engineers, One Birdcage Walk, London

CONFERENCE DAY ONE

13:00	REGISTRATION AND REFRESHMENTS MARBLE HALL & GALLERY			
13:30	LECTURE THEATRE CHAIR'S OPENING REMARKS SIMON IWNICKI			
13:40	KEYNOTE PRESENTATION <i>Mark Carne, Chief Executive, Network Rail</i>			
14:05	A JOURNEY INTO RAILWAY DIGITISATION FROM THE VIRTUOUS CIRCLE OF RAILWAY DIGITIZATION <i>Howard Parkinson, Digital Rail Limited</i>			
14:30	QUESTION AND ANSWER SESSION			
14:45	NETWORKING REFRESHMENT BREAK: MARBLE HALL & GALLERY			
SESSION:	WHEEL/RAIL INTERACTION LECTURE THEATRE Chaired by PIERRE ETIENNE GAUTIER	TRACK CONDITION MONITORING MANUFACTURING ROOM Chaired by DARREN PRESCOTT	DIGITAL RAILWAY 1 COUNCIL ROOM Chaired by REBEKA SELICK	SAFETY ASSURANCE ENERGY ROOM Chaired by ANDY BROADBENT
15:30	WHEEL RAIL FORCE MEASUREMENTS USING MEMS <i>Kam To Man and Keith Thomas Man, Neuplex</i>	NOVEL APPROACHES IN REMOTE CONDITION MONITORING FOR RETROFIT APPLICATIONS <i>Mark Robinson, Chrome Angel Solutions</i>	TOWARDS INCLUSION OF THE FREIGHT RAIL SYSTEM IN THE INDUSTRIAL INTERNET OF THINGS - WAGON 4.0 <i>Raphael Pfaff, Fachhochschule Aachen</i>	HOW TO MAINTAIN/OBTAIN COMPETENCE <i>Roger Short</i>
15:55	A STUDY INTO THE LONG-TERM DEVELOPMENT OF VEHICLE DYNAMIC PARAMETERS OF WHEEL/RAIL CONTACT GEOMETRY	DEVELOPMENT OF NOVEL ACOUSTIC EMISSION TECHNIQUES FOR MONITORING THE STRUCTURAL HEALTH OF	ENHANCING FREIGHT RAIL - THE FREIGHT IDENTIFICATION AND MONITORING SYSTEM <i>Colin Alonzo Williams, SNC-Lavalin Rail and Transit</i>	RISK-BASED DEVELOPMENTS IN RAILWAY SAFETY CERTIFICATION AND REGULATION FOR DUBAI

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	<i>Rainer Kratochville, Deutsche Bahn AG</i>	CAST MANGANESE CROSSINGS <i>Patrick Jason Vallely, Network Rail</i>		<i>Ali Chegini, Dubai Roads and Transport Authority (RTA)</i>
16:20	QUESTION AND ANSWER SESSION	QUESTION AND ANSWER SESSION	QUESTION AND ANSWER SESSION	QUESTION AND ANSWER SESSION
	LECTURE THEATRE PLENARY SESSION Chaired by SIMON IWNICKI			
16:40	KEYNOTE PRESENTATION <i>Professor John Miles, Cambridge University</i>			
17:10	QUESTION AND ANSWER SESSION			
17:25	CHAIR'S CLOSING REMARKS			
17:30	CLOSE OF CONFERENCE DAY ONE			
18:00 – 19:00	EVENING DRINKS RECEPTION: LIBRARY			

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CONFERENCE DAY TWO

08:30	REGISTRATION AND REFRESHMENTS: MARBLE HALL & GALLERY			
09:00	LECTURE THEATRE CHAIR'S OPENING REMARKS SHARON ODETUNDE			
09:05	KEYNOTE PRESENTATION <i>Carlo Borghini, Executive Director, Shift2Rail</i>			
09:30	QUESTION AND ANSWER SESSION			
SESSION:	VEHICLE/INFRASTRUCTURE DYNAMICS LECTURE THEATRE Chaired by JULIAN STOW	TRACK MANUFACTURING ROOM Chaired by PIERRE ETIENNE GAUTIER	DIGITAL RAILWAY 2 COUNCIL ROOM Chaired by HOWARD PARKINSON	ECONOMICS AND SUSTAINABILITY ENERGY ROOM Chaired by DAVID POLHILL
09:50	MODELLING OF HEAVY HAUL TRAIN-BRIDGE DYNAMIC INTERACTIONS AND PARAMETRIC STUDIES USING MULTI-BODY DYNAMICS APPROACHES <i>Yan Quan Sun, Central Queensland University</i>	OPTIMISING GROUND IMPROVEMENT ON NEW HIGH SPEED RAIL LINES <i>David P Connolly, Heriot Watt University</i>	THE TECHNICAL CHALLENGES IN DESIGNING A TELEMATICS ARCHITECTURE FOR THE SYSTEM-WIDE MONITORING OF TRAIN AND INFRASTRUCTURE ASSETS <i>Luca Fornasiero, Comtest Wireless Ltd</i>	SAVING WEIGHT IN THE RAILWAYS <i>Mark James Singleton, Startlink Systems Ltd</i>
10:15	A Three-Dimensional Vehicle-Track Coupled DYNAMIC MODEL BASED ON THE GREEN'S FUNCTION METHOD	CASE STUDY: HIGH SPEED ASSET MAPPING	CONTRIBUTION OF ARTIFICIAL INTELLIGENCE IN RISK PREVENTION OF RAILWAY ACCIDENTS	SOCIAL SUSTAINABILITY OF HSR-COMPARATIVE STUDY

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	<i>Yu Sun, Yu Guo, Mei Chen and Wanming Zhai, Southwest Jiaotong University, China</i>	<i>Ingmar Posner and Anita Hancox, Oxford Robotics</i>	<i>Habib Hadj Mabrouk, French Institute Of Science And Technology For Transport, Development And Networks (IFSTTAR)</i>	<i>Inara Watson, London South Bank University</i>
10:40	QUESTION AND ANSWER SESSION	QUESTION AND ANSWER SESSION	QUESTION AND ANSWER SESSION	QUESTION AND ANSWER SESSION
10:50	NETWORKING REFRESHMENT BREAK: MARBLE HALL & GALLERY			
SESSION:	WHEEL/RAIL ADHESION	TRACK DEGRADATION	ROAD AND RAIL: FRIEND OR FOE?	SAFETY
	LECTURE THEATRE Chaired by DAVID FLETCHER	MANUFACTURING ROOM Chaired by PAUL MOLYNEUX BERRY	COUNCIL ROOM Chaired by DAVID SHIRRES	ENERGY ROOM Chaired by DAVID POLHILL
11:25	DEVELOPMENT OF AN ADAPTIVE TOP-OF-RAIL FRICTION MODIFICATION SYSTEM <i>Milan Omasta, Brno University of Technology, CZ</i>	DEVELOPMENT OF NEW MEASUREMENT PRINCIPLE FOR TRULY PORTABLE TRACK GEOMETRY RECORDING TROLLEY <i>Yasukuni Naganuma, Central Japan Railway Company, JP</i>	CASE STUDY: ROAD VERSUS RAIL <i>Professor John Miles, Arup</i>	SLED TESTS USING THE HYBRID III RAIL SAFETY ATD AND WORKSTATION TABLES FOR PASSENGER TRAINS <i>David Hynd, TRL Ltd</i>
11:50	THE EFFECT OF SANDERS IN IMPROVING TRAIN BRAKING PERFORMANCE WHEN ADHESION IS LOW <i>Alan Peter Lawton, ALEC Ltd</i>	ASSESSMENT OF THE SHORT AND LONG TERM BEHAVIOUR OF THE TRACK ON RAILWAY TRANSITION ZONES <i>Cristina Alves Ribeiro and Rui Calçada, University of Porto, Faculty of Engineering</i>	AUTOMOTIVE TO RAIL: CAN TECHNOLOGIES CROSS THE GAP? <i>James Winnett, Athanasios Iraklis, Elspeth M Keating, Andy McGordon, Tony Ridler and Darren J Hughes, University of Warwick</i>	DEVELOPMENT OF AN ASSISTANCE SYSTEM FOR SECURED SHUNTING OPERATIONS <i>Julian Franzen, Udo Pinders, Walter Schreiber and Kuhlenkoetter Bernd, Ruhr-Universität Bochum</i>
12:15	CASE STUDY: RISK AND OPPORTUNITIES FROM THE	IDENTIFYING THE FACTORS INFLUENCING	WHEN DO CONNECTED AUTONOMOUS VEHICLES	A NOVEL RISK-BASED INSPECTION PLANNING

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	APPLICATION OF SAND DURING BRAKING <i>Paul Gray, RSSB</i>	TRACK DEGRADATION ON THE UK RAIL NETWORK <i>Darren Prescott, University of Nottingham</i>	(CAVS) BECOME A TRAIN? CHALLENGES AND OPPORTUNITIES OF INTEGRATED TRANSPORT <i>Rebeka Sellick, TRL Ltd</i>	MODEL WITH CONDITION MONITORING DATA: CASE STUDY OF ROLLING STOCK PANTOGRAPHS <i>Fateme Dinmohammadi, Babakalli Alkali, and Mahmood Shafiee, GCU</i>
12:40	QUESTION AND ANSWER SESSION	QUESTION AND ANSWER SESSION	QUESTION AND ANSWER SESSION	QUESTION AND ANSWER SESSION
12:55	NETWORKING LUNCH: MARBLE HALL & GALLERY			
SESSION:	TRAIN CONDITION MONITORING LECTURE THEATRE Chaired by ALAN LAWTON	TRACK COMPONENTS AND TESTING MANUFACTURING ROOM Chaired by RAPHAEL PFAFF	AERODYNAMICS COUNCIL ROOM Chaired by JULIAN STOW	CAPACITY ENERGY ROOM Chaired by REBEKA SELLICK
13:55	TOWARDS IMPLEMENTING CONDITION BASED MAINTENANCE POLICY FOR ROLLING STOCK CRITICAL SYSTEM <i>Babakalli Alkali and Fateme Dinmohammadi, Glasgow Caledonian University</i>	FULL-SCALE TESTING OF LASER CLAD RAILWAY TRACK FOR WEAR/RCF, BEND FATIGUE AND IBJ LIPPING RESISTANCE <i>Stephen Robert Lewis, University of Sheffield</i>	THE AERODYNAMICS OF FREIGHT TRAINS <i>Christopher James Baker, University of Birmingham</i>	DEVELOPMENT OF INNOVATIVE CAPACITY SOLUTIONS FOR THE GREAT WESTERN MAIN LINE <i>Julian Crawford Ross, Network Rail</i>
14:20	CASE STUDY: MRX - WHEEL CRACK MEASUREMENT DEVICE <i>Barry Winchester, MRX/Univeristy of Huddersfield</i>	BULLHEAD TRACKFORM INTO THE 21ST CENTURY: AN UNDERGROUND CHALLENGE <i>Paul Bewes Molyneux-Berry, University of Huddersfield</i>	AEROLINER3000 – DOUBLE-DECKER HIGH SPEED TRAIN FOR GB <i>Gregor Malzacher, German Aerospace Center</i>	REPORT ON HOLBORN PILOT FOR STANDING ON BOTH SIDES OF ESCALATORS <i>Neera Kukadia, Transport for London, United Kingdom</i>

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14:45	A SIGNAL-BASED FAULT DETECTION METHOD FOR BOLSTER SPRINGS ON HEAVY HAUL WAGONS <i>Chunsheng Li, Central Queensland University</i>	UK TESTING & TRIALLING FACILITIES, AND AVAILABLE FUNDING SUPPORT <i>Amanda Mackie, Network Rail and Jim Lupton, RIA</i>	BALLAST FLIGHT UNDER HIGH-SPEED TRAINS – AERODYNAMIC AND GEOTECHNICAL STUDIES <i>Christopher James Baker, University of Birmingham</i>	CASE STUDY: MINIMISATION OF TRAIN TRACTION ENERGY CONSUMPTION UNDER MAXIMUM SPEED AND COAST CONTROL WITH GENETIC ALGORITHM <i>Bayandy Sarsembayev, Brunel University London</i>
15:10	QUESTION AND ANSWER SESSION	QUESTION AND ANSWER SESSION	QUESTION AND ANSWER SESSION	QUESTION AND ANSWER SESSION
15:25	NETWORKING REFRESHMENT BREAK: MARBLE HALL & GALLERY			
SESSION:	WHEEL/RAIL WEAR LECTURE THEATRE CHAIRED BY SHARON ODETUNDE	POINT MACHINES MANUFACTURING ROOM CHAIRED BY PAUL MOLYNEUW BERRY	VEHICLE STRUCTURE STRENGTH COUNCIL ROOM CHAIRED BY JOHN REDDYHOFF	INDUSTRY INSIGHTS ENERGY ROOM CHAIRED BY ROGER DIXON
15:55	CASE STUDY: RISKS AND BENEFITS OF ECONOMIC TYRE TURNING <i>Julian Stow, University of Huddersfield</i>	DESIGN, CONSTRUCTION, DEPLOYMENT AND TESTING OF A FULL-SCALE REPOINT LIGHT TRACK SWITCH <i>Maria L. Sarmiento-Carnevali, Loughborough University</i>	NOVEL EXPANSION-SPLITTING ENERGY ABSORBER AND PERFORMANCE COMPARISON TO EXPANSION, SPLITTING And Progressive Buckling Tubes <i>Carlos Moreno, Oleo International</i>	ROBUST AUTOMATED SERVICING OF PASSENGER TRAINS-FLUIDS <i>Stuart Adam Hill, Brunel University London</i>
16:20	QUESTION AND ANSWER SESSION	QUESTION AND ANSWER SESSION	QUESTION AND ANSWER SESSION	QUESTION AND ANSWER SESSION

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16:30	ACTIVELY STEERED AND GUIDED WHELMOTOR DEMONSTRATOR VEHICLE <i>Rebeka Sellick, TRL Ltd</i>	FAULT ANALYSIS OF THE SWITCH AND POINT MACHINE TO IMPROVE RAILWAY RELIABILITY <i>Ning Zhao, The University of Birmingham</i>	COMPUTER MODELLING THE DYNAMICS AND STRENGTH OF A RAIL TANK CAR WITH LIQUID CARGO <i>Artur Putsiata, Belarusian State University of Transport</i>	RAILWAY ELECTRIFICATION: CONSIDERATIONS FOR THE IMPROVEMENT OF DESIGN OF SHORT NEUTRAL SECTIONS <i>John Christopher Morris, Newcastle University</i>
16:55	QUESTION AND ANSWER SESSION	QUESTION AND ANSWER SESSION	QUESTION AND ANSWER SESSION	QUESTION AND ANSWER SESSION
17:05	CLOSE OF CONFERENCE DAY TWO			
17:45	DRINKS RECEPTION: LIBRARY			
18:15	NETWORKING DINNER			

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CONFERENCE DAY THREE

08:30	REGISTRATION AND REFRESHMENTS: MARBLE HALL & GALLERY			
SESSION:	ROLLING STOCK RELIABILITY	TRACK COMPONENTS	TRAIN CONTROL	TECHNOLOGY STRATEGY
	LECTURE THEATRE	MANUFACTURING ROOM	COUNCIL ROOM	ENERGY ROOM
	Chaired by	Chaired by DAVID CONNOLLY	Chaired by RICHARD EAST	Chaired by ANDY BROADBENT
09:00	DEVELOPING ROLLING STOCK FAULT ANALYSIS AND KEY PERFORMANCE INDICATORS USING STATISTICAL MODELLING <i>Stephanie Louise Coates, Fishbone Solutions</i>	ASSET CLAMP FORCE MEASUREMENT AND REMOTE CONDITION MONITORING USING A SMART WASHER: A CASE STUDY OF RAILWAY RESEARCH, INNOVATION AND TECHNICAL DELIVERY IN THE EARLY 21ST CENTURY <i>Greg Horler, Smart Component Technologies Ltd</i>	S2PTC : A NEW TRACK CIRCUIT BASED ON SOFTWARE WITHOUT ELECTRICAL OR MECHANICAL ISOLATING COMPONENTS <i>Jerome De Reffye, PI-Ramses Cy</i>	TECHNOLOGY DEVELOPMENT STRATEGIES IN A RAIL SYSTEM PROBLEM CONTEXT <i>Dominic Johnson, Network Rail</i>
09:25	CASE STUDY: DOCKLANDS LIGHT RAILWAY DOOR GUIDE IMPROVEMENT <i>Mitixa Jani, Keolis amey Docklands</i>	A UNIFIED ELASTOPLASTIC BOND MODEL FOR PRESTRESSING STEEL REINFORCEMENTS USED IN RAILROAD CONCRETE CROSSTIES <i>Hailing Yu, U.S. DOT/Volpe Center</i>	CASE STUDY: A SYSTEMS ENGINEERING FRAMEWORK FOR RAILWAY CONTROL AND SAFETY SYSTEMS: THE MAINLINE CHALLENGE <i>Karl Michael King, shi</i>	OPTIMISING STRATEGY SELECTION FOR THE MANAGEMENT OF RAILWAY ASSETS <i>Claudia Fecarotti, University of Nottingham</i>

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09:50	QUESTION AND ANSWER SESSION	QUESTION AND ANSWER SESSION	QUESTION AND ANSWER SESSION	QUESTION AND ANSWER SESSION
10:00	NETWORKING REFRESHMENT BREAK: MARBLE HALL & GALLERY			
SESSION:	POWER AND BRAKING SYSTEMS LECTURE THEATRE Chaired by	BRIDGES MANUFACTURING ROOM Chaired by	GAUGING COUNCIL ROOM Chaired by ROGER DIXON	CUSTOMERS ENERGY ROOM Chaired by DAVID SHIRRES
10:30	APPLICATION OF KALMAN FILTER ON TRAIN CONTROL CIRCUIT IN ORDER TO REDUCE THE SHUDDERING EFFECT DURING STOPPING <i>Monish Sengupta, Ricardo Rail</i>	BRIDGE ASSET MANAGEMENT USING PETRI-NETS <i>Luis Canhoto Neves, University of Nottingham</i>	ASSESSING THE IMPACT OF RISK ON GAUGING PRACTICE <i>Colin Davenport, Balfour Beatty Rail</i>	CASE STUDY: HOW LONDON UNDERGROUND'S BUILT ENVIRONMENT AFFECTS CUSTOMER SATISFACTION <i>Ian Pring, Transport for London</i>
10:55	LOCOFLYER: LOW COST FLYWHEELS FOR EFFICIENT RAILWAYS <i>Rebeka Sellick, TRL Ltd</i>	ANTI-SEISMIC EFFECTS OF FLUID VISCOUS DAMPERS ON SIMPLY SUPPORTED GIRDER BRIDGE WITH HIGH PIER IN SICHUAN-TIBET RAILWAY <i>Zhaoling Han, Southwest Jiaotong University</i>	APPLICABILITY OF VIDEO GAUGE FOR THE ASSESSMENT OF TRACK DISPLACEMENT <i>Maria Gallou, LB Foster Rail Technologies (UK) Ltd</i>	SIMULATION OF INTERCHANGES FOR PASSENGER BENEFITS AND ROLLING STOCK OPTIMISATION <i>Paul Clifford, Mott MacDonald</i>
11:20	INTER-DISCIPLINARY APPROACH FOR SIMULATION OF RAILWAY VEHICLE DRIVELINE <i>Naim Kuka, Alstom</i>	RAILWAY BRIDGE FAULT DETECTION USING BAYESIAN BELIEF NETWORK <i>Matteo Vagnoli, The University of Nottingham</i>	MAXIMISING VEHICLE SIZE AND COMPATIBILITY USING KINEMATIC ENVELOPE (KE) TEMPLATE AND DYNAMIC GAUGES, A CASE STUDY	MAXIMISING PASSENGER SATISFACTION THROUGH OPTIMISED TRAIN MOVEMENTS <i>Bob Hickish, University of Sheffield</i>

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			OF THE NEW DYNAMIC PASSENGER GAUGES <i>David Buckley, Balfour Beatty Rail</i>	
11:45	QUESTION AND ANSWER SESSION	QUESTION AND ANSWER SESSION	QUESTION AND ANSWER SESSION	QUESTION AND ANSWER SESSION
12:00	NETWORKING LUNCH: MARBLE HALL & GALLERY			
	LECTURE THEATRE PLENARY SESSION Chaired by FRANCIS HOW			
12:45	CASE STUDY: KEYNOTE PRESENTATION CARBON/SUSTAINABILITY <i>Inga Doak, Sustainability Manager, Siemens Rail Automation</i>			
13:15	CHRIS JACKSON, RAILWAY GAZETTE			
13:45	BEST PAPER AWARD Chris Jackson, Railway Gazette and Professor Simon Iwnicki, University of Huddersfield			
13:50	CHAIR'S CLOSING REMARKS			
14:00	END OF CONFERENCE			