INTERNATIONAL WORKSHOP ON RAILWAY BRAKE RESEARCH

(Virtual Conference)

19-20 SEPTEMBER 2023

Hosted by

CQUniversity AUSTRALIA

UNIVERSITÀ DEGLI STUDI FIRENZE
DIEF DIPARTIMENTO DI INGEGNERIA INDUSTRIALE

Chairs

Qing Wu & Luca Pugi

Event QR Code:

EVENT CONTACTS:

Dan Agustin
d.agustin@cqu.edu.au

Vanessa Soldatos
vanessa@eventfrog.com.au

BACKGROUND

Brakes are indispensable and safety-critical systems for all types of railway trains including passenger (high-speed, metro, tram, etc.) and freight trains (heavy-haul, intermodal, etc.). Safe and efficient railway operations require a good understanding of brakes from various parties including drivers, maintenance crews, manufacturers, and design engineers. Brake research helps to expand and deepen the knowledge about railway train brakes.

Driven by the rapid development of Intelligent Transport Systems and the ever-increasing demands for faster and heavier trains, as well as energy savings and sustainability, railway brake research has seen a new wave of interests from the industry and academia. Under these situations, we propose an International Workshop on Railway Brake Research to boost brake research. The International Workshop on Railway Brake Research will be virtually hosted by CRE of Central Queensland University (Australia) and DIEF of University of Florence (Italy) from 19-20 September 2023. This virtual conference will bring together the latest research to achieve a better understanding of the behaviour and mechanisms of railway brake systems and associated phenomena.

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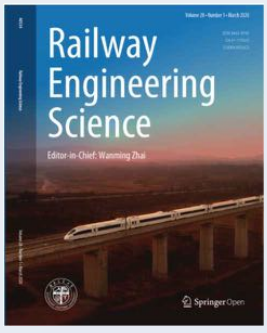

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FINAL PROGRAM

Day 1

Day 1				
Time Start	**Duration (mins)**	**Agenda**	**Presenter**	**Details**
16:00 (AEST)	20	Welcoming Session	**Qing Wu** *(Conference Chair)* **Vanessa Soldatos** *(Event Organiser)* **Grant Stanley** *(Vice-President (Research), Central Queensland University)* **Roy Unny** *(Executive Chair, RTSA - The Railway Technical Society of Australasia)*	
16:20 (AEST)	40	Keynote Session (Chair: Qing Wu)	**Luca Pugi** *University of Florence, Italy*	Management of regenerative braking of multi-modal trains on partially electrified lines
17:00 (AEST)	40		**Wei Wei** *Dalian Jiaotong University, China*	Research on the coordination and compatibility of heavy haul rolling stock and controllable train tail
17:40 (AEST)	10	*Tea Break*		
17:50 (AEST)	20	Session 1 Brake Adhesion and Contact (Chair: Maksym Spiryagin)	**Hua Chen** *Railway Technical Research Institute, Japan*	Assessment of adhesion coefficient and braking performance in cold environment
18:10 (AEST)	20		**Yanjun Zhang** *KTH Royal Institute of Technology, Sweden*	How changeable contact area between brake pad and disc influences disc temperature: a coupled thermomechanical model
18:30 (AEST)	20		**Quan Wang** *School of Mechanical Engineering, Southwest Jiaotong University, China*	Vibration characteristics analysis of a high-speed train braking system with the perforated friction block
18:50 (AEST)	10	*Tea Break*		
19:00 (AEST)	20	Session 2 Brake Strategy and Control (Chair: Colin Cole)	**Xueping Wang** *Tongji University, China*	Investigation on the intermittent braking strategy of high-speed train
19:20 (AEST)	20		**Auteliano Santos** *University of Campinas - Unicamp, Brazil*	Multi-objective optimization of electro-pneumatic braking systems with fuzzy logic control for heavy haul applications
19:40 (AEST)	20		**Xiangping Wang** *State Key Laboratory of Rail Transit Vehicle System, Southwest Jiaotong University, China*	A DNMPC control method for group operation of heterogeneous heavy-haul trainsets considering the response delay of pneumatic brake system
20:00 (AEST)	10	*Tea Break*		
20:10 (AEST)	20	Session 3 Brake Tests (Chair: Luca Pugi)	**Yuan Zhang** *Dalian Jiaotong University, China*	Brake test rig and simulation system for heavy haul trains up to 40,000 tonnes
20:30 (AEST)	20		**Ivano Sgnaolin** *Alstom, Italy*	Condition-based maintenance (CBM) on Air Production Systems : State of the Art and Future Developments
20:50 (AEST)	20		**Elton Toma** *National Research Council, Canada*	Testing of freight car air brakes in climate-controlled conditions
21:10 (AEST)	10	*Tea Break*		
21:20 (AEST)	40	Lab Tour and Remarks of the Day (Centre for Railway Engineering, Central Queensland, Australia)		

IMPORTANT: TIME ZONE CONVERSION

Time zone	Time
Australian Eastern Standard Time QLD (AEST)	16:00 – 22:00
Australian Western Standard Time WA (AWST)	14:00 – 20:00
Italy, Central European Time (CET)	08:00 – 14:00
United Kingdom, Greenwich Mean Time (GMT)	07:00 – 13:00
Beijing, China Standard Time (CST)	14:00 – 20:00
Iran Standard Time (IRST)	11:30 – 17:30
India Standard Time (IST)	11:30 – 17:30
US (DC), Eastern Daylight Time (EDT)	02:00 – 08:00

Day 2

Day 2				
Time Start	**Duration (mins)**	**Agenda**	**Presenter**	**Details**
16:00 (AEST)	40	Keynote Session (Chair: Luca Pugi)	**Paul Meehan** *The University of Queensland, Australia*	Brake Squeal and Nonlinear Phenomena: Prediction and Control
16:40 (AEST)	40		**Luciano Cantone** *University of Rome Tor Vergata, Italy*	Some ways to increase the efficiency of freight trains in Europe
17:20 (AEST)	10	*Tea Break*		
17:30 (AEST)	20	Session 4 Train Braking Dynamics (Chair: Colin Cole)	**Camil Ion Crăciun** *Politehnica University of Bucharest, Romania*	About longitudinal dynamic forces that appear during train braking
17:50 (AEST)	20		**Matteo Magelli & Nicolo Zampieri** *Politecnico Di Torino, Italy*	A co-simulation approach for the evaluation of full vehicle dynamics and shoe temperature during LTD braking operations.
18:10 (AEST)	20		**Maxim Keyno** *Far Eastern State Transport University, Russia*	An approach to improving longitudinal dynamics in long container trains
18:30 (AEST)	10	*Tea Break*		
18:40 (AEST)	20	Session 5 Vehicle Braking Dynamics (Chair: Maksym Spiryagin)	**Micheale Gebreyohanes** *School of Mechanical Engineering, Southwest Jiaotong University, China*	Modelling and analysis of a spatial vehicle-track coupled dynamics model with brake systems for a high-speed train
19:00 (AEST)	20		**Pengfei Liu** *Shijiazhuang Tiedao University, China*	Dynamic performance of locomotive subjected to asymmetric brake shoe forces
19:20 (AEST)	20		**Yan Sun** *Central Queensland University, Australia*	Gensys freight wagon modelling and simulation analysis due to braking
19:40 (AEST)	10	*Tea Break*		
19:50 (AEST)	20	Session 6 Brake Distance (Chair: Qing Wu)	**Lisa Croppi** *Knorr-bremse, Italy*	CubeControl Knorr-Bremse product and Reproducible Braking Distance (RBD) concept
20:10 (AEST)	20		**Raphael Pfaff** *Fh Aachen University of Applied Science, Germany*	Braking for driverless last-mile operations: braking distances and sensor selection
20:30 (AEST)	20		**Francesco Mazzeo** *Politecnico Milano, Italy*	Investigating the dynamic characteristics of brake rigging mechanism on an articulated freight train
20:50 (AEST)	10	*Tea Break*		
21:00 (AEST)	40	Lab Tour Department of Industrial Engineering Florence, University of Florence, Italy	**Veronica Elena Bocci** *(Coordinator DITECFR)* **Leonardo Cabrucci** *(Head of brake and mechanical components testing dept. – Italcertifer Labs)*	
21:40 (AEST)	20	Closing Session (Luca Pugi)		

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