THE 4th WORLD CONGRESS ON
CONDITION MONITORING

MILAN · ITALY · 25-27 AUGUST 2026

ORGANISED BY

ISCM
The International Society for Condition Monitoring

AIM
ASSOCIAZIONE ITALIANA DI METALLURGIA

WCCM2026

The 4th World Congress on Condition Monitoring

25-27 August 2026 - Milan, Italy

The 4th World Congress on Condition Monitoring (WCCM) will take place on August 25-27, 2026, in Milan, Italy, at FAST Congress Centre, piazzale Rodolfo Morandi 2.

The primary objective of the WCCM is to facilitate the global exchange of research and applications in Condition Monitoring and related areas, with a strong emphasis on scientific and technological advancements, industrial applications and international cooperation. The Congress serves as a worldwide platform for scientists and professionals from both academia and industry to share knowledge and insights.
The event is organized in collaboration with condition monitoring and NDT societies worldwide.

Congress chairpersons
Prof. Len Gelman – The University of Huddersfield, UK
Prof. Hamid Reza Karimi – Politecnico di Milano, Italy

Congress venue
WCCM 2026 will be held in Milan, at the FAST Congress Centre in Piazzale R. Morandi, 2 (http://www.fast.mi.it/).

Free Wi-Fi Network
Centro Congressi Fast

SUMMER SCHOOL: AI FOR CONDITION MONITORING
WCCM 2026 hosts a Summer School focused on AI for condition monitoring in English language for students from all over the world. The Summer School is organised with the support of ISCM International Society on Condition Monitoring.
Main teacher is Prof. Hamid Reza Karimi, Professor of Applied Mechanics with the Department of Mechanical Engineering, Politecnico di Milano.
His original research achievements are within the topic of control systems and intelligence health monitoring systems with applications to vehicles, robotics and mechatronics.

WCCM 2026 Organizing Secretariat
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CONGRESS PROGRAMME

(NOTE: possible changes in the programme will be communicated during the Congress)

Tuesday, 25 August 2026	
08:30	Registration of attendees in the foyer
	MAGGIORE room
	CONGRESS OPENING CEREMONY
09:00	Welcome addresses F. Bassani, Prof. L. Gelman, Prof. H.-R. Karimi
09:10	**PLENARY LECTURE** 203 - **Bridging the trust gap: trustworthy artificial intelligence for machine condition monitoring** **Prof. Piero Baraldi** - Italy - Chair: **Prof. H.-R. Karimi**

	MAGGIORE room	**MORANDI room**
	Condition monitoring technologies and systems chair: **Jerome Lacaille**	**Fault diagnosis and prognosis** Chair: **Jinzhen Kong**
9:40	DISTINGUISHED LECTURE 106 - **Mobile robot based inspection of large scale infrastructure in extreme conditions - a mining industry case study** Prof. Radoslaw Zimroz - Wroclaw University of Science, Poland	61 - **A hybrid QFA-NPSO co-optimization framework for robust damage identification of plate-like structures** Li Y. - The Chinese University of Hong Kong, China
10:00	DISTINGUISHED LECTURE 116 - **From anomaly detection to intelligent digital twins** Prof. Jerome Lacaille - Safran Aircraft Engines, France	67 - **Damage detection of thin plate structures based on nonlinear frequency domain analysis** Zhang B. - Ningxia University, China Guo X., Hu R., Zhang W., Cheng L., Zhu Y., Peng Z.
10:20	DISTINGUISHED LECTURE 178 - **Delivering value through condition monitoring in large power generation fleets: an Eskom RT&D perspective** Dr. A. Narain Singh, Dr. P. Madiba - Eskom Research Test and Development, South Africa	32 - **Bi-directional gradient-guided perturbation framework for remaining useful life prediction under unseen operating conditions** Qin Y. - Chongqing University, China Zheng L.
10:40	DISTINGUISHED LECTURE 139 - **New analysis tools for the diagnosis of gear systems** Dr. François Combet - EES – Dynae, France	47 - **Field data validation of continuous magnetic memory scanning for drill collar integrity monitoring** Ye Y.- China University of Petroleum, China Fan J.
11:00	**Coffee and tea break in the foyer & Exhibition by MDPI**	

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Tuesday, 25 August 2026		
	MAGGIORE room	**MORANDI room**
	Prognostics chair: **Changfu Zou**	**Condition monitoring technologies and systems** chair: **Suri Ganeriwala**
11:20	84 - **Simplified modeling approach for predicting the remaining useful life of EV batteries in second-life applications** Montaru M. - CEA, France Guillet N., Lonardoni L., Serra L.	109 - **Physics-statistics guided instruction tuning: constructing high-quality corpora for trustworthy bearing fault diagnosis** Jiang J. - Hunan University, China Wang T., Xie J.
11:40	93 - **A fast autoencoder-based soh estimation method for lithium-ion batteries second life applications** Klingelhoefer F. - CEA, France Laurin A.	161 - **Open-set fault diagnosis via orthogonal decoupling and purity-aware extreme value theory** Zhang J. - Beijing Institute of Technology, China Qi J., Wang H., Shi L., Lin C., Kong Y.
12:00	94 - **Fast diagnosis for SOH estimation of 2nd life battery modules** Montaru M., - CEA, France Guillet N., Cassarino L., Tanguy Y., Lonardoni L., Serra L., Arnal C.	177 - **Joint constraint modelling method for blade resonance and aliasing information based on single-sensor** Liu Y. - Beijing University of Chemical Technology, China Wang W., Wei A., Zhao J., Li Q., Gao J.
12:20	49 - **Transformer-based required state-of-charge forecasting and data-driven adaptive charging strategies for electric vehicles** Haj Ali M. - University of Ottawa, Canada Al Osman H., Heiries V.	202 - **Research on online acoustic emission monitoring technology for high-temperature components in supercritical boilers** Shen Y. - China Special Equipment Inspection and Research Institute, China
12:40	56 - **Remaining useful life prediction of li-ion batteries via degradation mode forecasting using physics-informed machine learning** Bigouraux Q. - CEA, France Heiries V., Aloui S., Laurin A., Chandesris M.	DISTINGUISHED LECTURE 205 – **How to publish with Springer** Dr. Swati Meherishi – Springer Nature, India
13:00	**Lunch at Cavour Bistrot (basement floor of FAST Congress Centre)**	

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Tuesday, 25 August 2026	
	MAGGIORE room
14:00	**PLENARY LECTURE** 31 - **Ultrasonic NDT and structural reliability assessment of complex aerospace structures"** **Prof. Jingjing He** - China – Chair: **Prof. H.-R. Karimi**
14:30	**PLENARY LECTURE** 135 - **Advanced digital signal processing methods for AI-based condition monitoring** **Prof. Radek Martinek** - Czech Republic – Chair: **Prof. L. Gelman**

	MAGGIORE room	**MORANDI room**
	Fault diagnosis and prognosis chair: **Radek Martinek**	**Fault diagnosis** chair: **Mayorkinos Papaelias**
15:00	60 - **DeepONet-based abrasive belt wear monitoring using wear-relevant acoustic emission features** Ding Y. - Beijing Jiaotong University, China Liu Y., Nie M., Xue S., He Y.	DISTINGUISHED LECTURE 188 - **Minimum entropy decomposition application for bearing fault analysis in a permanent magnet motor** Dr. Suri Ganeriwala - Spectraquest, USA
15:20	82 - **Learning when to measure: task-aware conditional acquisition for embedded RUL prediction** Prevost G. - CEA LETI, France Cabanillas E., Boutet J., Ioana C.	185 - **A 1D-ResNet approach for direct coordinate regression of damage localization on variable-thickness blades** Du D. - Beihang University, China Yu F., Hua J., Lin J.
15:40	DISTINGUISHED LECTURE 111 - **Fault diagnosis of varying-speed bearings based on non-stationary signal analysis** Prof. Tian Ran (Terry) Lin - Qingdao University of Technology, China Feng M., Wang, H.	151 - **Microstructure identification from AE under heterogeneous conditions via invariant representation learning** Zhang W. - Beihang University, China Wang L., He J.
16:00	163 - **PIFMA-PINN: a high-fidelity surrogate modelling framework for PMSM multi-component losses under sparse FEA samples** Wang L. - Beijing Information Science and Technology University, China Yu Y., Wang H.	107 -**System-level fault diagnosis of railway bogies under strong noise via identifiable factorized representation learning** Yin Q. - Hunan University, China Wang T., Xie J.
16:20	**Coffee and tea break in the foyer & Exhibition by MDPI**	

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	MAGGIORE room	**MORANDI room**
	Condition monitoring technologies and systems chair: **Radoslaw Zimroz**	**Fault diagnosis** chair: **Ruqiang Yan**
16:40	DISTINGUISHED LECTURE 117 - **A novel effective smart camera based machine health monitoring** Prof. Jacob Bortman- Ben-Gurion University of the Negev, Israel	119 - **On the impact of rotational speed on roller bearing fault diagnostics** Karioja K. - University of Oulu, Finland Laurila J.
17:00	DISTINGUISHED LECTURE 118 - **Gear pitting monitoring via encoder signal analysis and visual inspection** Toby Verwimp, Zhu R., Wen H., Achilleos A., Gryllias K. - KU Leuven, Belgium	54 - **Axle-box vibration-based monitoring of knuckle slack in centre buffer couplers of freight wagons** Anand A. - IIT Kanpur, India Vyas N.
17:20	104 - **Long-term degradation profile identification based on tensor decomposition of cyclic spectral conference and its application to run-to-failure measurements** Michalak A. - Wrocław University of Science and Technology, Poland Zimroz R., Wyłomańska A.	91 - **Bridging internal dynamics and diagnostic signals: a high fidelity multibody framework for bearing faults** Schwarcz O. - Ben-Gurion University of the Negev, Israel Talan A., Shoham S., Bortman J., Bublil T.
17:40	101 - **Application of nonnegative tensor factorization to RGB video sequence for instantaneous speed estimation of the rotating machine component** Dąbek P. - Wrocław University of Science and Technology, Poland Michalak A., Wodecki J., Zimroz R.	189 - **Detection of shaft crack in a rotor system using vibration signature analysis** Ganeriwala S. – Spectra Quest Inc., USA
18:00	18 - **Implementing functional data analysis in digital twin applications for robust gear wear monitoring** Katz, D. - Ben Gurioun University, Israel Cohen R., Kenett R., Bortman J.	115 -**Trajectory-informed evaluation of distributed irregularities in flexible catenary system** Liu J. – Politecnico di Milano, Italy Zhou N., Collina A., Bernardini L.
18:20	**Congress close for the day**	
18:30	**Meeting of the ISCM Management Committee at AIM offices – via Filippo Turati 8, Milano**	

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Wednesday, 26 August 2026		
	MAGGIORE room	
09:00	**PLENARY LECTURE** 204 - **Advancing NDT for a safer world** **Dr. Jason Riggs** - USA – Chair: **Prof. L. Gelman**	
	MAGGIORE room	**MORANDI room**
	Condition monitoring and NDT chair: **Hamid Reza Karimi**	**Condition monitoring technologies and systems** chair: **Jingjing He**
09:30	DISTINGUISHED LECTURE 12 - **A software and hardware system for condition monitoring and lifetime research of stationary process equipment in hazardous production facilities** Prof. Vladimir A. Syasko - Russian Society for Non-Destructive Testing and Technical Diagnostics	DISTINGUISHED LECTURE 89 - **The importance of multiple data sources for condition monitoring - a wind industry case study** Dr. Daryl Hickey - Natural Power, United Kingdom
09:50	53 - **Metasurface-enabled lamb wave multiple access communication** Xu Y. - Chongqing University, China Huang W.	DISTINGUISHED LECTURE 155 - **Information quality and its acquisition time: new challenges in technical condition monitoring** Prof. Rafal Burdzik - Silesian University of Technology, Poland
10:10	108 - **The procedure of segmentation of signal from rotating machinery - a case study of acoustic measurement with impulsive background noise** Michalak A. - Wrocław University of Science and Technology, Poland Zimroz R., Wyłomańska A.	DISTINGUISHED LECTURE 198 - **Marine robotic systems for condition monitoring. The MERLIN project** Prof. Mayorkinos Papaelias - University of Birmingham, United Kingdom
10:30	69 - **Experimental study on metamaterial-enhanced acoustic tweezers for precision actuation in advanced condition monitoring systems** Zhang B. - Ningxia University, China Abdulatef A., Zhou J., Cheng L., Zhu Y., Peng Z.	DISTINGUISHED LECTURE 113 - **Research and application of acoustic emission condition monitoring and fault diagnosis technology for low-speed heavy-load rolling bearings** Prof. Gongtian Shen - China Institute of Special Equipment Testing and Research (CSEI) Zhang J., Shen Y., Hu B.
10:50	DISTINGUISHED LECTURE 201 - **Accelerometers versus proximity probes in rotating machinery condition monitoring** Prof. Mehdi Behzad - Sharif University of Technology, Iran ***online presentation***	88 - **Two-stage NMF with intermediate feature filtering and enhancement for acoustic-based cyclostationary bearing diagnostics** Wodecki J. - Wrocław University of Science and Technology, Poland Michalak A.
11:10	**Coffee and tea break in the foyer & Exhibition by MDPI**	

Wednesday, 26 August 2026

	MAGGIORE room	MORANDI room
	Condition monitoring technologies and systems chair: **Dong Wang**	**Fault diagnosis and prognosis** chair: **Changfu Zou**
11:30	DISTINGUISHED LECTURE 141 - **Fringe pattern-based vision sensing system for the measurement of dynamic parameters** Prof. Jianfeng Zhong - Fuzhou University, China	46 - **Average treatment effect–guided LLM–based semantic alignment network for zero-shot compound fault diagnosis** Xu J. - Anhui University, China Yang Z., Ding X., Li X., Yan R.
11:50	180 - **The method for calculating the time-varying meshing stiffness of planetary gear transmission system considering load distribution** Pan J. - Nanjing University of Aeronautics and Astronautics, China li Z., Zhu R.	51 - **Development and application of intelligent diagnostic technology for sustained annular pressure in HPHT gas wells** Xu K. - Petrochina Southwest Oil & Gas Field Company, China Wang X., Fan J., Hu K.
12:10	123 - **A novel vision-based method for coupler force measurement using multi-scale feature aggregation network and improved itransformer** Chen S. - Southwest Jiaotong University, China Li L., Xie R., Li H.	196 -**Distributed gear fault dynamic response prediction based on a physics-guided ODE neural network** Zhou P. - Tongji University, China
12:30	68 - **A time-frequency enhanced deep residual model for interpretable machine health monitoring** Wei S. - Shanghai University, China Zhu Y., Liu X., Zhang H., Liu S.	143 - **Tacholess order tracking via instantaneous frequency estimation: a DSP-based alternative to vold–kalman for variable-speed condition monitoring** Peña O. - TECNALIA, Spain Simón N., Gutierrez I.
12:50	**Lunch at Cavour Bistrot (basement floor of FAST Congress Centre)**	

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Wednesday, 26 August 2026	
	MAGGIORE room
13:50	**PLENARY LECTURE** 200 - **Evolving paradigms in machinery fault diagnosis: from learning-based models to next-generation diagnostic intelligence** **Prof. Ruqiang Yan** - China - Chair: **Prof. H.-R. Karimi**

	MAGGIORE room	**MORANDI room**
	Fault diagnosis chair: **Peng Zhou**	**Condition monitoring technologies and systems** chair: **Jianfeng Zhong**
14:20	145 - **Physics-guided data augmentation for robust gearbox fault diagnostics with limited data** Yao J. - Shanghai Jiaotong University, China He Q., Peng Z.	124 - **Acoustic emission analysis for predictive tool condition monitoring in turning** Nadkarni P. - University of Augsburg, Germany Merzkirch M., Sause M.
14:40	146 - **Robust optimization of nonlinear energy sinks for supersonic viscoelastic plates under hybrid uncertainties** Huang F. - Shanghai University, China Wei S., Hu D., Chen L.	103 - **Searching for informative frequency band in non-gaussian data - comparison of results for time-frequency and bi-frequency domains** Zimroz R. - Wrocław University of Science and Technology, Poland Hebda-Sobkowicz J., Michalak A., Wodecki J., Hu B., Zhan T., Lei W., Zhu Y., Shen Y.
15:00	25 - **Kurtosis with logarithmic envelope input: a novel indicator for incipient-fault detection and degradation tracking** Li J. - Ningxia University, China Wang D., Yu L., Peng Z.	105 - **On the efficiency of impulsiveness-based statistical criteria for local damage detection in rolling element bearings** Zimroz R. - Wrocław University of Science and Technology, Poland Kuzio D., Wyłomańska A.
15:20	38 – **Investigation and application of the ultra-fast transient characteristics test of the rotor winding of the non-salient pole synchronous generator in the rotor ventilation test of large-scale generators** Zhang Q. - Hangzhou Nuclear Nova Technology Co., Ltd., China Zhang Y.	167 - **Online monitoring technology and application for complete chemical plant equipment** Zou X. - China Special Equipment Inspection and Research Institute, China
15:40	**Coffee and tea break in the foyer & Exhibition by MDPI**	

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	MAGGIORE room	MORANDI room
	Condition monitoring technologies and systems chair: **Junyu Qi**	**Fault diagnosis** chair: **Sha Wei**
16:00	DISTINGUISHED LECTURE 22 - **A digital twin-driven cross-domain adaptation method for bearing intelligent fault diagnosis** Prof. Zijian Qiao - Ningbo University, China	DISTINGUISHED LECTURE 147 - **Optical and Vision-based Measurement Methodologies and Systems for Condition Monitoring** Prof. Shuncong Zhong - Fuzhou University, China ***online presentation***
16:20	DISTINGUISHED LECTURE 48 - **AeroTwinX™: a physics-aware, ai-enabled digital twin framework for aero-engines** Prof. Nalinaksh S. Vyas - Indian Institute of Technology Kanpur, India	179 - **Data-model-fusion health state monitoring and performance optimization for high-end equipment** Kong J. - China Wang X., Ma S., Zhen D.
16:40	62 - **Design of an agentic AI–driven multi-spatiotemporal digital twin system for large impeller machining centers** Liu S. - Huazhong University of Science and Technology, China Liu L., Duan C., Liu J., Hu Z., Hu Y.	166 - **Investigation of the motion stability of passive wireless strain sensors for a uav-based strain inspection system** Hu B. - China Special Equipment Inspection and Research Institute, China Zou X.
17:00	79 - **Acoustic intelligence-based roller chain monitoring: a transfer learning approach to address varying operational regimes** Qi J. - Karlsruhe Institute of Technology, Germany Nölcke J., Chen Z., Schullerus G., Proppe C.	20 - **Evaluating the frequency-resolution trade-off in FFT-based vibration diagnostics using real-world data from CHP units and marine diesel engines** Schlieker F. - German Aerospace Center, Germany Schwung A., Javidi da Costa J., Bergström M., Ehlers S.
17:20	DISTINGUISHED LECTURE 148 - **Active noise control using mpc with uncertainty estimation; a comparison study of deep learning architectures** Jalaeian-Farimani M. - Politecnico di Milano, Italy Dr. Rastegar Moghaddam M., Karimi H.-R., Liang C.	DISTINGUISHED LECTURE 110 - **Detecting multiple faults from waveform signals with a set of specialized features** Prof. Esko Juuso - University of Oulu, Finland ***online presentation***
19:30	**Congress Gala Dinner and Award Ceremonies at Bauscia Brera Milano Restaurant - via dell'Orso 2, Milano**	

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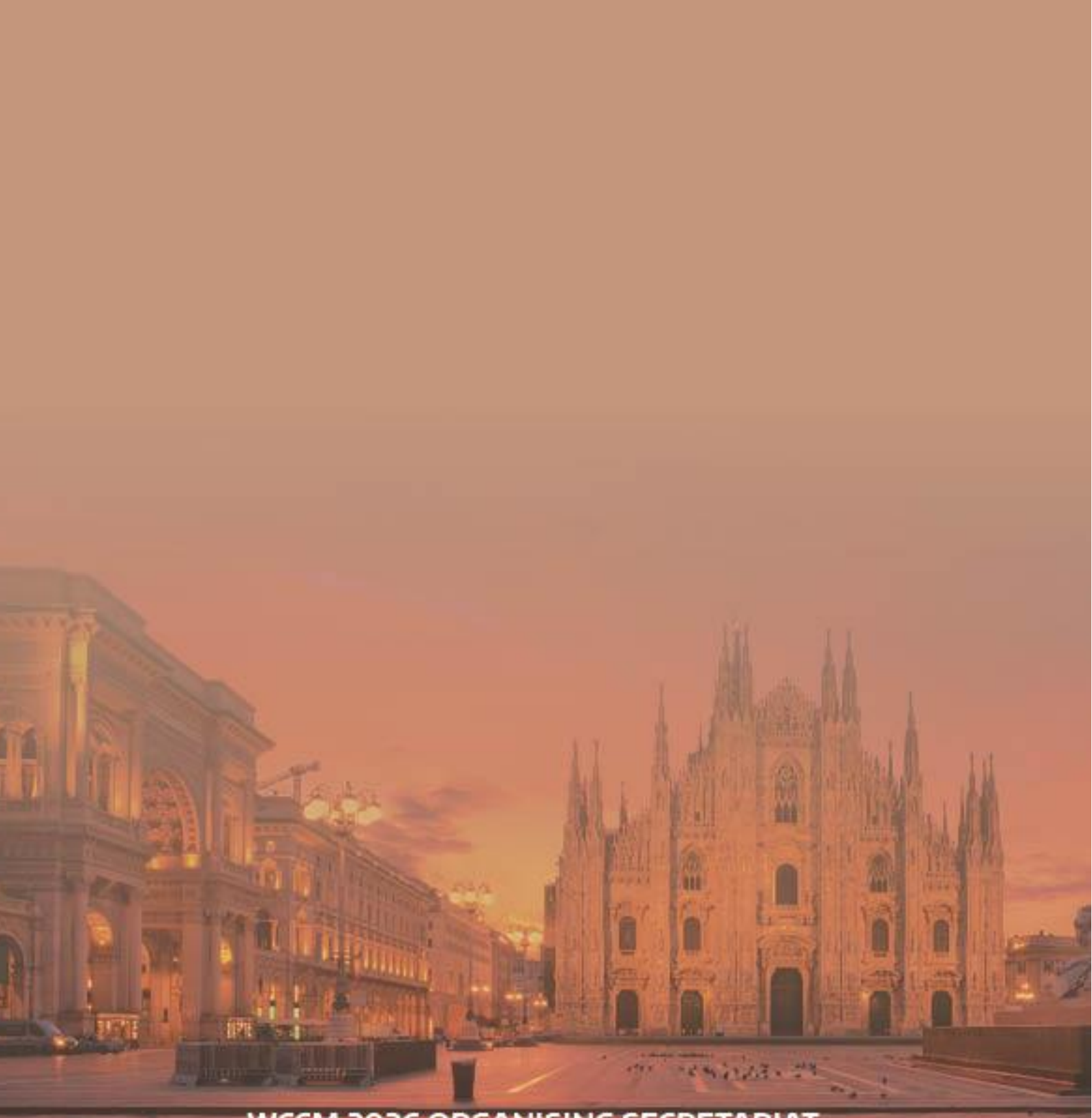
	MAGGIORE room
09:00	**PLENARY LECTURE** 130 - **Fault feature identification theory and separation method** Prof. Dong Wang - China – Chair: **Prof. L. Gelman**

	MAGGIORE room	MORANDI room
	Condition monitoring and structural health monitoring technologies and systems chair: **Qingbo He**	**Condition monitoring and structural health monitoring technologies and systems** chair: **Sha Wei**
09:30	193 -**Deep learning–enabled early prediction of piston-ring wear in marine two-stroke diesel engines using onboard sensors** Al Hariri A. - Khalifa University, United Arab Emirates Berrouk A., Saeed M., Mikhaylov D., Al Wahedi Y., Alhosani M., Vahdati N., el-khasawneh B.	66 - **An information fusion weighted meta-learning method for few-shot cross-machine transfer diagnosis** Lin C. - Beijing Institute of Technology, China Kong Y., Shi L., Zhao K., Zhang Y., Dong M.,
09:50	102 - **Adaptive order selection for instantaneous frequency estimation using multi-order probabilistic approach** Protopapadakis G. - Vrije Universiteit Brussel, Belgium Peeters C., Leclere Q., Antoni J., Helsen J.	55 - **SHM of concrete using embedded sensors: prediction by IA, and data fusion with uncertainty -** Sbartaï Z.M. - University of Bordeaux, France Dufau S., Baudrit C., Villain G.
10:10	98 - **Unsupervised detection of shaft unbalance using neural network reconstruction error** Pinello L. - Politecnico di Milano, Italy Petriconi E., Lucii L., Aravanis G., Giglio M., Sbarufatti C.	207 **- Novel higher order spectral technologies for condition monitoring and NDT** Gelman L. - The University of Huddersfield, United Kingdom
10:30	87 - **Locally adaptive self-attentive physics-informed neural networksfor fatigue crack-growth prediction** Ji M. - Beijing University of Chemical Technology, China Liu P., Liu, X., Zhong, X., Wang, W.	35 - **Technical framework for dynamic safety evaluation of large-scale ferris wheels based on operational modal analysis** Liu R. - China Special Equipment Inspection and Research Institute, China Qiao S., Zhu D., Liu S.,
10:50	174 - **CBMDD-Net: An enhanced multiscale defect detection network for car body surface** He Y. - Southwest Jiaotong University, China	45 - **Vibration parameter identification from undersampled single-sensor blade tip-timing using block-omp** Jia T. - Nanjing University of Aeronautics and Astronautics, China Yue L.
11:10	39 - **A diffusion-based data augmentation framework for rebar segmentation** Liu H. - Wuhan University of Technology, China Liu Y., Zhao Z., He B., Zou Y.	50-**Remaining capacity estimation of massive retired lithium ion batteries using consecutive short pulse combinations** Zou C. – Chalmers University of Technology, Sweden Tao S., Xia C.,
11:30	**Congress Closing Ceremony in Maggiore room -** Dr. F. Bassani, Prof. L. Gelman, Prof. H.-R. Karimi	



WCCM 2026 ORGANISING SECRETARIAT

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