

14 July 2023, Friday

Time	Programme
09:00 - 09:30	Invited speech: The new paradigm: performance-based design for wind Dr Melissa Burton <i>Arup, Toronto, Canada</i>
09:30 - 10:00	Invited speech: Artificial intelligence-powered wind engineering Dr Gang Hu <i>Harbin Institute of Technology (Shenzhen), China</i>
	Session 6: AI, big data, and machine learning
10:00 - 10:15	P1: Bridge deck aerodynamic optimisation using DVM in cloud with total design automation platform Ngai Yeung, Paresh Vishnoi, John Chen, Yun Sung <i>Arup, Hong Kong, China</i>
10:15 - 10:30	P2: Peak wind pressure estimation on building facades using convolutional neural networks informed by pressure gradient Yong Cao ¹ , Haokai Wu ¹ , Yaoran Chen ² and Dai Zhou ¹ <i>¹Shanghai Jiao Tong University, China, ²Shanghai University, China</i>
10:30 - 10:45	P3: Prediction of pressure coefficients on low-rise buildings using deep neural networks Youqin Huang and Guanheng Ou <i>Guangzhou University, China</i>
10:45 - 11:00	P4: Two steps wind speed prediction with accuracy enhanced method Enbo Yu and Guoji Xu <i>Southwest Jiaotong University, China</i>
11:00 - 11:15	Coffee break
11:15 - 11:45	Invited speech: Simulations and mechanisms of tornado-induced wind effects on structures Dr Jinxin Cao <i>Tongji University, China</i>
	Session 7: STR wind – special structures
11:45 - 12:00	P1: Numerical study of wind flow and pollutant dispersion in street canyons under traffic flow Xing Zheng ¹ , Jiachuan Yang ² and Rudi Stouffs ³ <i>¹Singapore-ETH Centre, ²The Hong Kong University of Science and Technology, China, ³National University of Singapore</i>
12:00 - 12:15	P2: Respiratory droplets transmission in urban street canyons Xiaodan Fan ¹ , Xuelin Zhang ¹ , A. U. Weerasuriya ² <i>¹Sun Yat-sen University, China, ²Hong Kong Metropolitan University, China</i>
12:15 - 12:30	P3: Investigating mechanism of pollutant dispersion in an isolated building with different geometric features by dynamic mode decomposition Yaojia Guo, Xuelin Zhang <i>Sun Yat-sen University, China</i>
12:30 - 12:45	P4: Pollutant mitigation effects of green walls in idealised urban environment Xingyu Qian, Xuelin Zhang <i>Sun Yat-sen University, China</i>
12:45 - 13:00	P5: Investigation of specific effects of trees on cross-ventilation of a generic building Xuelin Zhang ¹ , A.U. Weerasuriya ² <i>¹Sun Yat-sen University, China, ²The Hong Kong University of Science and Technology, China</i>
13:00 – 14:00	Lunch
14:15 – 17:30	Training course on 2019 Hong Kong Wind Code

Keynote speakers (13-14 July)



Prof Ted Stathopoulos

Professor, Building, Civil and Environmental Engineering, Member, Centre for Zero Energy Building Studies, Concordia University, Canada

Distinguished Professor, Building Physics, Urban Physics and Wind Engineering, Eindhoven University of Technology, The Netherlands.

Guest Professor, "111 Talents" Project, Beijing Jiaotong University and Chongqing University, China

Topic

Wind effects on buildings and their environment: codification and standardisation - what lies ahead?

Biography

Dr Ted Stathopoulos is a professor in the Department of Building, Civil, and Environmental Engineering at Concordia University, specialising in wind engineering and building aerodynamics. He holds a Civil Engineering Diploma from the National Technical University of Athens, Greece, and earned his M.E.Sc. and Ph.D. from the University of Western Ontario. With over 600 publications, his research has significantly influenced the development of wind design provisions in building codes and standards worldwide. Dr Stathopoulos has been recognised with numerous awards, including two Honorary Doctorates in 2011 by Aristotle University of Thessaloniki (Greece) and in 2015 by Eindhoven University of Technology (The Netherlands). He established the Building Aerodynamics Laboratory at Concordia University. He has extensive experience as a consultant and expert witness, and has participated actively in numerous external bodies.

Dr Stathopoulos is the editor of the Journal of Wind Engineering and Industrial Aerodynamics, as well as an Editorial Board member of several prestigious journals in his field. Additionally, he has served as a visiting professor in China and as a distinguished professor in The Netherlands. He is a Fellow of the Canadian Academy of Engineering.



Prof Shuyang Cao

Professor, College of Civil Engineering, Tongji University, China

Member of the Board of Directors of the China Aerodynamics Society

Secretary-General and Executive Board member of the IAWE

Topic

Technical issues for developing an early warning system for wind-related disaster risk reduction

Biography

Dr Shuyang Cao is a professor of the State Key Laboratory for Disaster Risk Reduction in Civil Engineering, Tongji University, China. He works in both structural and environmental wind engineering fields. His current research field includes the development of numerical and physical modeling methods for wind engineering applications, building/bridge aerodynamics and wind-resistant design of structures. He contributed significantly to the first multiple-fan actively controlled wind tunnel in the world. He developed the first tornado-like vortex generator in China. He contributed to 4 books, more than 100 journal papers and more than 100 conference papers. He was awarded the Prize of JAWE in 2011 for his outstanding academic contributions.

Dr Cao is the Editorial Board member of the Journal of Wind Engineering and Industrial Aerodynamics, and Wind and Structures, an international journal. He is the Secretary General and Executive Board member of the International Association for Wind Engineering (IAWE) and the Vice-chair of the International Group for Wind-related Disaster Risk Reduction (IG-WRDRR).

Invited speakers (13-14 July)



Dr Melissa Burton

Fellow, Global Wind Skills leader,
Canada Operation Director,
Americas Region Board of Arup

ATC Board Member

BWAF Board Member

*Committee members of ASCE7-22
(wind load committee), ASCE7-28
(performance-based wind and future
conditions committees), ASCE-49
(wind tunnel testing standard) and
ASCE tall building committee*

Topic

The new paradigm: performance-based design for wind

Biography

Dr Melissa Burton is a Principal at Arup and the Operations Director for Canada. She is a Fellow of Wind Engineering of the company and leads Arup's Global Wind Skills Network.

Through her work in the field of wind engineering, Dr Burton has had the opportunity to work and collaborate on some of the world's most iconic infrastructures. She has worked as a senior technical expert on a large number of international projects and has extensive wind consulting experiences in high-rise buildings, stadiums, pedestrian, long-span bridges and long-span roof structures. She is also experienced in wind hazard quantification and wind resilience. She has worked in the world's leading aeronautical and boundary layer wind tunnels and has a keen understanding of physical and numerical model testing, replicating flow regimes at scale, and conducting aerodynamic optimisation workshops.

Dr Burton has been involved in developing design codes for more than a decade. She has been funded by the Charles Pankow Foundation to write guidelines on wind resilient design. She has both lived and worked in the UK, Asia, and North America and has a global portfolio of project work.



Chun-Ming Choy

Acting Senior Scientific Officer
(Quality Management and
International Cooperation),
Hong Kong Observatory (HKO),
China

*Vice-chair, Training and Research
Coordination Group, the
ESCAP/WMO Typhoon Committee*

Topic

Tropical cyclone induced extreme winds and storm surge in Hong Kong – past and future

Biography

Mr Choy joined the Hong Kong Observatory as a Scientific Officer in 2010. He has been involved in a number of disciplines, including development of weather information services, weather forecasting, TV weather reporting, tropical cyclone operational research and forecasting technique and climate information and service development. Mr Choy is currently involved in the overall establishment and implementation of quality management of the Observatory, and the liaison with the World Meteorological Organization (WMO) and the ESCAP/WMO Typhoon Committee to promote international collaboration. He is also the Vice-chair of the Training and Research Coordination Group of the ESCAP/WMO Typhoon Committee and is involved in coordinating efforts on various areas of research on tropical cyclones and their impacts on the socio-economic development process in the Typhoon Committee region.

Mr Choy published a number of papers on tropical cyclones over the years, including analysis of maximum intensity and wind structure of Super Typhoons Hato and Mangkhut in 2017 and 2018, and assessment of damage and direct economic loss in Hong Kong due to Super Typhoon Mangkhut in 2018.

Invited speakers (13-14 July)



Dr Nicholas Truong

Director, Windtech Consultants,
Australia

*Standards Australia Committee
BD6-002 Wind Actions on Structures*

*AWES Committee for the Wind
Loading Handbook*

Topic

Aerodynamic optimisation of tall buildings while minimising architectural intervention

Biography

Dr Nicholas Truong is the Director at Windtech Consultants, a leading wind engineering consulting firm that has worked on over 3,000 major projects worldwide, including numerous high-profile projects in Hong Kong. Dr Truong is a professional engineer with over 15 years of consulting, research and development experience in the field of fluid dynamics and wind engineering. His particular interest and experience is in the use of wind tunnel testing and computational fluid dynamics to study and design the response of unusual structures under wind loading, as well as in the field of air and liquid fluid-structure interaction mechanics. He is also responsible for Windtech's ongoing innovation, research and development programme to maintain Windtech's position as a global leader in the field of wind engineering.

Dr Truong is also in the Standards Australia Committee BD6-002 Wind Actions on Structures and has contributed to the 2021 edition of AS/NZS 1170.2. He was a convenor of the recent Australasian Wind Engineering Society workshop held earlier this year in Sydney.



Dr Gang Hu

Professor, School of Civil and
Environmental Engineering, Harbin
Institute of Technology, Shenzhen,
China

*Early Career Board Member of
Advances in Structural Engineering*

*Executive committee member and
secretary of Hong Kong Wind
Engineering Society*

Topic

Artificial intelligence-powered wind engineering

Biography

Dr Gang Hu is currently a professor in the School of Civil and Environmental Engineering at Harbin Institute of Technology, Shenzhen (HITSz), and the director of Artificial Intelligence for Wind Engineering Lab at HITSz. He was selected for the National Youth Talent Program of China. His research focuses on structural wind engineering, environmental wind engineering, and wind energy using wind tunnel testing, computational fluid dynamics and artificial intelligence.

Dr Hu has published over 80 SCI international journal papers, including more than 60 JCR Q1 papers and 2 highly cited and hot articles in ESI. He is also a keynote speaker at the 17th National Wind Engineering Conference in Italy. He has led one topic within a National Key R&D Program project, one National Talent Program, NSFC general and youth projects. He has also participated as a core member in Shenzhen Peacock Team project. Dr Hu serves as the Secretary-General and Executive Committee member of the Hong Kong Wind Engineering Society. He was also selected as a National Young Talent and Shenzhen Overseas High-level Talent B.