

HKWES6

The 6th
Hong Kong Wind Engineering Society Workshop



Official website



Registration (Chinese)



Registration (English)

Sustainable and Intelligent Wind Engineering

Lee Shau Kee Campus, HKUST
10-11 July 2025, Hong Kong

Welcome Message

On behalf of the Organizing Committee, it is our great pleasure to extend a heartfelt welcome to all participants of the 6th Hong Kong Wind Engineering Society Workshop (HKWES 6). This year's assembly brings together distinguished experts spanning academia, research institutions, corporate enterprises, professional consultancies, and government sectors. Our program addresses pivotal themes in wind engineering, including Bridge Engineering, Urban Wind Environments, Bluff-Body Aerodynamics, Macroscopic Wind Dynamics, Wind Tunnel Methodologies, and Structural Wind Loads. Notably, we also explore cutting-edge interdisciplinary domains such as Data-driven model construction and Machine Learning applications. This convergence of traditional expertise and emerging innovations underscores our collective commitment to advancing the frontiers of wind engineering through collaborative wisdom and visionary inquiry.

We acknowledge with deep appreciation the steadfast support of our organizing partners: The Hong Kong University of Science and Technology, Central South University, Arup, Windtech Consultants, RED Façade Consultants Limited, Advancing Wind Engineering, and the Hong Kong Wind Engineering Society. Your institutional stewardship and resources have been instrumental in cultivating this platform for scholarly exchange. Above all, we extend profound gratitude to every participant whose intellectual contributions form the lifeblood of this symposium.

As you immerse yourselves in HKWES 6's vibrant program, we invite you to savor Hong Kong's renowned hospitality – from gourmet cuisine and captivating harbor vistas to the stimulating academic discourse that defines our community. May these two days inspire fruitful collaborations, deepen professional connections, and leave you with enduring memories of our dynamic city.

Welcome once again, and thank you for helping shape the future of wind engineering.

On behalf of the organizing team,



Conference Chair
Lei Zhou



Conference Co-Chair
Xuhui He



Conference Co-Chair
Tim K.T. Tse

The 6th Hong Kong Wind Engineering Society Workshop

Organizers:

Central South University
Hong Kong Wind Engineering Society (HKWES)
Hong Kong University of Science and Technology (HKUST)
Arup company
Windtech Consultants company
Research Engineering Development Façade Consultants Limited
Advances in Wind Engineering

Workshop Organizing Team

Chair: Prof. Lei Zhou (CSU)
Co-Chair: Prof. Xuhui He (CSU)
Co-Chair: Prof. Tim K.T. Tse (HKUST)
Secretary: Prof. Neptune Yu & Dr. Hongfu Zhang
Member: Dr. Qingchi Zhu & Dr. Wentong Zhang & Dr. Yifeng Ai
& Dr. Peng Guo & Mr. Yanyu Ke

Conference Schedule

10 July

Time	Subject	Name	Topic
08:20-09:00	Registration		
09:00-09:30	Opening Ceremony		
09:30-10:00	Keynote Speech 1 (Chair: Haiquan Jing)	Xuhui He	Flow-Mode-Driven Exploration: Mechanisms Elucidation, Intelligent Prediction, and Flow Control of Wind-Structure Interactions
10:00-10:15	Coffee Break		
10:15-11:30	Session 1.1:AI & Data-Driven Approaches (Chair: Enze Zhang, Simon Ye)	Enze Zhang	Deep learning-based Multi-Source Satellite Data Fusion and Downscaling for Typhoon Wind Fields
		A.G. Khedr	AI-Powered Generative Design of Shear Wall Layouts for Wind Load Resistance in Tall Buildings
		Yanyu Ke	FNO and Its Extensions in Solving Typical Issues in Wind Engineering
		Omid Razizadeh	Evaluating the Applicability of Shallow Neural Networks in Wind Engineering
		Simon Ye	AI-assisted aerodynamic design optioneering for long span bridge deck
11:30-12:45	Session 1.2:AI & Data-Driven Approaches (Chair:Han Zhang, Junlin Heng)	Han Zhang*	Modeling of tornado vortices based on deep learning method
		Guangnan Jia	Enhanced GPU Stencil Performance Model through combination of hardware and algorithms parameters
		Xisheng Lin	Efficient wind event simulation using orthogonal decomposition methods
		Guan Haiwei	Extreme combination rules of non-Gaussian wind effects based on extreme probability distribution for building structure
		Junlin Heng*	Digital Twins-Driven Intelligent Operation and Maintenance of Deteriorating Wind Turbine Structures
12:45-14:00	Lunch (UniBistro)		

*denotes the invited speaker

10 July

Time	Subject	Name	Topic
14:00-14:30	Keynote Speech 2 (Chair: Bryan Wong)	Neptune Yu	Projection of climate change impact on tropical cyclone hazard in Western North Pacific basin
14:30-16:00	Session 2.1:Structural Wind Engineering and Experiment-Based Wind Stuides (Chair:Wentong Zhang, Yueyang He)	Wentong Zhang*	A Structural Displacement-Driven Approach for Inverting Dynamic Wind Forces on Steel Lattice Towers
		Shuang Zhao*	Three Problems and Solutions in Wind-resistant Design of Overhead Transmission Lines
		Ya'nan Tang*	Random modeling of typhoon wind loads and wind-resistant reliability of transmission towers
		Yueyang He	An innovative tool to assess building-block-scale ventilation: Integrating the least cost path method into permeability estimation
		Yueyang He	Using wind LiDAR and wind tunnel technologies to support quantitative control of breezeway design in high-density urban areas
		Huan Li*	Aerodynamic and flow properties of a flat-box deck bridge and a railway foot plank in tornado-like vortices
16:00-16:15	Coffee Break		
16:15-17:45	Session 2.2:Structural Wind Engineering and Experiment-Based Wind Stuides (Chair:Wei Cui, Qi Zhou)	Wei Cui*	Internal resonance during nonlinear multimode coupled flutter response of long-span bridges
		Luo Nan*	Reduction measures for wind-induced vibrations of long-span flexible photovoltaic bracket and photovoltaic array
		Yifei Sun*	Countermeasures on aerodynamic forces and vortex-induced vibrations of stay cables in cable-stayed bridges
		Qi Zhou *	Wind tunnel experimental method for reproducing dual-mode competition of vertical-bending Vortex-Induced Vibration in long-span bridges
		Xiaoyu Ji	The influence of ventilation opening on pressure transients from high-speed trains intersecting in an enclosed noise barrier
		Xie Zuyu	Aerodynamics of a flat box bridge-deck: considering the effects of wind yaw angle and ballastless structure
17:45-18:15	HKWES Annual General Meeting		
18:15	Coach departs to Sai Kung		
18:40-21:00	Welcome Dinner (by invitation) Sai Kung		
21:00	Coach departs to Crowne Plaza		

Conference Schedule

11July

Time	Subject	Name	Topic
08:30-09:00	Registration		
09:00–09:30	Keynote Speech 3 (Chair: Lei Zhou)	Fuyou Xu	旧塔科马桥自然风场大比例气弹模型抗风性能试验研究 (Wind Tunnel Testing of Wind Resistance Performance for Large-Scale Aeroelastic Model of Old Tacoma Bridge in Natural Wind Field)
09:30–10:45	Session 3.1: CFD-based Urban and Environmental Wind Flow (Chair: Qiang Zhou,Gengyu Tian)	Qiang Zhou *	High-Resolution Wind Field Simulation for Offshore Bridge Sites Using WRF-LES
		Gengyu Tian	Turbulent flow inside multiple street canyons with protruding ribs: modeling with POD and Kriging surrogate model
		Daniel Ziyue Peng	Transitional Flow Field and Pollutant Dispersion in Uniform Finite Street Canyons
		Weijie Sun	An overview of methods for estimating aerodynamic parameters of vertical wind speed profiles in built-up areas
		Yidi Hou	Investigation of Turbulence Scale Characteristics over an Idealized Urban Street Canyon using Large-Eddy Simulation
10:45–11:15	Coffee Break		
11:15–12:45	Session 3.2:CFD-based Urban and Environmental Wind Flow (Chair: Weicheng Hu, Bingchao Zhang)	Hongmiao Jing*	Numerical study of wind characteristics at a long-span bridge site in mountain valley
		Weicheng Hu *	Wake modeling and layout optimization of floating wind turbine based on CFD simulation
		Bingchao Zhang	A Large-Eddy Simulation Study of Pollutant Transport in Vehicle Populated Street Canyons
		Chi Zhang	Feasibility Study of Mass Timber Buildings Subjected to Strong Winds in Hong Kong
		Fei Li	Turbulence Scale Characteristics within the Idealized Canopy Layer
		Liehao Zhang	Turbulent wind flow over hills: a comparative study between 3D hill and 2D ridge
12:45–14:00	Lunch (UniBistro)		

*denotes the invited speaker

11 July

Time	Subject	Name	Topic
14:00–14:30	Keynote Speech 4 (Chair: K.T. Tse)	Nicholas Truong	Substructure Analysis Methodology for Wide Rigidly Connected Tall Buildings
14:30–16:00	Session 4.1: Typhoon Resilience and Wind energy (Chair:Muguang Liu, Kun Yang)	Bryan Wong*	Wind Tunnel Study Adopting The Code of Practice on Wind Effects in Hong Kong 2019
		Muguang Liu*	Analysis of time-varying characteristics and model construction of average wind in downbursts
		Xi Zhong	A Stochastic Discrepancy Data-Physics Fusion Framework for Tropical Cyclone Model
		Yuxuan Lin	Assessing Social Vulnerability to Tropical Cyclones in Hong Kong: A Spatial Analysis
		Jian Yang	Development of a physically-based tropical cyclone wind-rainfall model
		Kun Yang	Multi-objective wind farm layout optimization balancing power production and turbine fatigue life
16:00–16:30	Coffee Break		
16:30–18:00	Session 4.2: Typhoon Resilience and Wind energy (Chair:Xiao Li, Tianyou Tao)	Guowei Qian*	A novel double-Gaussian full wake model for wind turbines considering the effects of blade aerodynamic load and inflow turbulence intensity
		Xiao Li*	Damage Analysis of Extreme Wind Events on Built Urban Environment
		Xiaoyu Ji	The influence of ventilation opening on pressure transients from high-speed trains intersecting in an enclosed noise barrier
		Chao Chen*	Structural control and fatigue analysis of offshore wind turbines by integrated modelling techniques
		Jian Zhang	Fatigue degradation of wind turbines considering dynamic wake meandering effects
		Niu Jiqiang*	Multi-objective aerodynamic optimization of the nose shape for high-speed maglev trains using a GPR-based adaptive sampling surrogate model
		Tianyou Tao*	Typhoon-induced Buffeting Analysis of A Long-span Bridge Considering Time-Varying Coherence
16:00–16:45	Wind Tunnel Tour 1-15 pax		
16:45–17:30	Wind Tunnel Tour 2-15 pax		
18:00–18:15	Closing Ceremony		

Biography

Prof. He Xuhui is Vice President of Central South University, Director of Hunan Provincial Key Laboratory of Disaster Prevention and Mitigation for Railway Engineering Structures, and Director of the Wind Engineering Research Center of Central South University. Recipient of the National Science Fund for Distinguished Young Scholars and the National Science Fund for Excellent Young Scholars, and a Leading Talent in Science and Technology under the National "Ten Thousand Talents Program".

He enjoys special government allowances from the State Council. He has led multiple projects including key research and development programs of the state and major scientific research instrument development projects. He is the chief editor of the first "Code for Wind-resistant Design of Railway Bridges" and founded the international academic journal "Advances in Wind Engineering" and serves as its chief editor.

He has led the team to win one second prize of the National Science and Technology Progress Award, one second prize of the National Teaching Achievement Award, and several first prizes of provincial and ministerial level awards. He has also participated in winning one first prize of the National Invention Award and one second prize of the National Science and Technology Progress Award.

He has received the National Innovation and Excellence Award, the National Excellent Popular Science Work Award, the Tencent "Science Exploration Award", the Zhan Tianyou Achievement Award, the Mao Yisheng Railway Science and Technology Award, the Hunan Province May Day Labor Medal, and the Hunan Province Most Beautiful Science and Technology Worker, etc.

Keynote Title: Flow-Mode-Driven Exploration: Mechanisms Elucidation, Intelligent Prediction, and Flow Control of Wind-Structure Interactions



Prof. Xuhui He

Keynote Speaker

Vice President ,
Central South University,
China

Biography

Prof. Xu Fuyou is a National High-Level Talent and Doctoral Supervisor at Dalian University of Technology, where he serves as Head of the Department of Civil Engineering and Director of the National-Local Joint Engineering Laboratory for Bridge and Tunnel Technology.

He holds key leadership roles including Vice Chair of the Committee of Wind-Induced Vibration and Control at the Chinese Society of Vibration Engineering, Associate Editor of Advances in Wind Engineering, Executive Director of the Bridge and Structural Engineering Branch of the China Highway and Transportation Society (CHTS), and Executive Director of the Green Construction and Operation & Maintenance Branch of the China Civil Engineering Society (CCES).

His research accomplishments include leading 6 National Natural Science Foundation of China (NSFC) projects and a National Key R&D Program of China project; publishing over 80 SCI-indexed papers as first/corresponding author; securing 8 U.S. patents and nearly 30 Chinese invention patents as first inventor; co-authoring 3 books/textbooks; and receiving the First Prize of Liaoning Provincial Science and Technology Progress Award and the First Prize of CHTS Science and Technology Award as primary contributor.

Keynote Title: 旧塔科马桥自然风场大比例气弹模型抗风性能试验研究 (Wind Tunnel Testing of Wind Resistance Performance for Large-Scale Aeroelastic Model of Old Tacoma Bridge in Natural Wind Field)



Prof. Fuyou Xu

Keynote Speaker

Head ,
Department of
Civil Engineering,
Dalian University
of Technology,
China

Biography

Dr Nicholas Truong is a professional wind engineer with over 15 years of consulting, research and development experience in the field of fluid dynamics and wind engineering.

Prior to joining Windtech in 2008, Dr Nicholas Truong was a research fellow and part-time lecturer at the University of New South Wales studying fluid-structure interactions and continues to supervise research students in the area of fluid mechanics from time to time. Nicholas' particular interest and experience is in the use of wind tunnel testing 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 program to maintain Windtech's position as a global leader in the field of wind engineering. Nicholas has undertaken and supervised wind engineering studies including wind tunnel investigations for various high-rise buildings, large-span roof structures, stadiums, statues and masts around the world. These include numerous landmark developments.

Nicholas is also a leader in the testing and analysis of wind loading and aerodynamic stability of bridges, including cable-stayed, arched, pedestrian and suspension bridge designs. This includes the initial design analysis during the concept design phase to assess aerodynamic stability. He also oversees the development and testing of static and aero-elastic bridge testing to determine the aerodynamic performance of the bridge. Wind climate analysis is a critical aspect in the accurate analysis of wind loading on any structure. Nicholas also leads the climate analysis group at Windtech, who provide detailed analyses of wind speed and directional probabilities as well as seasonal variations in the case of thermal comfort studies. His analysis includes both micro and macro climate analysis.

Keynote Title: Substructure Analysis Methodology for Wide Rigidly Connected Tall Buildings



Dr. Nicholas Truong

Keynote Speaker

Director,
WindTech Consultants,
Australasia

Biography

Dr Neptune Yu is East Asia Wind engineering design leader of Arup. His expertise focuses on wind design of super tall-buildings and large roofs, wind induced vibration mitigations, airport airflow studies, typhoon modelling and risk assessment, offshore wind energy, resilience wind design, and climate impact on extreme winds.

Neptune has provided wind consultancy to over 100 projects across the region, including working as wind discipline leader in a few landmark projects. His project portfolio includes around ten 400m + super tall buildings and five long roofs exceeding 500m.

Neptune is the main contact in Arup (leading consultant) for drafting the 2019 HK Wind Code, the main drafter of the HK Wind Loading Handbook, a code drafting member of the Chinese Wind Loading Code for Roof Structures (JGJ/T481-2019) and the Guangdong Provincial Test and Evaluation Standard for Building Wind Environment (DBJ/T15 – 154-2019).

He is the Chairman of Hong Kong Wind Engineering Society, an invited lecture of HKU and PolyU, and a Co-Principle Investigator of the 48.3M HKD Research Grant Council TRS project, INTACT: Intelligent tropical-storm-resilient system for coastal cities.

Keynote Title: Projection of climate change impact on tropical cyclone hazard in Western North Pacific basin



Dr. Neptune Yu

Keynote Speaker

East Asia Wind
Engineering
Design Leader,
Arup,
Hong Kong

Conference Information

Conference Venue

- **LSK G012, Lee Shau Kee Business Building** , The Hong Kong University of Science and Technology, Clear Water Bay, Kowloon, Hong Kong, China

Recommended Accommodation

- Conference Lodge (CL)

Address: Conference Lodge, HKUST, Clear Water Bay, Hong Kong

Tel: (+852) 3701 8888

- Crown Plaza Hong Kong Kowloon East

Address: Tower 5, No. 3 Tong Tak Street, Tseung Kwan O, Hong Kong

Tel: (+852) 3983 0388

- Holiday Inn Express

Address: No.97 How Ming Street, Kwun Tong District, Hong Kong

Tel: (+852) 3890 2888

Transportation

1. From Airport to HKUST

- RED taxi from Arrival Hall, ~400 HKD
- Bus A29 from Arrival Hall, alight at Nan Fung Plaza, transfer to Bus 11M or 91M to HKUST, ~50 HKD

2. From Airport to Crowne Plaza Kowloon East

- RED taxi from Arrival Hall, ~330 HKD
- Bus A29P from Arrival Hall, alight at Tong Ming Street, ~50 HKD

3. From Crowne Plaza Kowloon East to HKUST

- A free shuttle bus departs Crowne Plaza at 08:20 am every morning.

For return time, please refer to the conference schedule.

- RED taxi, ~80 HKD
- Bus 11M from Hang Hau MTR Station, ~7 HKD

Traveling Preparation tips

1 Apply for Hong Kong Visa

2 Payment method and Currency Exchange Rate

As of June 21, 2025:

- 1 HKD \approx 0.917 RMB, 1 HKD \approx 0.127 USD, 1 HKD \approx 0.196 AUD

You may exchange currency at the airport or local banks with a valid travel document. Most merchants do not accept 1000 HKD banknotes, so it is advisable to carry smaller denominations.

For taxis, cash is generally preferred. For the MTR and other public transportation, the Octopus card is the most convenient and widely used payment method. For hotels, major credit cards such as Visa, MasterCard, and UnionPay are commonly accepted and preferred.

3 Power Adapter

Electricity in Hong Kong is 220–240 V at 50 Hz. This is twice the voltage in North America. The socket type is British style.

On Site tips

1 Wi-Fi

For Wi-Fi connection, search the SSID below, more details can be referred to the Wi-Fi Service Configuration Guides: <https://itso.hkust.edu.hk/services/general-it-services/wifi/wi-fi-guests>

- SSID: Wi-Fi.HK via HKUST

Note: If you are outside the HKUST campus, we recommend preparing a local Hong Kong SIM card or activating an overseas roaming plan in advance to ensure stable internet access.

2 Information for Presenters

- Screen ratio is 16:9.
- Presenters must copy their presentation file (PowerPoint or PDF) before their session.
- **Each presentation = 15 minutes (12 min talk + 2 min Q&A + 1 min transition).**

Sessions are strictly timed.



MTR Stations with bus or green minibus service to HKUST
提供往科大巴士或綠色專綫小巴服務的港鐵車站

Diamond Hill 鑽石山: 91, 91M, 91P*

Choi Hung 彩虹: 91, 91M, 91P* 11, 11S#

Ngau Tau Kok 牛頭角: 104

Tiu Keng Leng 調景嶺: 792M

Hang Hau 坑口: 91M 11, 11M, 11S#

Po Lam 寶琳: 91M 12, 11S#

Tseung Kwan O 將軍澳: 792M

Transportation from airport to HKUST:

For passengers with bulky luggage, taking a taxi to HKUST direct is recommended. Those with simple luggage may take Airport Bus A22 to Lam Tin MTR station or A29 to Po Lam MTR station, and change for taxi to HKUST.

Bus Routes 巴士路線

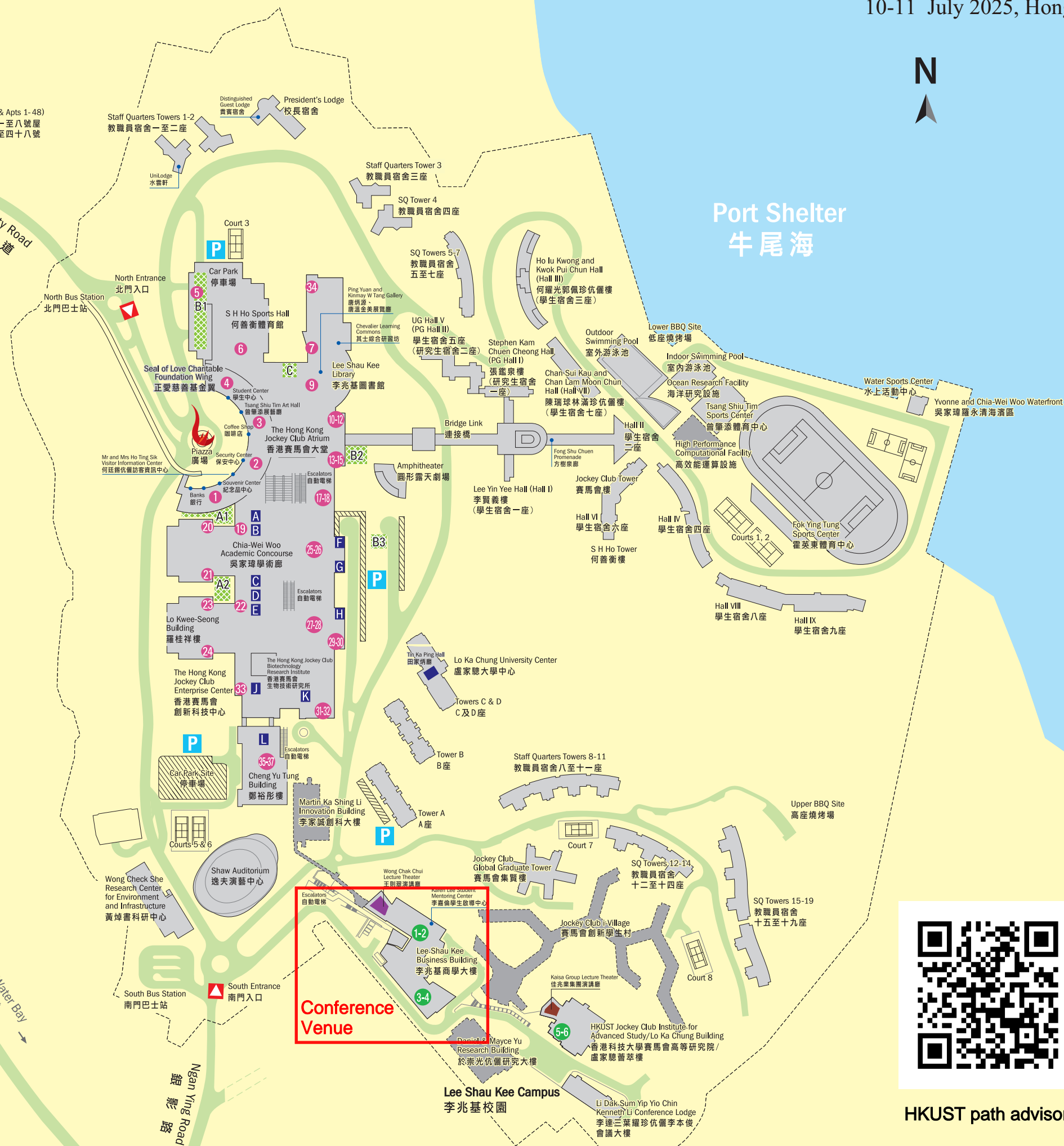
Green Minibus Routes 綠色專綫小巴路線

* Departing from Diamond Hill Station at 07:55 – 08:50 to North Bus Station (HKUST) Monday to Friday (except Public Holidays)
星期一至星期五 (公眾假期除外), 於07:55至08:50由鑽石山鐵路站前往北門巴士站 (香港科技大學)

Departing from Po Lam (Public Transport Interchange) at midnight 12:00 to 05:00 to North Bus Station (HKUST)
午夜12:00至05:00由寶琳 (公共交通交匯處) 前往北門巴士站 (香港科技大學)



-  Existing Buildings
現有建築物
-  Buildings Under Construction or Planning
興建中或規劃中建築物
-  Loading Bays A1, A2, B1, B2, B3, C
卸貨區
-  Lifts in Academic Building
學術大樓電梯
-  Lifts in Lee Shau Kee Campus
李兆基校園電梯
-  Citi Lecture Theater (LT-A)
花旗集團演講廳
-  Lam Woo Lecture Theater (LT-B)
林護演講廳
-  Padma and Hari Harilela Lecture Theater (LT-C)
夏利萊博士及夫人演講廳
-  Lee Wing Tat Lecture Theater (LT-D)
利榮達演講廳
-  Cheung On Tak Lecture Theater (LT-E)
張安德講堂
-  Leung Yat Sing Lecture Theater (LT-F)
梁日盛講堂
-  Chow Tak Sin Lecture Theater (LT-G)
周德新講堂
-  Chen Kuan Cheng Forum (LT-H)
陳冠貞論壇
-  Chiang Chen Lecture Theater (LT-J)
蔣震演講廳
-  Mr and Mrs Lee Siu Lun Lecture Theater (LT-K)
李兆麟伉儷演講廳
-  CMA Lecture Theater (LT-L)
香港中華廠商聯合會演講廳
-  Wong Chak Chui Lecture Theater
王則翠演講廳
-  Kaisa Group Lecture Theater
佳兆業集團演講廳



Directions to Lee Shau Kee (LSK) Business Building (Lee Shau Kee Campus)



The Hong Kong University of Science and Technology

