

**10th Asia-Pacific Young Researchers and Graduates
Symposium (YRGS2023)
Resilient and Smart Civil Infrastructure**



Conference Program

6-8 December 2023

Perth, Australia

Centre for Infrastructural Monitoring and Protection

Curtin University

Plenary speakers (In alphabetical order)



Prof. Hong Hao

Presentation Title: *Experimental and numerical investigations of prefabricated segmental geopolymer concrete bridge piers with FRP tendons subjected to earthquake ground excitation.*

Hong Hao is a professor in Earthquake Engineering Research and Test Center in Guangzhou University, China and a John Curtin Distinguished professor in Curtin University, Australia and an Australian Laureate Fellow. His research interests are structural dynamics and its applications to structure protections against earthquake, blast and impact loads, as well as structural condition monitoring. Prof. Hao has published over 700 papers in international journals, is one of the most highly cited researchers in civil and structural engineering with over 35000 citations and H-index 96 in Google Scholar. His research results have been included in textbooks, design codes and have been applied to many construction projects around the world. He has been named multiple times as the annual Australian research field leader in civil and structural engineering, and ranked at the 12th in Civil Engineering in “World’s Top 2% Scientists” published by Stanford University in 2022. Prof. Hong Hao received BS degree from Tianjin University in China, and MSc and PhD degree from the University of California at Berkeley, USA. He was the president of Australian Earthquake Engineering Society from 2010 to 2013, and the president of International Association of Protective Structures from 2018 to 2023. He is a distinguished fellow of International Association of Protective Structures fellow of Australian Academy of Technological Science and Engineering, fellow of Institution of Engineers Australia, American Society of Civil Engineers and International Association of Engineering Asset Management. He has received over 50 research awards, including Nishino Medal in 2022 and Charles Bubb Medal in 2019.



Prof. Yi-Qing Ni

Presentation Title: *Physics- and Data-driven Modelling and Forecasting: Applications in Structural Engineering and Beyond.*

Dr. Yi-Qing Ni is Yim, Mak, Kwok & Chung Professor in Smart Structures, Chair Professor of Smart Structures and Rail Transit at Department of Civil and Environmental Engineering, The Hong Kong Polytechnic University, Hong Kong, and Director of National Engineering Research Center on Rail Transit Electrification and Automation (Hong Kong Branch). His research areas cover structural health monitoring, smart materials and structures, Bayesian inference and scientific machine learning, and high-speed rail and maglev safety. Prof. Ni is a Co-Editor-in-Chief of Journal of Infrastructure Intelligence and Resilience (Elsevier) and Intelligent Transportation Infrastructure (Oxford University Press); an Academic Editor of Structural Control and Health Monitoring (Wiley and Hindawi); an Associate Editor of Journal of Civil Structural Health Monitoring (Springer) and Journal of Vibration and Control (SAGE Publications); and an editorial board member for seven journals including Engineering Structures (Elsevier) and Smart Structures and Systems (Techno-Press). Prof. Ni has published more than 290 SCI journal papers indexed in Web of Science Core Collection and over 340 conference papers. His publications receive an H-index of 51 and over 8,500 citations in Web of Science Core Collection and receive an H-index of 64 and over 16,700 citations in Google Scholar. He was in the list of Top 2% of highly cited researchers in the field of Civil Engineering in 2020, 2011 and 2022, published by Stanford University. Prof. Ni is a recipient of the 2017 SHM Person of the Year Award granted by the journal Structural Health Monitoring. He is an Executive Member of the International Society for Structural Health Monitoring of Intelligent Infrastructure (ISHMII) and a Board Member of the International Association for Structural Control and Monitoring (IASCM).

Plenary speakers (In alphabetical order)



Prof. C.M. Wang

Presentation Title: *Joy of Research Discovery.*

C.M. Wang is Professor of Structural Engineering in University of Queensland. Professor Wang is a Fellow of the Academy of Engineering Singapore, a Fellow of the Institution of Structural Engineers and a Fellow of the Society of Floating Solutions (Singapore).

His research interests are in the areas of structural stability, vibration, optimization, plated structures and Mega - Floats. He has published over 490 journal papers and co-authored 10 books such as Very Large Floating Structures, Structural Vibration, Shear Deformable Beams and Plates and Exact Solutions for Buckling of Structural Members. He is an Editor - in - Chief of the International Journal of Structural Stability and Dynamics and an Editorial Board Member in several journals including Engineering Structures,

International Journal of Applied Mechanics, and Structures. His H-index stands at 75 with over 23,000 citations for his publications according to Google Scholar. Currently, he is the Leader of the Offshore Engineering Program of the Blue Economy Cooperative Research Centre that conducts research projects that combine seafood, renewable energy and offshore engineering, underpinned by a \$329 million grant from the Australian Government and industry partners over a 10-year period. His current research interests are the development of offshore fish pens and seaweed cultivation platforms.

Professor Wang has won many awards such as the 2019 Nishino Medal, the 2019 JN Reddy Medal, the 2016 IStructE Singapore Structural Awards 2016 (Award for Sustainability) for Biophilic MyWaterway @ Punggol – Innovative Floating Wetlands System, the 2013 IES Prestigious Engineering Achievement Award, 2009 Lewis Kent Award, and the 2014 Keith Eaton Award.



Prof. Jie Yang

Presentation Title: *Recent Advances in Functionally Graded Engineering Structures.*

Dr. Yang is a Professor in Engineering in the School of Engineering, RMIT University, Australia. His main research interests include advanced composite structures, structural stability and dynamics, smart structures and control, and nanocomposites. He has authored over 400 publications including 300 journal papers which have so far attracted over 21900 Google Scholar citations with h-index 81. He is the Highly Cited Researcher (Cross Field) in 2019, 2020, 2021 and 2022 by Clarivate Analytics and is named by Australian Research Magazine as Global Field Leader in Mechanical Engineering in 2020, Australia's Research Field Leader in Mechanical Engineering in 2019, 2020, 2021, 2022 as well as in Structural Engineering in 2021. Prof Yang is the Lead Editor-in-Chief of Engineering Structures and serves the editorial boards of many other international journals.



Prof. Yan Zhuge

Presentation Title: *FRP-Reinforced Ultra-High Performance Concrete (UHPC) Composite.*

Dr. Yan Zhuge is a Professor of Structural Engineering and serves as the Professorial Lead in Research Education at the University of South Australia (UniSA). With a career spanning over 25 years, she has lectured in several Australian universities. Her primary research focuses on green concrete materials, fibre composite materials and structures. Yan has published 180+ SCI papers in the referred international journals and has been invited as a Plenary/keynote speaker at international conferences. Her contributions have garnered several Australian government awards and fellowships and attracted funding from the Australian Research Council (ARC) as well as industry partnerships. Since 2019, Yan has held the position of a member in the ARC College of Experts. She was the winner of 2018 South Australia Winnovation award in Engineering category.

Conference Venue

Curtin 137 St Georges Terrace, Perth, WA 6000

Location

Curtin 137 St Georges Terrace is located, at the entrance to the Brookfield Place commercial precinct. The venue is the Old Perth Technical School, which was later known as the Perth Technical College. The venue is located next door to Curtin 139 St Georges Terrace, (former Old Perth Boys School).

Perth Technical College is a two-storey brick and tile building, with a castellated square tower. It was designed by WA Government architect Hillson Beasley, and constructed adjacent to the Old Perth Boy's School in 1909-1910 to cope with the increased demand for technical training in the post-war period.

It was designed in the Federation Gothic style, with some Arts and Crafts, Tudor and Art Nouveau influences. It remains one of the few surviving examples of the style in Perth. The site at 137 St Georges Terrace is significant for its association with the Aboriginal Whadjuk Noongar peoples who gathered in this area. It was also the site of Perth settlers' first water mill, constructed in 1832.

Curtin Guest WiFi

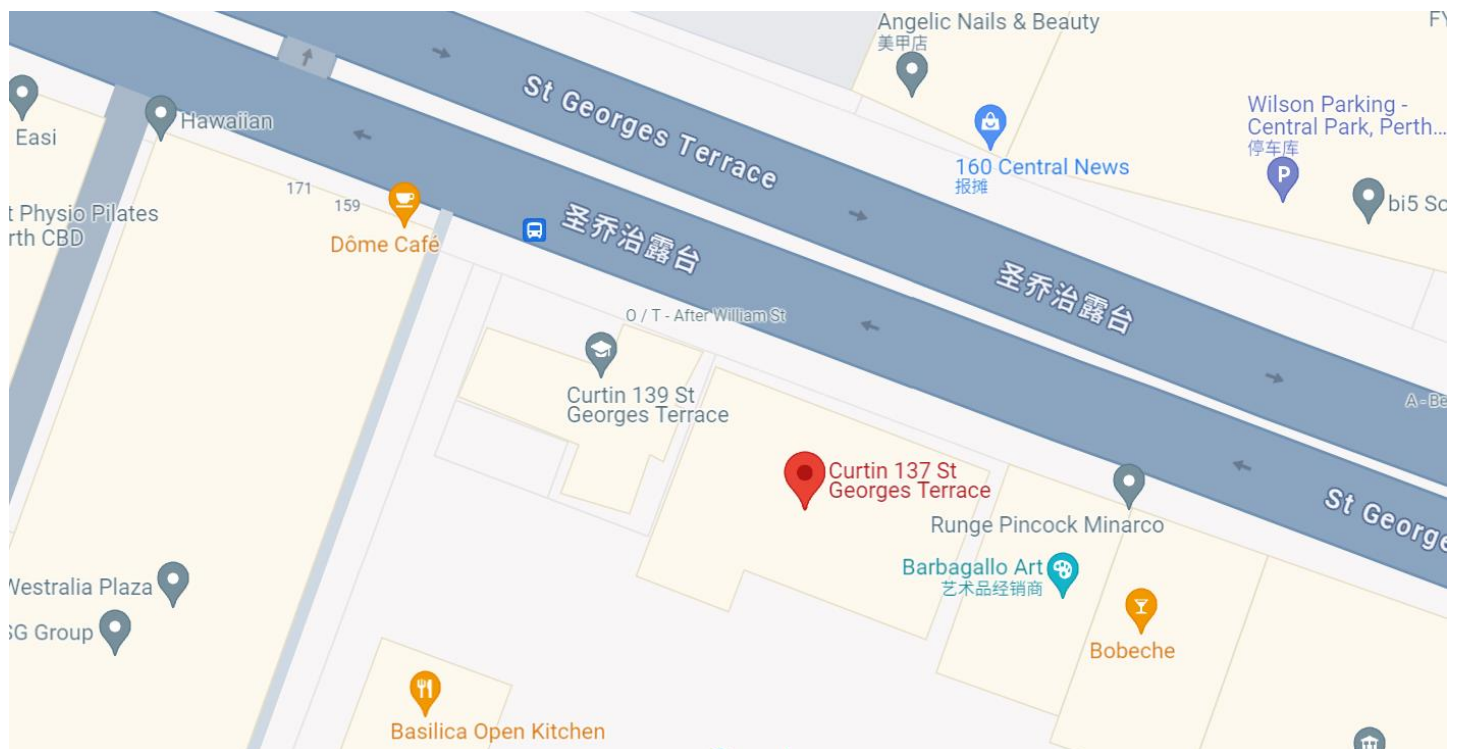
Username: 137sgt@curtin.guest

Password: gyH!66



Public Transport

The venue is a 10-minute walk from the Elizabeth Quay (formally known as Esplanade) Train Station. Information on bus and train routes and timetables can be found on the Transperth website <http://www.transperth.wa.gov.au/>.



Parking

The venue does not have any dedicated car parking spaces. The closest public car parks are at:

- Convention Centre, 21 Mounts Bay Rd and Mitchell Freeway
- Central Park, 152-158 St Georges Terrace
- His Majesty's, 377 Murray Street

Taxi

There is a taxi rank on St Georges Terrace, approximately 100 metres from the building.

Venue Rooms

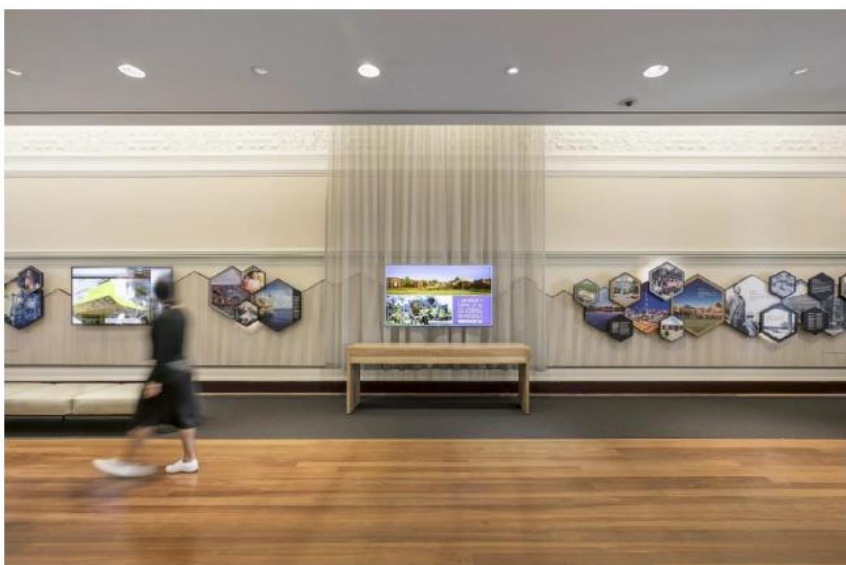
Gallery Room: Level 1, 137 St Georges Terrace



Salon Room: Level 1, 137 St Georges Terrace



Registration: Foyer, Ground floor, 137 St Georges Terrace



Lunch Venue

139 St Georges Terrace, Perth, WA 6000



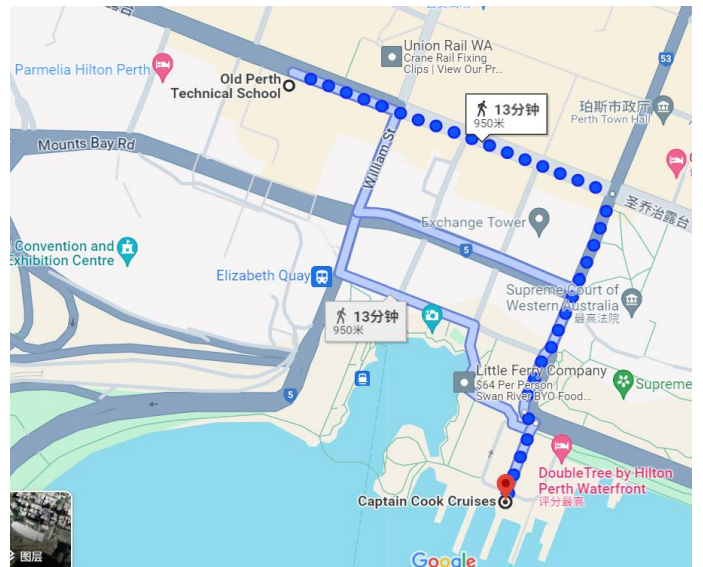
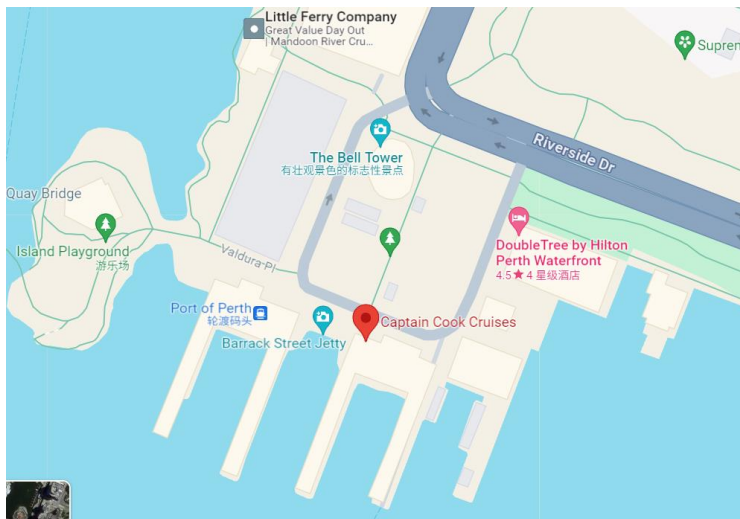
Conference Dinner Location

Pier 3, Barrack Street Jetty, 3 Birdiya Dr, Perth WA 6000

Captain Cook Cruise River Lady

<https://maps.app.goo.gl/zzQR8GLJMR9i1UC7A>

13 mins walk from 137 St George Terrace (Conference Venue) to Barrack Street Jetty



10th Asia-Pacific Young Researchers and Graduates Symposium

6th December 2023

15:00-17:00

Registration

7th December 2023

8:30-9:00

Registration & Arrival Tea

9:00-9:30

Opening Ceremony (Gallery Room)

9:00-9:05

Welcome: A/Prof. Jun Li

9:05-9:20

Opening Address

Professor Chris Rawson, Deputy Pro Vice Chancellor, Curtin University

9:20-9:30

Group Photo

9:30-10:30

Plenary Lecture Session I (Gallery Room)

Chair: Prof. Jie Yang

9:30-10:00

Prof. Hong Hao, Guangzhou University, China & Curtin University, Australia

Experimental and Numerical Investigations of Prefabricated Segmental Geopolymer Concrete Bridge Piers with FRP Tendons Subjected to Earthquake Ground Excitation

10:00-10:30

Prof. C.M. Wang, The University of Queensland, Australia

Joy of Research Discovery

10:30-11:00

Morning Tea

11:00-12:15

Parallel Session I-A: Big-data and machine-learning in structural engineering (Gallery Room)

Chair: Prof. Sandeep Chaudhary, Dr. Qi Xia

11:00-11:15

Dr. Qi Xia, Southeast University, China

Flexibility Identification and Deflection Prediction of Multi-Point Elastic Supported Structure Based on Impact Vibration Test

11:15-11:30

Tomohiro Fukui, National Defense Academy, Japan

Fundamental Study on Discrimination of Corrosion Level of Corroded RC Beams by Hammering Sound Based on Neural Network

11:30-11:45

Shihong Chen, Guangzhou University, China

Improving Depth Map of Images by Using Deep Learning

11:45-12:00

Xiaonan Zhang, Southeast University, China

Long-term Assessment of Bridge Condition Based on Vehicle Load and Strain Mapping Model

12:00-12:15

Yitian Han, Southeast University, China

Vision-based Structural Displacement Measurement and Modal Identification Assisted by Portable Laser Devices

11:00-12:15

Parallel Session I-B: Innovative numerical approaches (Salon Room)

Chair: A/Prof. Toshiyuki Horiguchi, Dr. Zhao Chen

11:00-11:15

Dr. Zhao Chen, Southeast University, China

Learning Dynamics from Coarse/Noisy Data with Scalable Symbolic Regression

11:15-11:30

Dr. Yuan Feng, The University of New South Wales, Australia

Virtual Modelling Aided Phase Field Method for Dynamic Elastoplastic Fracture Mechanics

11:30-11:45

Chang Xu and Prof. Wen Xiong, Southeast University, China

Geometry Extraction and Virtual Trial Assembly of Large-scale Steel Components Based on Terrestrial Laser Scanning

11:45-12:00

Jiafei Ning, Harbin Institute of Technology (Shenzhen), China

Algebraic Multigrid Method for Large-scale Sparse System Equations in Simulation of High-rise Structures

12:00-12:15	Zeng-Han Wu, Southeast University, China <i>Numerical Study on Prestressed ECC-Concrete Composite T-Section Beam under Close-In Blast Loading</i>
12:15-14:00	Lunch
14:00-15:00	Plenary Lecture Session II (Gallery Room) Chair: Prof. C.M. Wang
14:00-14:30	Prof. Jie Yang, RMIT University, Australia <i>Recent Advances in Functionally Graded Engineering Structures</i>
14:30-15:00	Prof. Yan Zhuge, University of South Australia, Australia <i>FRP-Reinforced Ultra-high Performance Concrete (UHPC) Composite</i>
15:00-15:30	Afternoon Tea
15:30-17:30	Parallel Session II-A: Structural diagnosis and assessment, SHM (Gallery Room) Chair: Dr Yanjie Zhu, Dr Jian-fu Lin
15:30-15:45	Dr. Yanjie Zhu, Southeast University, China <i>Long-span Bridges Performance Identification Based on 3D Point Cloud Model</i>
15:45-16:00	Dr. Zhen Peng, Curtin University, Australia <i>Mobile crowdsensing framework for drive-by-based dense spatial-resolution bridge mode shape identification</i>
16:00-16:15	Sahman Soleimani, Griffith University, Australia <i>Robustness Assessment of Post-and-beam Mass Timber Buildings</i>
16:15-16:30	Jinpeng Feng, Southeast University, China <i>In-Service Performance Assessment of Fire-Corrosion Damaged Steel Wires of Bridges</i>
16:30-16:45	Haochen Wang, Southeast University, China <i>Geometric Investigation and Vehicle Passability Evaluation of Transportation Infrastructures Based on Low-cost Portable Mobile Laser Scanning System</i>
16:45-17:00	Wenhao Zheng, Curtin University, Australia <i>Lost Monitoring Data Reconstruction for Arbitrary Channels with Transformer-based Generative Adversarial Networks</i>
17:00-17:15	Shanchang Yi, Changsha University of Science & Technology, China <i>Bolt Looseness Detection Using Ultrasonic Nonlinear Coda Wave Interferometry</i>
17:15-17:30	Wenlong Zhao, Southeast University, China <i>Damage Identification Based on Chaotic Excitation</i>
15:30-17:30	Parallel Session II-B: Dynamic behavior of emerging materials and structural systems (Salon Room) Chair: Prof. Dongmei Hu, Dr. Yuan Feng
15:30-15:45	Dr. Jianxing Hu, Chinese Academy of Sciences, China <i>Dynamic Behavior of Sierpinski Fractal Inspired Multi-Cellular Structures</i>
15:45-16:00	Dr. Sadaf Karkoodi, Griffith University, Australia <i>Structural Behaviour of Small-Scale Fibre-Filled Steel Tubular (Ffst) Planar Frames</i>
16:00-16:15	Dr. Xudong Lei, Chinese Academy of Sciences, China <i>Response of Monofilaments Under a High Transverse Impact</i>
16:15-16:30	Shuangmin Shi, The University of Melbourne, Australia <i>Experimental and Analytical Study on Hail Impact on Aluminium Cladding Panels</i>
16:30-16:45	Sanjida Khair, Curtin University, Australia <i>Performance of Copper Heap Leach Residue as Coarse Aggregate in Conventional Concrete</i>
16:45-17:00	Samira Gholizadeh, University of Cape Town, South Africa (Online) <i>Post-Blast Experimental Investigation of Microstructural Evolutions in Austenitic 316L, Ferritic 430, Duplex 2205 Stainless Steel, and Domex Steel 700</i>

17:00-17:15	Yujie Cheng, Chinese Academy of Sciences, China <i>Excellent Impact Resistance of Multilayer Metallic Glass Films Subjected to Micro-Ballistic Impact by Overcoming Dynamic Size Effects</i>
17:15-17:30	Yue Zhong, Curtin University, Australia <i>Integration of CNN and Phase Space Matrix with Interval Analysis to Consider Uncertainties in Structural Damage Identification</i>
18:40-22:00	Conference Dinner: Perth Swan River Dinner Cruise (Captain Cook River Lady) Pier 3, Barrack Street Jetty, Perth, WA (Cruise departs 7pm)

10th Asia-Pacific Young Researchers and Graduates Symposium

8th December 2023

8:30-9:00	Registration & Arrival Tea
9:00-9:30	Plenary Lecture Session III (Gallery Room) Chair: A/Prof. Jun Li
9:00-9:30	Prof. Yi-Qing Ni, The Hong Kong Polytechnic University, China <i>Physics- and Data-driven Modelling and Forecasting: Applications in Structural Engineering and Beyond</i>
9:30-10:15	Invited Lecture Session I-A (Gallery Room) Chair: A/Prof. Wensu Chen
9:30-9:45	Prof. Sandeep Chaudhary, Indian Institute of Technology Indore, India <i>Understanding the Significance of Quality Control on the Life Cycle of Concrete Structures under Corrosion</i>
9:45-10:00	A/Prof. Kaiming Bi, The Hong Kong Polytechnic University, China <i>Using Inerters to Control the Seismic Response of Adjacent Bridge Structures</i>
10:00-10:15	A/Prof. Wengui Li, University of New South Wales, Australia <i>Self-Sensing Graphene/Cementitious Composites: A Pathway Toward Smart Infrastructure</i>
9:30-10:15	Invited Lecture Session I-B (Salon Room) Chair: A/Prof. Thong Pham
9:30-9:45	A/Prof. Toshiyuki Horiguchi, National Defense Academy, Japan <i>Propose of Damage Simulation of Protective Structure Using Dem</i>
9:45-10:00	Prof. Dongmei Hu, Chinese Academy of Sciences, China <i>Micro-Ballistic Impact Enhances Impact Resistance in Micron-Thick Carbon Nanotube Films</i>
10:00-10:15	Prof. Zuohua Li, Harbin Institute of Technology, Shenzhen, China <i>A New High-performance Four-node Quadrilateral Flat Shell Element for Geometric Nonlinear Analysis</i>
10:15-10:45	Morning Tea
10:45-11:30	Invited Lecture Session II-A (Gallery Room) Chair: A/Prof. Kaiming Bi
10:45-11:00	A/Prof. Jun Li, Curtin University, Australia <i>Deep Learning Techniques for Structural Health Monitoring of Civil Engineering Structures</i>
11:00-11:15	A/Prof. Thong Pham, University of South Australia, Australia <i>Influence of FRP SIP Formworks on Impact Response and Capacity of Advanced Bridge Deck</i>
11:15-11:30	A/Prof. Jian-fu Lin, Shenzhen Academy of Disaster Prevention and Reduction, China <i>Damage Detection of a 3d Steel Frame Structure with Multiple Damages by Using an Adaptive Sparse Regularization-based Approach</i>

10:45-11:30	Invited Lecture Session II-B (Salon Room) Chair: A/Prof. Wengui Li
10:45-11:00	Prof. Wen Xiong, Southeast University, China (Online) <i>Bridge Scour Identification Based on 3D Sonar Point Clouds</i>
11:00-11:15	Dr. Jianjun Zhang, Swinburne University of Technology, Australia <i>Response of Auxetic Tubes Under Inner Pressure</i>
11:15-11:30	Dr. Jun-Jie Zeng, University of South Australia, Australia <i>Novel Floating Wind Turbine Foundations Based on FRP Reinforced UHPC Structures: Concept and Research Needs</i>
11:30-12:30	Parallel Session III-A: Multi-Hazard resistance and disaster mitigation (Gallery Room) Chair: Dr. Jianjun Zhang, A/Prof. Huifeng Xi
11:30-11:45	A/Prof. Huifeng Xi, Jinan University, China <i>Study Application of Polyurethane Foam in Fragile Product Packaging</i>
11:45-12:00	Dr. Zhoupeng Gu, Chinese Academy of Sciences, China <i>Geometric Scaling Laws for Launch Velocities in Laser-Induced Projectile Impact Testing</i>
12:00-12:15	Dr. Junzheng Yue, Chinese Academy of Sciences, China <i>Research on Impact Load and Fragmentation Pattern of Hailstone</i>
12:15-12:30	Ashish Kumar Chaudhary, Indian Institute of Technology Ropar, India <i>Steel Frame Structure Blast Analysis Under the Surface Blast Explosion</i>
11:30-12:30	Parallel Session III-B: Resilient structures and structural performance (Salon Room) Chair: Dr. Jun-Jie Zeng, Dr. Xing Chen
11:30-11:45	Dr. Xing Chen, Tongji University, China <i>Interfacial Adhesion and Post-Fracture Behaviour of Laminated Safety Glass Under Blast Loading</i>
11:45-12:00	Dr. Yiping Song, Chinese Academy of Sciences, China <i>Hardness of Metals at 10³ to 10⁸ S⁻¹ Strain Rates</i>
12:00-12:15	Jebie Balagosa, Kongju National University, Republic of Korea <i>Experimental Study on Mechanical Properties of Compacted Gyeongju Bentonite and Soils Stabilized with Wood Pellet Fly Ash-based Binders</i>
12:15-12:30	Xia Li, Southeast University, China <i>Shear Properties of a Novel Wave-Shaped Shear Connector for Thin UHPC-Steel Composite Structures</i>
12:30-12:40	Event Closure
12:40-14:30	Lunch

ABOUT YRGS

The Asia-Pacific Young Researchers and Graduates Symposium (YRGS) is primarily a platform for early-stage structural engineering professors, research scientists, professional engineers, postdoctoral fellows and postgraduate students to present their latest findings within the context of the wider structural engineering discipline. The symposium features oral presentations predominantly from early-career structural engineering people but also includes talks from leading figures in the field. It provides an opportunity for learning about future career paths and networking with fellow researchers. One of the valuable merits of attending YRGS is the opportunity to network with a wide range of structural engineering researchers from the Asia-Pacific regions to develop collaboration and friendship.

YRGS 2023 focuses on general research topics in structural engineering, particularly resilient and smart civil infrastructure. Papers addressing advances in structural engineering are cordially invited for submission:

- Emerging materials and structural systems
- Structural diagnosis and assessment
- Structural health monitoring
- Durability of existing structures
- Life-cycle maintenance of existing structures
- Structure reliability
- Multi-Hazard resistance and disaster mitigation
- New design theories
- Resilient structures and structural performance
- Innovative numerical approaches
- Big-data and machine-learning in structural engineering
- Engineering practice in the above field

Past YRGS

9th YRGS: Tongji University, Shanghai, China, 19-20 December 2019

8th YRGS: The University of Tokyo, Tokyo, Japan, 7-8 September 2017

7th YRGS: University of Malaya, Kuala Lumpur, Malaysia, 20-21 August 2015

6th YRGS: Sirindhorn International Institute of Technology, Bangkok, Thailand, 31 July-1 August 2014

5th YRGS: Malaviya National Institute of Technology, Jaipur, India, 30-31 August 2013

4th YRGS: The Hong Kong Polytechnic University, Hong Kong, China, 4-5 December 2012

3rd YRGS: Taiwan University, Taipei, China, 25-26 March 2011

2nd YRGS: Zhejiang University, Hangzhou, China, 27-28 March 2010

1st YRGS: Kunsan National University, Kunsan, South Korea, 26-28 February 2009

