

*The Institution
of Structural
Engineers*

IStructE Conference on Structural Engineering in Hazard Mitigation 2013



清华大学
Tsinghua University

**Tsinghua University, Beijing
28 and 29 October 2013**



P R O G R A M M E

Jointly organized by

The Institution of Structural Engineers
Tsinghua University **Tongji University**
and
The IStructE China Group

Contents

	Page
The Conference	2
The IStructE	3
Conference Advisory Committee	4
Conference Organizing Committee	5
International Scientific Committee	6
Conference Editorial Board	7
Programme at a Glance and Registration Desk	8
Schedule of Presentations	
- 28 October 2013, Monday, The Main Hall, Tsinghua University	9
- 29 October 2013, Tuesday, 4 th Floor, Wenjin Hotel	10
Map	15
General Information	16

The Conference

The IStructE Conference on Structural Engineering in Hazard Mitigation is jointly organized by

- the Institution of Structural Engineers (www.istructe.org),
- Tongji University (www.tongji.edu.cn),
- Tsinghua University (www.tsinghua.edu.cn), and
- the IStructE China Group.

The Conference is held in Beijing on 28 and 29 October 2013, and in Shanghai on 31 October and 1 November 2013 featuring keynote lectures as well as presentations in parallel themed-based sessions.

**The Institution
of Structural
Engineers**



由英国结构工程师学会 (www.istructe.org)、清华大学 (www.tsinghua.edu.cn)、同济大学 (www.tongji.edu.cn)、英国结构工程师学会中国分部联合组办的 IStructE 结构工程防灾减灾国际会议 (*sehm2013*), 将分别于 2013 年 10 月 28 日和 29 日在北京、10 月 31 日和 11 月 01 日在上海举行。

The IStructE

The Institution of Structural Engineers (www.istructe.org) is the world's largest membership organisation dedicated to the art and science of structural engineering. The Institution has over 27,000 members working in 105 countries around the world. The Institution is an internationally recognised source of expertise and information concerning all issues that involve structural engineering and public safety within the built environment.

The Institution has three core values to support the roles of the structural engineers around the world:

- Professional standards striving for continued technical excellence; advancing safety and innovation across the built environment.
- Celebrating excellence and promoting greater understanding of the structural engineering profession by sharing the achievements and milestones of the industry with the public.
- Sustainability supporting structural engineers as they protect, influence and advance environmental development responsibly.

The IStructE China Group was formally established in 2002. To better represent IStructE members and their interests in the major cities of China, three sub-groups were developed, and they are currently based in Beijing, Shanghai and Shenzhen.

Conference Advisory Committee

Mr. Yan-Kee Cheng	President, IStructE
Prof. Si Yuan	Vice President, Tsinghua University
Prof. Yi-Yi Chen	Executive Vice President, Tongji University
Prof. Jan-Ming Ko	Emeritus Professor, The Hong Kong Polytechnic University
Prof. Peter Kai-Kwong Lee	Honorary Professor, The University of Hong Kong
Prof. Yong-Sheng Li	Former Executive Vice President, Tongji University
Mr. Nick Russell	Senior Vice President, IStructE
Prof. Da-Sui Wang	Chief Engineer, East China Architectural Design and Research Institute

Conference Organizing Committee

Joint Chairmen:

Prof. Yong-Jiu Shi	Tsinghua University
Prof. Kwok-Fai Chung	The Hong Kong Polytechnic University
Prof. James Jie-Min Ding	Tongji University

Secretaries:

Dr. Gang Shi	Tsinghua University
Dr. Paul Heung-Fai Lam	The City University of Hong Kong
Ms. Zoe Ying Zhou	Tongji Architectural Design (Group) Co., Ltd.

Members:

Prof. Zhong Fan	China Architecture Design and Research Group
Mr. Bin-Lei Chen	Beijing Institute of Architectural Design and Research
Dr. Jian-Guo Dai	The Hong Kong Polytechnic University
Dr. Peng Feng	Tsinghua University
Prof. Jun-Shang Kuang	The Hong Kong University of Science and Technology
Dr. Quan-Wang Li	Tsinghua University
Dr. Xin-Zheng Lu	Tsinghua University
Dr. Ray Kai-Leung Su	The University of Hong Kong
Dr. Michael Chi-Ho Yam	The Hong Kong Polytechnic University
Dr. Xin Zhao	Tongji Architectural Design (Group) Co., Ltd.
Ms. Esther Ming-Yan Choy	Tsinghua University

International Scientific Committee

Dr. Michael Cook	Vice President, IStructE
Mr. Alan Crossman	Vice President, IStructE
Mr. Ian Firth	Vice President, IStructE
Prof. Tim Ibell	Vice President, IStructE
Prof. Christopher Kin-Ying Leung	The Hong Kong University of Science and Technology
Prof. David Nethercot	Past President, IStructE
Prof. Roger Plank	Past President, IStructE
Dr. Graham Owens	Past President, IStructE
Prof. Jin-Guang Teng	The Hong Kong Polytechnic University
Prof. You-Lin Xu	The Hong Kong Polytechnic University

Conference Editorial Board

Chairman & Editor-in-Chief

Prof. Kwok-Fai Chung The Hong Kong Polytechnic University

Editors

Dr. Michael Chi-Ho Yam The Hong Kong Polytechnic University

Dr. Paul Heung-Fai Lam City University of Hong Kong

Dr. Jian-Guo Dai The Hong Kong Polytechnic University

Members

Prof. Ai-Rong Chen Tongji University

Prof. Jie-Min Ding Tongji Architectural Design (Group) Co., Ltd.

Dr. Ho-Cheung Ho The Hong Kong Polytechnic University

Prof. Guo-Qiang Li Tongji University

Prof. Xi-Lin Lu Tongji University

Dr. Ching-Tai Ng University of Adelaide

Dr. Yan-Chun Ni City University of Hong Kong

Prof. Yi-Qing Ni The Hong Kong Polytechnic University

Prof. Gang Shi Tsinghua University

Prof. Yong-Jiu Shi Tsinghua University

Dr. Ray Kai-Leung Su The University of Hong Kong

Dr. Xiao-Wei Ye Zhejiang University

Dr. Tao Yin Wuhan University

Dr. Feng-Liang Zhang City University of Hong Kong

Ms Zoe Ying Zhou Tongji Architectural Design (Group) Co., Ltd.

Programme at a Glance

Date	27 Oct Sunday	Day 1 28 Oct Monday	Day 2 29 Oct Tuesday
		Main Hall, Tsinghua University	Wenjin Hotel, Tsinghua Science Park
Morning		Opening Ceremony Keynote Presentations	Sessions I-A, I-B and I-C
		Lunch	
Afternoon	Registration	Keynote Presentations	Sessions II-A, II-B and II-C
			Keynote Presentations
		Dinner	

Registration Desk

- Sunday 27 October 2013**
 Time: 14:00 to 21:00
*The Lobby, Wenjin Hotel, Tsinghua Science Park,
 Haidian District*
- Monday 28 October 2013**
 Time: 8:00 to 9:00
*The Lobby, The Main Hall, Tsinghua University,
 Haidian District*
- Tuesday 29 October 2013**
 Time: 8:30 to 9:30
*4th Floor, Wenjin Hotel, Tsinghua Science Park,
 Haidian District*

Schedule of Presentations

28 October 2013, Monday, The Main Hall, Tsinghua University

Time	Programme
08:00-09:00	Registration
09:00-09:25	Opening Ceremony
09:25-10:00	Group Photo at the Main Hall & Coffee Break
10:00-10:45	<p><i>Plenary Session 1</i> <i>Chair : Prof. Kwok-Fai CHUNG</i></p> <p>Prof. Ahmed ELGHAZOULI <i>Department of Civil and Environmental Engineering, Imperial College London, U.K.</i> Robustness of Steel and Composite Structures Under Extreme Loads</p>
10:45-11:30	<p>Prof. Nelson LAM <i>Department of Infrastructure Engineering, University of Melbourne, Australia.</i> Displacement Based Seismic Design Principles as Applied to Regions of Low and Moderate Seismicity</p>
11:30-13:30	Lunch Break
13:30-14:15	<p><i>Plenary Session 2</i> <i>Chair : Dr. Michael Chi-Ho YAM</i></p> <p>Prof. Andrew WHITTLE <i>Department of Civil and Environmental Engineering, Massachusetts Institute of Technology, U.S.A.</i> Design and Performance of Coastal Flood Protection Systems</p>
14:15-15:00	<p>Dr. Fahim SADEK <i>Engineering Laboratory, National Institute of Standard and Technology, USA.</i> Structural Design for Disaster Resilience</p>
15:00-15:15	Short Break
15:15-16:00	<p><i>Plenary Session 3</i> <i>Chair: Prof. Dennis LAM</i></p> <p>Prof. Lin-Hai HAN <i>Department of Civil Engineering, School of Civil Engineering, Tsinghua University, Beijing, China.</i> Concrete-Filled Steel Tubular Structures: Research and Practice</p>
16:00	Adjourn
17:30	Dinner

Schedule of Presentations

29 October 2013, Tuesday, 4th Floor, Wenjin Hotel

Venue	Multi-function Room 多功能厅	Furong Room 芙蓉厅	Shoushan Room 寿山厅
Time	Session I -A	Session I -B	Session I -C
09:30-11:00	Modern Structural Engineering Design using Eurocodes <i>Chair: Prof. Kwok-Fai CHUNG</i>	Structural Health Monitoring and Vibration Control of Engineering Structures <i>Chair: Dr. Xiao-Wei YE</i> <i>Co-Chair: Prof. Yi-Qing NI</i>	Research and Development in Structural Engineering I <i>Chair: Prof. Yong-Jiu SHI</i>
11:00-13:00	Lunch Break		
Time	Session II -A	Session II -B	Session II -C
13:00-14:30	Use of Advanced Fibre Reinforced Polymer Composites in Construction <i>Chair: Dr. Jian-Guo DAI</i>	Recent Developments in Seismic Engineering Design <i>Chair: Dr. Ray Kai-Leung SU</i>	Research and Development in Structural Engineering II <i>Chair: Prof. Yong-Jiu SHI</i>
14:30-15:00	Coffee Break		
	Multi-function Room 多功能厅		
15:00-15:45	Plenary Session 4 Chair: Dr. Gang SHI Prof. Zhong FAN <i>China Architecture Design and Research Group, Beijing, China.</i> Bundled Tower Structures and Their Applications In Sightseeing Towers		
15:45-16:30	Prof. Jia-Qi GE <i>China Aviation Planning and Construction Development Co., Ltd., Beijing, China.</i> Structural Performance of Pre-stressed Long Span Steel Structures		
16:30	Conclusions		

Theme-based Session I-A

Modern Structural Engineering Design using Eurocodes

29 Oct 2013, 9:30 - 11:00 (Multi-function Room)

Chair: Prof. Kwok-Fai CHUNG
Hong Kong Polytechnic University, China

1. Prof. Dennis LAM, Bradford University, U.K.
Demountable Shear Connectors for Sustainable and Robust Composite Structures
2. Prof. Kwok-Fai CHUNG, The Hong Kong Polytechnic University, China.
Harmonized Member Buckling Design in Structural Eurocodes
3. Prof. Ahmed ELGHAZOULI, Imperial College London, U.K.
Seismic Design of Building Structures to Eurocode 8
4. Prof. Nelson LAM, The University of Melbourne, Australia.
Earthquake Loading Model in the Proposed National Annex To Eurocode 8 for Peninsular Malaysia
5. Dr. Sing-Ping CHIEW, Nanyang Technological University, Singapore.
Impact of Structural Eurocodes on Steel and Composite Structures in Singapore

Theme-based Session I-B

Structural Health Monitoring and Vibration Control of Engineering Structures

29 Oct 2013, 9:30 - 11:00 (Furong Room)

Chair: Dr. Xiao-Wei YE, Zhejiang University, China.
Co-chair: Prof. Yi-Qing NI, Hong Kong Polytechnic University, China.

1. Dr. Xiao-Wei YE, Zhejiang University, China.
Theoretical And Experimental Study of Structural Displacement Measurement using Vision-based Technology
2. Prof. Zong-Guang SUN, Dalian Maritime University, China.
A Vibration Reduction Scheme for Stayed-Cables Based on Space Layout
3. Prof. Shao-Fei JIANG, Fuzhou University, China.
A Hybrid Data-fusion System Based on Correlation Fractal Dimension and PNN for Structural Damage Identification

4. Dr. Jin-Song ZHU, Tianjin University, China.
Study of A Novel Wavelet Packet Energy based Damage Detection Index for Bridges
5. Dr. Yue-Quan BAO, Harbin Institute of Technology, China.
Compressive Sensing Based Lost Data Recovery of Fast Moving Wireless Sensing for Structural Health Monitoring

Theme-based Session I-C

Research and Development in Structural Engineering I

29 Oct 2013, 9:30 - 11:00 (Shoushan Room)

Chair: Prof. Yong-Jiu SHI, Tsinghua University, China

1. Prof. Yan-Xia ZHANG, University of Civil Engineering and Architecture, Beijing, China.
Static Elastic-Plastic Analysis of Self-Centring Steel Moment-Resisting Plane Frames
2. Prof. You-Kai PENG, China University of Mining and Technology, Beijing, China.
Experimental Results of Recycled Concrete Structural Walls under Cyclic Loadings
3. Prof. Yan ZHAO, Engineering Research Centre of Structural Engineering and New Materials, China.
Experimental and Numerical Study on Strength of CHS T-joints Retrofitted by External Stiffeners
4. Prof. Quan-Li DONG, China Construction Design International, China.
Performance-Based Seismic Design of Two Large Stadia
5. Dr. Jian-Hua ZHENG, China Huanqiu Contracting & Engineering Corporation, China.
Base-isolated Model Analysis for Full-containment LNG Storage Tanks

Theme-based Session II-A

Use of Advanced Fiber Reinforced Polymer (FRP) Composites in Construction
29 Oct 2013, 13:00 - 14:30 (Multi-function Room)

Chair: Dr. Jian-Guo DAI, Hong Kong Polytechnic University, China.

1. Prof. Xiao-Ling ZHAO, Monash University, Australia.
CFRP-Metal Systems Subjected to Impact and Blast Loadings
2. Dr. Jian-Guo DAI, Hong Kong Polytechnic University, Hong Kong SAR, China.
Fire Resistance Design of FRP-Strengthened RC Beams
3. Prof. Wei-Chen XUE, Tongji University, China.
Experimental Studies on Seismic Performance of High Performance Concrete Beams Prestressed with AFRP Tendons
4. Prof. Gui-Jun XIAN, Harbin Institute of Technology, China.
Durability Study of Pultruded GFRP Composites Subjected to Water Immersion
5. Dr. Peng FENG, Tsinghua University, China.
Roofs and Bridges Made of Fibre-Reinforced Polymer

Theme-bases Session II-B

Recent Developments in Seismic Engineering Design
29 Oct 2013, 13:00 - 14:30 (Furong Room)

Chair: Dr. Ray Kai-Leung SU, The University of Hong Kong, China.

1. Dr Ray Kai-Leung SU, The University of Hong Kong, Hong Kong SAR, China.
Shear Concentration Effects in RC Walls above Transfer Structures
2. Prof. Nelson LAM, The University of Melbourne, Australia.
Minimum Design Loads of Intraplate Seismic Hazards
3. Dr Hing-Ho TSANG, Swinburne University of Technology, Australia.
A Displacement-based Soil Amplification Model for Low and Moderate Seismicity Regions
4. Dr. Johnny Ching-Ming HO, University of Queensland, Australia.
Improving Strength, Stiffness and Ductility of High-Strength Double-skinned Concrete Filled Steel Tubular Columns with External Steel Rings

5. Dr Bei CHENG, Beijing University of Civil Engineering and Architecture, Beijing, China.

Deformation Design Guidelines of Retrofitted Deep Coupling Beams by Restrained Bolted Steel Plates

Theme-based Session II-C

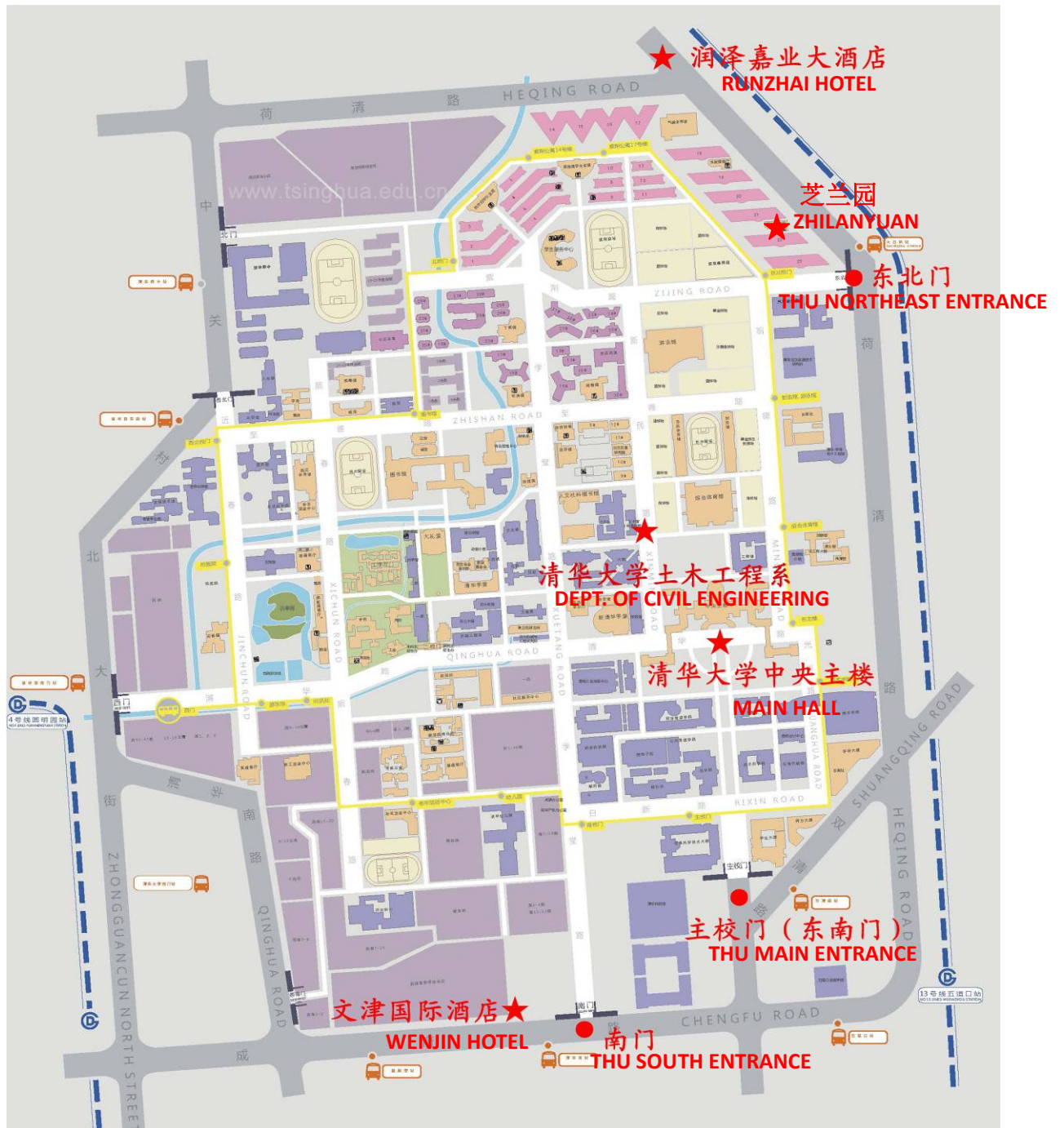
Research and Development in Structural Engineering II

29 Oct 2013, 13:00 - 14:30 (Shoushan Room)

Chair: Prof. Yong-Jiu SHI, Tsinghua University, China

1. Prof. Fu-Di XIE, Beijing University of Civil Engineering and Architecture, China.
Studies on Fire Resistance Performance of Reinforced Concrete Simple-Supported Beams by Finite Element Analysis with Different Cover Thicknesses and Section Sizes
2. Prof. Rong-Gang ZHANG, Tsinghua University, China.
Research on Fire Performance Design for Steel Plate Shear Walls in Petrochemical Furnace and Fire Detecting System
3. Dr Si-Qing WEN, CITIC General Institute of Architectural Design and Research Co., Ltd, China.
Application of Construction Control in the Design of Building Structures
4. Dr. Aaron Juan WANG, Corporate Technical Management, CapitaLand Management (China) Co., Ltd., Shanghai, P.R. China.
Design and Construction of Complex Projects in China - Rethinking through Practicing
5. Y. Liu, Spatial Structures Research Centre, Beijing University of Technology, Beijing, China.
Dynamic Characteristics Analysis of Cylindrical Reticulate Shells Considering Pile-Soil-Structure Interaction
6. R.J. Liu, Spatial Structures Research Centre, Beijing University of Technology, Beijing, China.
Static Mechanical Behaviour Analysis for Annular Crossed Cable-Truss Structures

Map



General Information

Venue

- *28 October 2013, Monday - DAY 1*

Presentations

The Main Hall, Tsinghua University 清华大学中央主楼

Lunch

Zhilanyuan Dining Hall, Tsinghua University 清华大学芝兰园餐厅

Please gather at the main entrance of the Main Hall of the University for shuttle bus service. 请在主楼大门集合，有专车接送。

Dinner

4th Floor, Wenjin Hotel 文津酒店

Please gather at the main entrance of the Main Hall of the University for shuttle bus service. 请在主楼大门集合，有专车接送。

- *29 October 2013, Tuesday - DAY 2*

Presentations

4th Floor, Wenjin Hotel 文津酒店

Lunch

Zhilanyuan Dining Hall, Tsinghua University 清华大学芝兰园餐厅

Please gather at the hotel lobby for shuttle bus service.

请在酒店大堂集合，有专车接送。

Language

English is the official language and is the only language to be used for presentations and publications. There will be no translation into other languages.