The 5th Tongji–UBC Symposium on Earthquake Engineering

“Facing Earthquake Challenges Together”

May 4-8, 2015 Shanghai, China
Symposium Chairs
Prof. Xilin LU  Prof. Carlos VENTURA

Academia committee
Prof. Haibei XIONG  Prof. Minjuan HE  Prof. Jianzhong LI
Prof. Yu HUANG  Prof. Ying ZHOU  Mr. Xin ZHAO
Mr. Felix YAO  Prof. Tony YANG  Mr. John PAO
Ms. Sharlie HUFFMAN

Organizing committee
Ms. Jiafei JIANG  Mr. Zheng LI  Mr. Jiazeng SHAN
Mr. Fengliang ZHANG  Ms. Jiajun SHEN  Mr. Shuiming SHEN

Student committee of Tongji
Ms. Ling WU  Ms. Ying WU  Mr. Hanlin DONG
Mr. Jixin CAO  Mr. Lu OUYANG  Mr. Yuting OUYANG
Mr. Jianan FAN  Ms. Benben LI  Mr. Hongwei LIU
Ms. Ruiyuan SHI  Mr. Hongsheng XU  Mr. Hao FU
Mr. Zhi YU  Mr. Kangli WANG  Mr. Wenchen DONG
Mr. Haocheng GUO  Mr. Miguel CALVO

Student committee of UBC
Mr. Dorian TUNG  Mr. Yuxin PAN  Ms. Amaia MARTINEZ
Ms. Ilaria CAPRARO  Ms. Lisa TOBBER  Mr. Jeremy ATKINSON
## Program at a glance

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### Sunday, May 3, 2015

**All Day**

Registration

Main Lobby, Magnolia Hotel
1251 Siping Road, Yangpu District, Shanghai

**Note:** Please pick up the conference package at the registration desk and upload the PPT presentation.

### Monday, May 4, 2015

**08:30-09:10**

Opening Ceremony and Group Photo

Room 1002, Multi-Function Building (10F), Tongji University.
1239 Siping Road, Yangpu District, Shanghai

Chair: Haibei XIONG (Tongji University, China)

Opening Address

Prof. Yiyi CHEN, Vice President of Tongji University, China
Mr. David Yarwood, Consul & Trade Commissioner at the Canadian Consulate General in Shanghai
Prof. Carlos VENTURA, Director of the Earthquake Engineering Research Facility (EERF) at University of British Columbia

Group Photo

**09:10-10:10**

Plenary Session 1

Room 1002, Multi-Function Building (10F), Tongji University.
Chair: Minjuan HE (Tongji University, China)

**Note:** 17-minute oral presentation; 3-minute Q/A.
09:10-09:30  Earthquake Engineering Research and Education in Tongji University
Xilin LU (Tongji University, China)

09:30-09:50  To be determined
Carlos VENTURA (University of British Columbia, Canada)

09:50-10:10  Finite Element Analysis of Precast Short Column Connections Under Cyclic Loading
Feng XIONG (Sichuan University, China)

10:10-10:30  Coffee Break

10:30-11:50  Plenary Session 2
Room 1002, Multi-Function Building (10F), Tongji University.
Chair: Carlos VENTURA (University of British Columbia, Canada)
Note: 17-minute oral presentation; 3-minute Q/A.

10:30-10:50  Analysis of Different Instability Modes in Biaxial Testing of Sand under both Drained and Undrained Condition
Amit PRASHANT (Indian Institute of Technology Gandhinagar, India)

10:50-11:10  Seismic Performance and Driving Security of Trains of Bridges In High-Speed Railway
Lizhong JIANG (Central South University, China)

11:10-11:30  To be determined
Jianping HAN (Lanzhou University of Technology, China)

11:30-11:50  Development of High-performance Structural Systems for Seismic Applications
Tony YANG (University of British Columbia, Canada)

12:00-13:30  Lunch
F2, Campus Canteen (Xueyuan), Tongji University.

13:30-14:30  Plenary Session 3
Room 1002, Multi-Function Building (10F), Tongji University.
Chair: Feng XIONG (Sichuan University, China)
Note: 17-minute oral presentation; 3-minute Q/A.

Yu HUANG (Tongji University, China)

13:50-14:10  Experimental Compare Evaluation of Seismic Behavior of RC Frame Infilled With Panels to with Hollow Brick Masonry
Bixiong LI (Sichuan University, China)

14:10-14:30  Allowing for Uncertainty in Site Response Analysis
Jason DOWLING (University of British Columbia, Canada)
14:30-14:50 Coffee Break

14:50-15:50 Student Session 1 (Structural analysis)
Room 1002, Multi-Function Building (10F), Tongji University.
Chair: Tony YANG (University of British Columbia, Canada)
Note: 8-minute oral presentation; 2-minute Q/A.

14:50-15:00 Behavior and Modelling of Reinforced Concrete Shear Walls in High-Rise Buildings
Lisa TOBBER (University of British Columbia, Canada)

15:00-15:10 Study on the Cushioning Performance of Cushion Material on Shed
Liangpu LI (Sichuan University, China)

15:10-15:20 Ductility Estimation for a Novel Timber-steel-hybrid System
Xiaoyue ZHANG (University of British Columbia, Canada)

15:20-15:30 The Three-dimensional Theory of the ICNMM and Its Application in the Analysis of the Plate Structure
Guangchao ZHANG (Tongji University, China)

15:30-15:40 Shear Connections with Self-tapping-screws for Cross-laminated-timber Panels
Afrin HOSSAIN (University of British Columbia, Canada)

15:40-15:50 Construction Techniques and Seismic Design Concept about the Dong's Pile-dwelling Traditional House
Ling WU (Tongji University, China)

15:50-16:05 Coffee Break

16:05-17:15 Student Session 2 (Monitoring and control)
Room 1002, Multi-Function Building (10F), Tongji University.
Chair: Bixiong LI (Sichuan University, China)
Note: 8-minute oral presentation; 2-minute Q/A.

16:05-16:15 Ambient Vibration Tests and Model Updating of the Health Sciences Parkade at UBC
Ilaria CAPRARO (University of British Columbia, Canada)

16:15-16:25 Frequency Response Function in System Identification under Ambient Vibration
Yuting OUYANG (Tongji University, China)

16:25-16:35 Model Updating of Nine-story Concrete Core Wall Building
Steve MCDONALD (University of British Columbia, Canada)

16:35-16:45 Sensitivity Evaluation of Subspace Based Damage Detection Technique to Damage and Noise Features
Saeid ALLAHADIAN (University of British Columbia, Canada)

16:45-16:55 Experimental Study of Nonlinear Energy Sinks for Seismic Reduction
Jingjing WANG (Tongji University, China)
16:55-17:05  Seismic Analysis on Viscoelastic Dampers in the Dabaoen Temple  
Shunming GONG (Tongji University, China)

17:05-17:15  Dynamic Similitude Mechanism and Design Approaches of the Base-isolated Structures  
Xiangxiang REN (Tongji University, China)

18:00-20:00  Welcome Banquet  
Restaurant (F15), Magnolia Hotel  
1251 Siping Road, Yangpu District, Shanghai

Tuesday, May 5, 2015

09:00-10:20  Plenary Session 4  
Room 1002, Multi-Function Building (10F), Tongji University.  
Yongfeng DU (Lanzhou University of Technology, China)  
**Note:** 17-minute oral presentation; 3-minute Q/A.

09:00-09:20  Performance-based Seismic Design in 2014 Canadian Bridge Code  
Shariie HUFFMAN (University of British Columbia, Canada)

09:20-09:40  To be determined  
Minjuan HE (Tongji University, China)

09:40-10:00  Seismic Vulnerability Analysis on Large-span Continuous Bridges of High Speed Railway  
Biao WEI (Central South University, China)

10:00-10:20  To be determined  
Ye XIA (Tongji University, China)

10:20-10:40  Coffee Break

10:40-12:00  Plenary Session 5  
Room 1002, Multi-Function Building(10F), Tongji University.  
Chair: Jianping HAN (Lanzhou University of Technology, China)  
**Note:** 17-minute oral presentation; 3-minute Q/A.

10:40-11:00  Tongji Shaker Table Coupled with Loading Actuator Hybrid Simulation Test  
Chengyu YANG (Tongji University, China)

11:00-11:20  Numerical Simulation of Seismic Collapse and Progressive Collapse of Isolated Structures  
Yongfeng DU (Lanzhou University of Technology, China)

11:20-11:40  Displacement Type Calculation Algorithm for Structural Dynamic Analysis  
Changqing LI (Central South University, China)

11:40-12:00  Finte Element Model Calibration of Multi-story Buildings  
Yavuz KAYA (University of British Columbia, Canada)
12:00-13:30 Lunch
F2, Campus Canteen (Xueyuan), Tongji University.

13:30-14:30 Plenary Session 6
Room 1002, Multi-Function Building (10F), Tongji University.
Chair: Lizhong JIANG (Central South University, China)
Note: 17-minute oral presentation; 3-minute Q/A.

13:30-13:50 Subspace Identification of Shear-Beam Buildings under Unknown Ground Excitation
Yuanfeng SHI (Sichuan University, China)

13:50-14:10 Seismic Control of Buildings Using Apparent Mass Dampers with Rotational Amplifying Mechanisms
Ruifu ZHANG (Tongji University, China)

14:10-14:30 To be determined
Jianhua DONG (Lanzhou University of Technology, China)

14:30-14:50 Coffee Break

14:50-16:00 Student Session 3(Soil and Ground motion)
Room 1002, Multi-Function Building (10F), Tongji University.
Chair: Dhiman BASU (India Institute of Technology Gandhinagar, India)
Note: 8-minute oral presentation; 2-minute Q/A.

14:50-15:00 Effect of Ground Motion Duration on RC Frame Structural Collapse Capacity Based on Spectrum-matched Artificial Ground Motion
Xiaoyun SUN (Lanzhou Technology University, China)

15:00-15:10 Dynamic Behaviour of Unsaturated CH Soil under Cyclic Loading in Unconsolidated Undrained Conditions
Saloni PANDYA (India Institute of Technology Gandhinagar, India)

15:10-15:20 Record Evaluation of a Bridge under the Napa Earthquake
Omar Alcazar PASTRANA (University of British Columbia, Canada)

Tianyi XU (Lanzhou University of Technology, China)

15:30-15:40 A Novel Mitigation Method for Seismic Liquefaction by Using Nanoparticles
Lin WANG (Tongji University, China)

15:40-15:50 Development of A Window Based Approach for Simplified Estimation of Rotational Ground Motion
Gopala Krishna RODDA (India Institute of Technology Gandhinagar, India)

15:50-16:00 Influence of Spectral Matching Ground Motion on Seismic Response of Multi-storey Reinforced Concrete Frames
Shilong WEI (Lanzhou University of Technology, China)
16:00-16:15  Coffee Break

16:15-17:25  Student Session 4 (Seismic performance)
Room 1002, Multi-Function Building (10F), Tongji University.
Chair: Chengyu YANG (Tongji University, China)
Note: 8-minute oral presentation; 2-minute Q/A.

16:15-16:25  Seismic Performance of a Pre-cast Arch Structure
Amaia MARTINEZ (University of British Columbia, Canada)

16:25-16:35  Study on Correlation Parameters of Main-after Shocks and Damage Mechanism
Based on Strong Earthquake Records in Western China
Ping SHAO (Central South University, China)

16:35-16:45  PDEM-based Stochastic Seismic Response and Reliability Evaluation of
Nonlinear Structures
Junyi YANG (Tongji University, China)

16:45-16:55  Collapse Assessment of Buckling Restrained Knee Braced Truss Moment
Frame System
Yuanjie LI (University of British Columbia, Canada)

16:55-17:05  Seismic Performance of an Innovative Timber-steel Hybrid Structure
Yang YANG (Tongji University, China)

17:05-17:15  Seismic Performance of Shear Wall Buildings with Permanent Lateral Demands
Tyler BEST (University of British Columbia, Canada)

17:15-17:25  Nonlinear Performance and Damage Potential of Degraded Structures under
Different Earthquakes
Yuxin PAN (University of British Columbia, Canada)

18:00-20:00  Dinner for Students
Banmu Garden Restaurant (2F), Tongji University
1239 Siping Road, Yangpu District, Shanghai

18:00-20:00  Dinner for Faculties
Tongji Guest House
69 Zhangwu Road, Yangpu District, Shanghai

Wednesday, May 6, 2015

09:00-10:20  Plenary Session 7
Room 1002, Multi-Function Building (10F), Tongji University.
Chair: Amit PRASHANT (India Institute of Technology Gandhinagar, India)
Note: 17-minute oral presentation; 3-minute Q/A.

09:00-09:20  Design of a New Passive Energy Dissipation System
Dhiman BASU (India Institute of Technology Gandhinagar, India)
09:20-09:40  Small Strain Stiffness of Sand: Experiments and DEM Simulation  
Xiaoqiang GU (Tongji University, China)
09:40-10:00  An Innovative Conical Friction System for Seismic Isolation  
Wei XIONG (Central South University, China)
10:00-10:20  Application of Shape Memory Alloys in Seismic Engineering  
Cheng FANG (Tongji University, China)

10:20-10:40  Coffee Break

10:40-12:00  Plenary Session 8  
Room 1002, Multi-Function Building (10F), Tongji University.  
Chair: Sharlie Huffman (BC Ministry of Transportation & Infrastructure, Canada)  
Note: 17-minute oral presentation; 3-minute Q/A.
10:40-11:00  Innovative Seismic Upgrade Solution of a Wood Frame Ice Arena in Coquitlam BC  
John PAO (BPA Group of Companies, Canada)
11:00-11:20  Optimal Structural Design and Case Studies for Super Tall Buildings  
Xin ZHAO (Architectural Design & Research Institute of Tongji University (Group) Co, LTD)
11:20-11:40  To be determined  
Martin TUREK (University of British Columbia, Canada)
11:40-12:00  To be determined  
Jingli HU (ZBM)

12:00-13:30  Lunch  
F2, Campus Canteen (Xueyuan), Tongji University.

13:30-14:40  Student Session 5(Structural modeling)  
Room 1002, Multi-Function Building (10F), Tongji University.  
Chair: Biao WEI (Central South University, China)  
Note: 8-minute oral presentation; 2-minute Q/A.
13:30-13:40  The Vertical Vehicle-bridge Coupling Vibration Research Based on OpenSees  
Hanyun LIU (Central South University, China)
Wanli XU (Tongji University, China)
13:50-14:00  Dynamic Calculation Model and Seismic Response for Frame Supporting Structure with Prestressed Anchors  
Xuguang DONG (Lanzhou University of Technology, China)
14:00-14:10  Analysis of a Bridge Substructure Subject to Falling Rock Impact  
Xiaoyu ZHOU (Tongji University, China)
14:10-14:20 Seismic Performance of Outrigger Systems in Tall Buildings  
*Jeremy ATKINSON* (University of British Columbia, Canada)

14:20-14:30 Parametric Vibration Analysis of Stay Cables Considering Strong Bridge Deck Vibration  
*Qin LU* (Tongji University, China)

14:30-14:40 Numerical Studies for the Feasibility Assessment of PCCP in Pipe Jacking Method  
*Qin GONG* (Tongji University, China)

14:40-14:55 **Coffee Break**

14:55-16:05 **Student Session 6** (Seismic performance)  
*Room 1002, Multi-Function Building (10F), Tongji University.*  
Chair: *Jianhua DONG* (Lanzhou Technology University, China)  
**Note:** 8-minute oral presentation; 2-minute Q/A.

14:55-15:05 Seismic Behavior & Modeling of Reinforced Concrete Flat Slab-column Connections  
*Omar ALHARRAS* (University of British Columbia, Canada)

15:05-15:15 Lateral Performance of Beam-to-column Joints Built with Recombinational Wood  
*Duotao TAO* (Tongji University, China)

15:15-15:25 Preliminary Investigation on Post-earthquake Assessment of Damaged RC Structures Based on Residual Drift  
*Jianze WANG* (Tongji University, China)

15:25-15:35 Analytical Investigations of Self-centering Capability of Columns with Pre-Stressed Strands  
*Xiaolian LIU* (Tongji University, China)

15:35-15:45 Performance-Based Design and Seismic Evaluation for Eccentric Frame Structure with VD  
*Xiaoqing HUANG* (Lanzhou University of Technology, China)

15:45-15:55 Seismic Performance Assessment of Simply Supported High-speed Railway Bridge with Different Base Isolators  
*Xie XU* (University of British Columbia, Canada)

15:55-16:05 Performance-based Retrofit of School Buildings in British Columbia Canada  
*Michael FAIRHURST* (University of British Columbia, Canada)

16:05-16:20 **Coffee Break**

16:20-17:30 **Student Session 7** (Structural analysis and experiment)  
*Room 1002, Multi-Function Building (10F), Tongji University.*  
Chair: *Yuanfeng SHI* (Sichuan University, China)  
**Note:** 8-minute oral presentation; 2-minute Q/A.
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<th>Time</th>
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<td>16:20-16:30</td>
<td>Shaking Table Experiment of High Speed Railway Piers</td>
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<td>Xin KANG (Central South University, China)</td>
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<td>16:30-16:40</td>
<td>Stress-state Dependency and Effect of Silt Content on Small-strain Shear Modulus of Ganga Sand using Bender Elements in Triaxial Testing</td>
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<td>Debayan BHATTACHARYA (India Institute of Technology Gandhinagar, India)</td>
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<td>16:40-16:50</td>
<td>Hierarchical Control Framework for Hybrid Simulation</td>
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<td>Dorian Peng TUNG (University of British Columbia, Canada)</td>
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<td>16:50-17:00</td>
<td>Error Assessment of Seismic Model Experiment of Engineering Structure Using Shaking Table</td>
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<td>Ping SHAO (Central South University, China)</td>
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<td>17:00-17:10</td>
<td>Modified Analysis-oriented Model for FRP-confined Concrete with Path-dependence</td>
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<td>Benben LI (Tongji University, China)</td>
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<td>17:10-17:20</td>
<td>Experimental Investigation on Sealant Behavior of Shield Tunnel Segmental Joint under Earthquake Loading</td>
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<td>Shenjie GONG (Tongji University, China)</td>
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<td>17:20-17:30</td>
<td>Advanced Controller Design and Hierarchical Control Framework Implementation for Shake Table Test</td>
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<td>Jianyuan LIN (University of British Columbia, Canada)</td>
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**18:00-20:00**  
**Dinner for Students**  
Banmu Garden Restaurant (2F), Tongji University  
1239 Siping Road, Yangpu District, Shanghai

**18:00-20:00**  
**Dinner for Faculties**  
To be determined

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**Thursday, May 7, 2015**

**08:30-11:30**  
**Technical Visit**  
Multi-functional Shaking Table Laboratory, Jiading Campus, Tongji University  
4800 Caoan Highway, Jiading District, Shanghai

**Note:** There will be shuttle buses taking the forum participants to Jiading Campus. Buses will depart from the Magnolia Hotel at 8:00 AM.

**12:00-13:30**  
**Lunch**  
F2, Campus Canteen (Xueyuan), Tongji University.

**15:30-17:30**  
**Faculty meeting**  
Room B206 Building of College of Civil Engineering, Tongji University  
1239 Siping Road, Yangpu District, Shanghai
15:00-17:00  Student Activity  
129 Stadium, Tongji University  
1239 Siping Road, Yangpu District, Shanghai  
Friendly basketball match on 2 courts and friendly volleyball match on 2 courts

18:00-20:00  Closing banquet  
Restaurant (1F), Tongji Guest House  
69 Zhangwu Road, Yangpu District, Shanghai

Friday, May 8, 2015

Half day  City tour

Routine 1 (on chartered bus):
Departure at 8:30 – Visit China Art Museum – Visit Lujiazui area – Pass the Bund Sightseeing Tunnel – Visit the bund and East Nanjing Rd.

Routine 2 (by metro):
Departure at 8:30 – Visit Chenghuangmiao and the Yuyuan Garden – Visit Tianzifang – Visit the bund and East Nanjing Rd.

Note:  Please meet at the lobby of the Magnolia Hotel at 8:25 am

Best Presenters in Student Session  
One best presenter will be awarded in each student session by the session chair and audiences.  
The scoring criterion is shown in the following table.

Scoring rubric for the best presenters

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<th>Scoring criteria</th>
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<tr>
<td>Good presenting structure, supporting key concepts, proper organization.</td>
<td>/20</td>
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<tr>
<td>Artistic and convincing presentation file.</td>
<td>/20</td>
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<tr>
<td>Delivery style, pronunciation and proper use of technical language and grammar,</td>
<td>/20</td>
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<tr>
<td>enthusiasm and voice projection.</td>
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<tr>
<td>Time to be strictly controlled (8 minutes).</td>
<td>/20</td>
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<tr>
<td>Fluency and convincing on answering questions.</td>
<td>/20</td>
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<tr>
<td><strong>Overall score</strong></td>
<td>/100</td>
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Metro of Shanghai
Tongji University Campus Map

Campus Canteen (Xueyuan)  
学苑食堂

Multi-Function Building  
综合楼

Magnolia Hotel  
白玉兰迎宾馆

Building of Civil Engineering  
土木大楼

Banmu Garden Restaurant  
半亩园
Note: Taxis are available outside the terminal at ground floor of Pudong International Airport (PVG) at a cost of approximately RMB 180 and it takes about 60 minutes from PVG to the conference registration hotels (Magnolia Hotel), which are close to the campus of Tongji University. Attendees can also take metro. First take Line 2 at the station of Pudong International Airport; interchange the train at the station of Guanglan Road; and interchange for Line 10 at the station of East Nanjing Road; you need to take off at the station of Tongji University and then walk to the registration hotels.
Note: Taxis are available outside the terminal at ground level of Hongqiao Airport (SHA) at a cost of approximately RMB 120 and it takes about 50 minutes from SHA to the conference registration hotels (Magnolia Hotel), which are close to the campus of Tongji University.

Attendees can also take metro. Take Line 10 at the station of Hongqiao Airport; take off at the station of Tongji University, and then walk to the registration hotels.