The Sixth Kwang-Hua Forum on Innovations and Implementations in Earthquake Engineering Research December 12-14, 2014 Shanghai, China

Hosted by



State Key Laboratory of Disaster Reduction in Civil Engineering

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College of Civil Engineering, Tongji University

Sponsored by



**National Natural Science Foundation of China** 



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# Program at a glance

Thursday, Dece	ember 11	
12:00-22:00	Registration	<ul> <li>Room 525, Kingswell Hotel-Tongji</li> <li>50 Zhangwu Road, Yangpu District, Shanghai</li> <li>Main Lobby, Tongji Guest House</li> <li>69 Zhangwu Road, Yangpu District, Shanghai</li> </ul>
Friday, Decemb	per 12	
08:30-09:10	Opening Ceremony	Lecture Hall, Office Building(1F), Architectural Design and Research Institute of Tongji University Co., Ltd (ADRI) 281 Fuxin Road, Yangpu District, Shanghai
09:10-10:19	Plenary Session 1	Lecture Hall, Office Building (1F), ADRI
10:19-10:35	Coffee Break	Office Building (1F), ADRI
10:35-12:07	Plenary Session 2	Lecture Hall, Office Building (1F), ADRI
12:07-13:30	Lunch	Dining Hall, Office Building (1F), ADRI
13:30-14:39	Plenary Session 3	Lecture Hall, Office Building (1F), ADRI
14:39-14:50	Coffee Break	Office Building (1F), ADRI
14:50-16:14	Parallel Session 1A	Lecture Hall, Office Building (1F), ADRI
14:50-16:14	Parallel Session 1B	Room 108, Office Building (1F), ADRI
14:50-16:14	Parallel Session 1C	Room 103, Office Building (1F), ADRI
14:50-16:14	Parallel Session 1D	Room 107, Office Building (1F), ADRI
16:14-16:25	Coffee Break	Office Building (1F), ADRI
16:25-17:49	Parallel Session 2A	Lecture Hall, Office Building (1F), ADRI
16:25-17:49	Parallel Session 2B	Room 108, Office Building (1F), ADRI
16:25-17:49	Parallel Session 2C	Room 103, Office Building (1F), ADRI
16:25-18:01	Parallel Session (S)	Room 107, Office Building (1F), ADRI
18:30-20:30	Banquet	Tang Dynasty (2F) 18 Zhangwu Road, Yangpu District, Shanghai
Saturday, Dece	mber 13	
08:30-10:25	Plenary Session 4	Lecture Hall, Office Building (1F), ADRI
10:25-10:40	Coffee Break	Office Building (1F), ADRI
10:40-12:12	Plenary Session 5	Lecture Hall, Office Building (1F), ADRI
12:12-13:30	Lunch	Dining Hall, Office Building (1F), ADRI
13:30-15:02	Plenary Session 6	Lecture Hall, Office Building (1F), ADRI
15:02-15:15	Coffee Break	Office Building (1F), ADRI
15:15-16:24	Plenary Session 7	Lecture Hall, Office Building (1F), ADRI
16:24-16:35	Coffee Break	Office Building (1F), ADRI
16:35-18:05	Free Discussion	Lecture Hall, Office Building (1F), ADRI
18:30-20:00	Dinner	Restaurant (1F), Tongji Guest House
Sunday, Decem	iber 14	-
08:00-11:00	Technical Visit	Multi-functional Shaking Table Laboratory, Jiading Campus of Tongji University 4800 Caoan Highway, Jiading District, Shanghai



Thurseday, December 11, 2014

# 12:00-22:00 Registration

#### Room 525, Kingswell Hotel-Tongji

http://www.kingswelltongji.com/home.html 50 Zhangwu Road, Yangpu District, Shanghai Tel: +86-21-33626868 **Main Lobby, Tongji Guest House** 69 Zhangwu Road, Yangpu District, Shanghai

Tel: +86-21-65016969

# Friday, December 12, 2014

# 08:30-09:10 Opening Ceremony

Lecture Hall, 1F, Office Building, Architectural Design and Research Institute of Tongji University (Group) Co., Ltd. 281 Fuxin Road, Yangpu District, Shanghai Chair: Xilin Lu, Organizing Committee Chair (Tongji University, China)

### **Opening Address**

<u>Jinming Ma</u>, Vice President of Tongji University, China <u>Yaojun Ge</u>, Director of State Key Laboratory of Disaster Reduction in Civil Engineering, Tongji University, China <u>Huanjun Jiang</u>, Chair of Research Institute of Structural Engineering and Disaster Reduction, Tongji University, China **Group Photo** 

# 09:10-10:19 Plenary Session 1

	Lecture Hall, 1F, Office Building, Architectural Design and Research Institute of Tongji University (Group) Co., Ltd. Chair: <u>Ian Buckle</u> (University of Nevada at Reno, USA) Note: 20-minute oral presentation; 3-minute Q/A.
09:10-09:33	Towards the resilient design of tall buildings
	Gregory G. Deierlein (Stanford University, USA)
09:33-09:56	Seismic response of underground twin tunnels by the finite/infinite element
	method
	Yeong-bin Yang (National Taiwan University, Chinese Taipei; Chongqing
	University, China)
09:56-10:19	Integration and cooperation of European research infrastructures in earthquake
	engineering
	Fabio Taucer (ELSA Unit, Joint Research Centre, European Commission, Italy)



#### 10:19-10:35 Coffee Break

1F, Office Building, Architectural Design and Research Institute of Tongji University (Group) Co., Ltd.

### 10:35-12:07 Plenary Session 2

Lecture Hall, 1F, Office Building, Architectural Design and Research Institute of Tongji University (Group) Co., Ltd. Chair: <u>Songtao Xue</u> (Tohoku Institute of Technology, Japan)

**Note:** 20-minute oral presentation; 3-minute Q/A.

- 10:35-10:58 'Ductility' is 'damage', people don't want to live in damaged buildings <u>Akira Wada</u> (Tokyo Institute of Technology, Japan)
- 10:58-11:21 Developments in the application of steel-plate concrete composite walls to safety-related nuclear structures

Andrew Whittaker (State University of New York at Buffalo, USA)

 11:21-11:44
 Analytical verifying the behavior of Saipai RCC Arch Dam during 2008

 Wenchuan earthquake
 Wenchuan earthquake

<u>Houqun Chen</u> (China Institute of Water Resources and Hydropower Research, China)

11:44-12:07 Evaluation method of life-cycle seismic performance for offshore bridges based on a new chloride ions corrosion model <u>Hongnan Li</u> (Dalian University of Technology, China)

### 12:07-13:30 Lunch

Dining Hall, 1F, Office Building, Architectural Design and Research Institute of Tongji University (Group) Co., Ltd.

### 13:30-14:39 Plenary Session 3

Lecture Hall, 1F, Office Building, Architectural Design and Research Institute of Tongji University (Group) Co., Ltd. Chair: <u>Han Seon Lee</u> (Korea University, Korea) Note: 20-minute oral presentation; 3-minute Q/A.

- 13:30-13:53 Nonlinear stochastic response analysis of concrete structures considering stochastic damage evaluation Jie Li (Tongji University, China)
- 13:53-14:16 The new launched activities of the SEISM Institute <u>Evelyne Foerster</u> (Atomic Energy Commission, France)
- 14:16-14:39 Design of a new large-scale structures testing equipment HNU-MUST <u>Yan Xiao</u> (University of Southern California, USA; Hunan University, China)



14:39-14:50	Coffee Break 1F, Office Building, Architectural Design and Research Institute of Tongji University (Group) Co., Ltd.
14:50-16:14	Parallel Session 1A Lecture Hall, 1F, Office Building, Architectural Design and Research Institute of Tongji University (Group) Co., Ltd. Chair: <u>Khalid Mosalam</u> (University of California, Berkeley, USA) Note: 10-minute oral presentation; 2-minute Q/A.
14:50-15:02	Mechanical performance and seismic failure control on high-rise diagrid tube structures
15:02-15:14	<u>Jun Teng</u> (Shenzhen Graduate School, Harbin Institute of Technology, China) Dynamic instability issues in high-rise buildings subjected to extreme ground motions: a review of state-of-the-art
15:14-15:26	<u>Kohju Ikago</u> (Tohoku University, Japan) Seismic performance of embedded steel plate concrete shear wall in high-rise buildings
15:26-15:38	<u>Qiyun Qiao</u> (Beijing University of Technology, China) Challenges in seismic fragility estimation of reinforced concrete structures <u>Bing Li</u> (Nanyang Technological University, Singapore)
15:38-15:50	Applications of fragility analysis to the new-generation performance-based earthquake engineering Dagang Lu (Harbin Institute of Technology, China)
15:50-16:02	Simplified seismic assessment of tall buildings using Timoshenko beam model in low-to-moderate seismicity regions <u>Ray K.L. Su</u> (The University of Hong Kong, China)
16:02-16:14	Study on collapse patterns of multi-story building structures under earthquake <u>Junwu Dai</u> (Institute of Engineering Mechanics, China Earthquake Administration, China)
14:50-16:14	Parallel Session 1B Room 108, 1F, Office Building, Architectural Design and Research Institute of Tongji University (Group) Co., Ltd. Chair: <u>Sharlie Huffman</u> (BCMinistry of Transportation &Infrastructure, Canada) Note: 10-minute oral presentation; 2-minute Q/A.

- 14:50-15:02Support length requirements in skew bridges during earthquakesIan Buckle (University of Nevada at Reno, USA)
- 15:02-15:14 Study on the calculation method for hydrodynamic pressure of bridge piers in



	deep water under earthquakes
	Bo Song (University of Science and Technology, Beijing, China)
15:14-15:26	Ultimate behavior of elevated girder bridge focusing on interaction between
	superstructure, rubber bearings and steel piers
	<u>Goto Yoshiaki</u> (Nagoya Institute of Technology, Japan)
15:26-15:38	Quasi-static testing study of the double skin steel-concrete composite box piers
	of bridge
	Zhouhong Zong (Southeast University, China)
15:38-15:50	Resilient bridge columns with copper-based shape memory alloy reinforcement
	M. Saiid Saiidi (University of Nevada at Reno, USA)
15:50-16:02	Seismic performances of high-speed train bridges
	Lizhong Jiang (Central South University, China)
16:02-16:14	Multiple shaking tables test for bridge models
	<u>Jianzhong Li</u> (Tongji University, China)

# 14:50-16:14 Parallel Session 1C

# Room 103, 1F, Office Building, Architectural Design and Research Institute of Tongji University (Group) Co., Ltd.

Chair: <u>Yi Liu</u> (Dalhouse University, Canada) **Note:** 10-minute oral presentation; 2-minute Q/A.

- 14:50-15:02Seismic performance of high-rise RC wall-type buildings in KoreaHan Seon Lee (Korea University, Korea)
- 15:02-15:14 An efficient time-domain explicit formulation method for nonlinear random vibration of large complex structures subjected to non-stationary seismic excitations

Cheng Su (South China University of Technology, China)

- 15:14-15:26 Advances on building structure seismic design in mountain areas <u>Yingmin Li</u> (Chongqing University, China)
- 15:26-15:38 The experimental campaign and associated benchmark of the SMART 2013 <u>Thierry Chaudat</u> (Atomic Energy Commission, France)
- 15:38-15:50 Research and application of hybrid simulation <u>Bin Wu</u> (Harbin Institute of Technology, China)
- 15:50-16:02 A new low-stories seismic and energy-saving building with precast sandwich panels

Feng Xiong (Sichuan University, China)

16:02-16:14 Response analysis of a tall frame-tube structure beyond the code-specification with energy-dissipated outriggers under long-period ground motions <u>Jianping Han</u> (Lanzhou University of Technology, China)



14:50-16:14	Parallel Session 1D	
	Room 107, 1F, Office Building, Architectural Design and Research	
	Institute of Tongji University (Group) Co., Ltd.	
	Chair: <u>Carlos Ventura</u> (University of British Columbia, Canada)	
	<b>Note:</b> 10-minute oral presentation; 2-minute Q/A.	
14:50-15:02	Developments in buckling restrained brace with inspection windows	
	Chong-Shien Tsai (Feng Chia University, Chinese Taipei)	
15:02-15:14	Earthquake mitigation and engineering application by using viscoelastic	
	technique	
	Zhaodong Xu (Southeast University, China)	
15:14-15:26	Advances in seismic isolation of existing buildings	
	Bruno Briseghella (Fuzhou University, China)	
15:26-15:38	Random buckling of rubber bearing serially connected with column and	
	verification using dynamic test	
	Yongfeng Du (Lanzhou University of Technology, China)	
15:38-15:50	Next generation hybridized polymeric tuned composites for 21st century	
	advances in earthquake engineering	
	Thomas Attard (University of Alabama at Birmingham, USA)	
15:50-16:02	Performance evaluation of a tall building with damped outriggers	
	Ping Tan (Guangzhou University, China)	
16:02-16:14	Experimental assessment of curved surface sliders under biaxial input motion	

# 16:14-16:25 Coffee Break

1F, Office Building, Architectural Design and Research Institute of Tongji University (Group) Co., Ltd.

### 16:25-17:49 Parallel Session 2A

Lecture Hall, 1F, Office Building, Architectural Design and Research Institute of Tongji University (Group) Co., Ltd.

Chair: <u>Fabio Taucer</u> (ELSA Unit, Joint Research Centre, European Commission, Italy)

Note: 10-minute oral presentation; 2-minute Q/A.

Alberto Pavese (University of Pavia, Italy)

16:25-16:37 Several novel techniques for seismic strengthening of structures and their applications

Gang Wu (Southeast University, China)

16:37-16:49 New methods to include fluid-structure interaction effects in seismic assessment of civil engineering infrastructure



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Bin Xu (Hunan University, China)

17:01-17:13 Seismic strengthening of R/C beam-column joints with wing walls

<u>Yasushi Sanada</u> (Osaka University, Japan)

- 17:13-17:25 Fast retrofitting techniques and seismic assessment on new type piles Shaofei Jiang (Fuzhou University, China)
- 17:25-17:37 GPU-based high-performance computing for urban seismic damage prediction and visualization

Xinzheng Lu (Tsinghua University, China)

17:37-17:49 Global reliability of nonlinear engineering structures subjected to strong earthquakes

Jianbin Chen (Tongji University, China)

# 16:25-17:49 Parallel Session 2B

# Room 108, 1F, Office Building, Architectural Design and Research Institute of Tongji University (Group) Co., Ltd.

Chair: <u>Goto Yoshiaki</u> (Nagoya InstituteofTechnology, Japan) **Note:** 10-minute oral presentation; 2-minute Q/A.

16:25-16:37 Solution to improve seismic performance of high-rise concrete structures with shear walls

<u>Tao Wang</u> (Institute of Engineering Mechanics, China Earthquake Administration, China)

16:37-16:49 Earthquake resilient multistory buildings at near fault regions using base isolation and rocking core-walls

Marios Panagiotou (University of California, Berkeley, USA)

16:49-17:01 Experimental and numerical study of seismic performances of RC frame structure infill walls

Changhai Zhai (Harbin Institute of Technology, China)

- 17:01-17:13 A new macroelement for pile foundations Panagiotis Kotronis (Ecole Centrale de Nantes, France)
- 17:13-17:25 Seismic response simulation of tall buildings considering resilient function <u>Quan Gu</u> (Xiamen University, China)
- 17:25-17:37 Development of resilient high-rise buildings

Peng Pan (Tsinghua University, China)

17:37-17:49 Experimental study of buried pipe network subjected to earthquakes <u>Wei Liu</u> (Tongji University, China)



16:25-17:49	Parallel Session 2C
	Room 103, 1F, Office Building, Architectural Design and Research
	Institute of Tongji University (Group) Co., Ltd.
	Chair: Thierry Chaudat (Atomic Energy Commission, France)
	<b>Note:</b> 10-minute oral presentation; 2-minute Q/A.
16:25-16:37	Simulation of nonlinear behavior of UHTCC (ultra high toughness cementitious
	composites) column by vector mechanics
	Yuanfeng Duan (Zhejiang University, China)
16:37-16:49	Performance-based seismic design of tall buildings in Vancouver Canada
	Tony Yang (University of British Columbia, Canada)
16:49-17:01	Shaking table test of a full concrete cable stayed bridge model
	<u>Yan Xu</u> (Tongji University, China)
17:01-17:13	The eigenvalue problem for cylindrical liquid-filled shells
	Britta Holtschoppen (RWTH Aachen University, Germany)
17:13-17:25	Damping modification factors for structures subjected to near-fault earthquake
	motions
	<u>Wuchuan Pu</u> (Wuhan University of Technology, China)
17:25-17:37	Comparative experimental study of vibration control effects of particle damper
	and tuned mass damper
	<u>Zheng Lu</u> (Tongji University, China)
17:37-17:49	Model reference monitoring of earthquake-damaged structures: interstory drift
	estimation and nonlinearity assessment
	<u>Jiazeng Shan</u> (Tongji University, China)
16:25-18:01	Parallel Session (S)
	Room 107, 1F, Office Building, Architectural Design and Research
	Institute of Tongji University (Group) Co., Ltd.
	Chair: Thomas Attard (University of Alabama at Birmingham USA)

Chair: <u>Thomas Attard</u> (University of Alabama at Birmingham, USA) **Note:** 10-minute oral presentation; 2-minute Q/A.

- 16:25-16:37 Influence of ground motion duration on structural collapse risk <u>Reagan Chandramohan</u> (Stanford University, USA)
- 16:37-16:49 Numerical modeling and collapse safety assessment of an unbonded post-tensioned cast-in-place concrete wall <u>Hao Wu</u> (Tongji University, China)
- 16:49-17:01 Quasi-static experimental tests of three full-scale concentric braced frames <u>Barbara Simpson</u> (University of California, Berkeley, USA)
- 17:01-17:13 Multi-site real-time hybrid simulation of MR dampers for response reduction Xin Li (Tongji University, China)



17:13-17:25 Seismic protection of building structures using a synergistic combination of multiple nonlinear energy sinks

<u>Nicholas E. Wierschem</u> (University of Illinois at Urbana-Champaign, USA)

17:25-17:37 A new elastomeric material damper: theory, experiment, and simulation

<u>Shunming Gong</u> (Tongji University, China)

17:37-17:49 Seismic analysis of reinforced concrete non-planar walls and buildings using three-dimensional beam-truss models

<u>Yuan Lu</u> (University of California, Berkeley, USA)

17:49-18:01 Seismic evaluation and retrofit of tall buildings

<u>Shanshan Wang</u> (University of California, Berkeley, USA)

# 18:30-20:30 Banquet

# Tang Dynasty (2F)

18 Zhangwu Road, Yangpu District, Shanghai Welcome address: <u>Xianglin Gu</u>, Dean of College of Civil Engineering,

Tongji University, China



Saturday, December 13, 2014		
8:30-10:25	Plenary Session 4	
	Lecture Hall, 1F, Office Building, Architectural Design and Research	
	Institute of Tongji University (Group) Co., Ltd.	
	Chair: M. Saiid Saiidi (University of Nevada at Reno, USA)	
	<b>Note:</b> 20-minute oral presentation; 3-minute Q/A.	
08:30-08:53	Earthquake loss assessment in China	
	Baitao Sun (Institute of Engineering Mechanics, China Earthquake	
	Administration, China)	
08:53-09:16	Hybrid simulation of coupled thermal and mechanical response of structures	
	Bozidar Stojadinovic (Swiss Federal Institute of Technology Zurich, Switzerland)	
09:16-09:39	Unresolved issues in ground motion scaling, intensity measures and seismic	
	demand modeling	
	Sashi K. Kunnath (University of California at Davis, USA)	
09:39-10:02	Progress of earthquake engineering and damage of Fukushima No.1 nuclear	
	power station	
	<u>Masanori Izumi</u> (Tohoku University, Japan)	
10:02-10:25	Accelerated bridge construction detail in high seismicity area	
	Philip Yen (Federal highway administration, USA)	

### 10:25-10:40 Coffee Break

1F, Office Building, Architectural Design and Research Institute of Tongji University (Group) Co., Ltd.

# 10:40-12:12 Plenary Session 5

	Lecture Hall, 1F, Office Building, Architectural Design and Research
	Institute of Tongji University (Group) Co., Ltd.
	Chair: <u>Richard Sause</u> (Lehigh University, USA)
	<b>Note:</b> 20-minute oral presentation; 3-minute Q/A.
10:40-11:03	Performance-based seismic design of tall buildings in the United States
	Jack Moehle (University of California, Berkeley, USA)
11:03-11:26	Response control of two super tall buildings in Shanghai
	Xilin Lu (Tongji University, China)
11:26-11:49	Developments in seismic-resilient steel structures
	Constantin Christopoulos (University of Toronto, Canada)
11:49-12:12	Multiple disaster behavior and control of bridges
	Hui Li (Harbin Institute of Technology, China)



# 12:12-13:30 Lunch

Dining Hall, 1F, Office Building, Architectural Design and Research Institute of Tongji University (Group) Co., Ltd.

# 13:30-15:02 Plenary Session 6

Lecture Hall, 1F, Office Building, Architectural Design and Research Institute of Tongji University (Group) Co., Ltd. Chair: <u>Chong-Shien Tsai</u>(Feng Chia University, Chinese Taipei)

**Note:** 20-minute oral presentation; 3-minute Q/A.

- 13:30-13:53 Real-time hybrid earthquake simulations on steel frame structure with dampers <u>Richard Sause</u> (Lehigh University, USA)
- 13:53-14:16 Studies on steel and composite frames with dampers by the test method simulating two distinct phases of forces Kazuhiko Kasai (Tokyo Institute of Technology, Japan)
- 14:16-14:39 Improving FE models of tall buildings through field testing and monitoring <u>Carlos Ventura</u> (University of British Columbia, Canada)
- 14:39-15:02 Structural response of bent caps in as-built and retrofitted reinforced concrete box-girder bridges Khalid Mosalam (University of California, Berkeley, USA)

# 15:02-15:15 Coffee Break

1F, Office Building, Architectural Design and Research Institute of Tongji University (Group) Co., Ltd.

# 15:15-16:24 Plenary Session 7

Lecture Hall, 1F, Office Building, Architectural Design and Research Institute of Tongji University (Group) Co., Ltd. Chair: <u>Kohju Ikago</u> (Tohoku University, Japan)

Note: 20-minute oral presentation; 3-minute Q/A.

- 15:15-15:38Fib model code for a concrete structures 2010Balazs Gyorgy Laszlo (Budapest University of Technology and Economics,<br/>Hungary)
- 15:38-16:01Durability based life-cycle design of concrete structuresWeiliang Jin (Zhejiang University, China)
- 16:01-16:24 Real-time hybrid simulation with shaker table coupled with structure actuators Shawn You (MTS, USA)



# 16:24-16:35 Coffee Break

1F, Office Building, Architectural Design and Research Institute of Tongji University (Group) Co., Ltd.

# 16:35-18:05 Free Discussion for Forum Resolution

Lecture Hall, 1F, Office Building, Architectural Design and Research Institute of Tongji University (Group) Co., Ltd.

Chairs:

<u>Gongkang Fu</u> (Illinois Institute of Technology, USA) <u>David T. Lau</u> (Carleton University, Canada) Recorder: <u>Tony Yang</u> (University of British Columbia, Canada)

# 18:30-20:00 Dinner

**Restaurant (1F), Tongji Guest House** 69 Zhangwu Road, Yangpu District, Shanghai



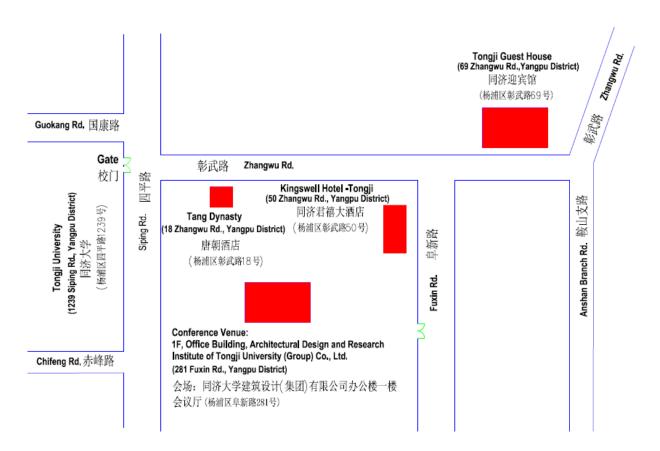
# Sunday, December 14, 2014

# 08:00-11:00 Technical Visit

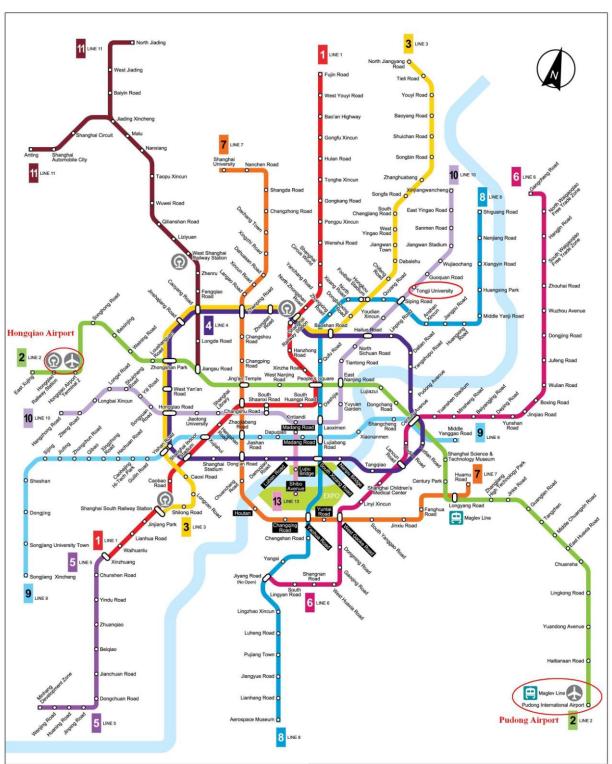
# Multi-functional Shaking Table Laboratory, Jiading Campus, Tongji University

4800 Caoan Highway, Jiading District, Shanghai

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







# Metro of Shanghai



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 (Tongji Guest House and Kingswell Hotel-Tongji), 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 (Tongji Guest House and Kingswell Hotel-Tongji), 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.

Note Page

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