Technical Program

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013-11-08</td>
<td>08:00 - 09:00</td>
<td>Registration</td>
</tr>
<tr>
<td></td>
<td>09:00 - 09:30</td>
<td>Open Ceremony</td>
</tr>
<tr>
<td></td>
<td>09:30 - 10:05</td>
<td>Keynote Speech: Stephen A. Mahin</td>
</tr>
<tr>
<td></td>
<td>10:05 - 10:40</td>
<td>Keynote Speech: Paolo Negro</td>
</tr>
<tr>
<td></td>
<td>10:40 - 10:50</td>
<td>Break</td>
</tr>
<tr>
<td></td>
<td>10:50 - 11:25</td>
<td>Keynote Speech: Kazuhiro Kasai</td>
</tr>
<tr>
<td></td>
<td>11:25 - 12:00</td>
<td>Keynote Speech: Xilin Lu</td>
</tr>
<tr>
<td></td>
<td>12:00 - 14:00</td>
<td>Welcome Reception</td>
</tr>
<tr>
<td></td>
<td>14:00 - 15:30</td>
<td>Session 1: Modeling and Numerical Simulation in Predicting and Interpreting Experimental Results</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Session 2: Real-time Structural Testing Techniques</td>
</tr>
<tr>
<td></td>
<td>15:30 - 16:10</td>
<td>Technical Tour: Visiting NCREE Lab</td>
</tr>
<tr>
<td></td>
<td>16:10 - 17:40</td>
<td>Session 3: Application of Experimental Results to Structural Design and Analysis (Reinforced Concrete)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Session 4: Application of Experimental Results to Structural Design and Analysis (Structural Control and Retrofit)</td>
</tr>
<tr>
<td></td>
<td>17:40 - 18:00</td>
<td>Adjournment</td>
</tr>
<tr>
<td></td>
<td>18:30 - 20:00</td>
<td>Welcome Banquet</td>
</tr>
<tr>
<td>2013-11-09</td>
<td>08:30 - 10:00</td>
<td>Session 5: Application of Experimental Results to Structural Design and Analysis (Bracing)</td>
</tr>
<tr>
<td></td>
<td>10:00 - 10:20</td>
<td>Break</td>
</tr>
<tr>
<td></td>
<td>10:20 - 11:50</td>
<td>Session 7: Application of Experimental Results to Structural Design and Analysis (General)</td>
</tr>
<tr>
<td></td>
<td>11:50 - 13:00</td>
<td>Lunch (Standing Buffet)</td>
</tr>
<tr>
<td></td>
<td>13:00 - 14:30</td>
<td>Session 9: Novel Measurement, New Facility, and Structural Behaviors</td>
</tr>
<tr>
<td></td>
<td>14:30 - 15:00</td>
<td>Break</td>
</tr>
<tr>
<td></td>
<td>15:00 - 15:35</td>
<td>Keynote Speech: Oreste S. Bursi</td>
</tr>
<tr>
<td></td>
<td>15:35 - 16:10</td>
<td>Keynote Speech: David T. Lau</td>
</tr>
<tr>
<td></td>
<td>16:10 - 16:20</td>
<td>Break</td>
</tr>
<tr>
<td></td>
<td>16:55 - 17:30</td>
<td>Keynote Speech: Shyh-Jiann Hwang</td>
</tr>
<tr>
<td></td>
<td>17:30 - 17:50</td>
<td>Close Ceremony</td>
</tr>
</tbody>
</table>

Download the PDF version of the program

Shuttle Service

NCREE will provide pick-up service by sending shuttles to the Howard Civil Service International House in the mornings of 8 and 9 Nov. If you stay in this hotel and want to use this service, please show up in the hotel lobby at 8:05AM (on both 8 Nov. and 9 Nov.). Mr. An-Chien Wu will be at the hotel lobby in the two mornings and help you with this.

Detailed Program

ws2.ncree.org/~kjwang/conference/aese5/program.php
There are 63 papers to be presented.
There are 4 more papers to be included in the proceedings but not to be presented in 5AESE.

2013-11-08

08:00 - 09:00
Registration

Lobby

09:00 - 09:30
Open Ceremony
Chaired by Prof. Kuo-Chun Chang

R101

09:30 - 10:05
Keynote Speech: Stephen A. Mahin
Chaired by Prof. Kuo-Chun Chang

R101

Use of Shaking Tables in Advanced Hybrid Simulations of Complex Structures

Stephen Mahin, and Andreas Schellenberg
Presented by: Prof. Stephen Mahin, University of California, Berkeley
Keywords: hybrid simulation, complex structures, shaking table, real time
abstract paper presentation

10:05 - 10:40
Keynote Speech: Paolo Negro
Chaired by Prof. Kuo-Chun Chang

R101

Do We Still Need Full-Scale Testing of Complete Structures?

Paolo Negro
Presented by: Dr Paolo Negro, European Laboratory for Structural Assessment
Keywords: large-scale testing, pseudodynamic testing, precast structures, connections, claddings
abstract paper presentation

10:40 - 10:50
Break

Lobby

10:50 - 11:25
Keynote Speech: Kazuhiko Kasai
Chaired by Prof. Keh-Chyuan Tsai

R101

Implications for Design of Supplementally-Damped Buildings from Full-Scale Lab Tests and Actual Earthquake Observations

Kazuhiko Kasai
Presented by: Prof. Kazuhiko Kasai, Structural Engineering Research Center, Tokyo Institute of Technology
Keywords: response control, dampers, monitoring, displacement and acceleration response, performance curve, system identification
abstract paper presentation

11:25 - 12:00
Keynote Speech: Xilin Lu
Chaired by Prof. Keh-Chyuan Tsai

R101

Full Scale Test and Analysis on CFT Columns and Connections

Xilin Lu, Liping Kang, Jianghao Liang, and Ge Huang
Presented by: Prof. Xilin Lu, Tongji University
Keywords: finite element analysis, cft columns, studs, connections with different diaphragms, full scale experiment
abstract paper presentation

12:00 - 14:00
Welcome Reception
14:00 - 15:30

**Session 1: Modeling and Numerical Simulation in Predicting and Interpreting Experimental Results**
Chaired by Prof. Chung-Jung Lee

A Constitutive Model of Circular Steel Tubes Based on Experiment
*Guibo Nie*, Jun-Wu Dai, Xu-Dong Zhi, and Yong-Qiang Yang
Presented by: Assistant Research Fellow Guibo Nie, Institute of Engineering Mechanics, China Ear
Keywords: circular steel tube, damage accumulation, hysteretic behaviour, constitutive model, finite element
abstract paper presentation

Centrifuge Modeling on Seismic Response of Mono-Pile Foundation in Liquefiable Sand Liquefiable Sand
*Chung-Jung Lee*, Wen-Yi Hung, Yi-Chun Tu, Chen-Hui Tsai, Chin-Cheng Huang, Yuan-Chieh Wu, and Meng-Hsiu Hsieh
Presented by: Professor Chung-Jung Lee, National Central University
Keywords: mono-pile foundation, offshore wind turbine, seismic responses, centrifuge shaking table test
abstract paper presentation

Finite Element Modelling of Nonlinear Behaviour of Headed Stud Shear Connectors in Foamed and Lightweight Aggregate Concrete
*Ee Loon Tan*, Charles Thomas, and Vute Sirivivatnanon
Presented by: Dr. Ee Loon Tan, University of Western Sydney
Keywords: composite steel-concrete beams, finite element modelling, lightweight aggregate concrete, foamed concrete, headed stud shear connectors
abstract paper presentation

Analytical Models for Seismic Assessment of Reinforced Concrete Bridge Pier
*Witarto Witarto*, Kuang-Yen Liu, and Kuo-Chun Chang
Presented by: Research Assistant Witarto Witarto, National Taiwan University
Keywords: reinforced concrete, analytical model, bridge pier, hysteretic loops, opensees
abstract paper presentation

Railway Bridge-Track Interaction Under Elevated Temperatures
*Olivia Mirza*, Sarkidar Kaewunruen, Oscar Guzman, Vince Aquino, and Anthony Cavasini
Presented by: Dr Olivia Mirza, University of Western Sydney
Keywords: temperatures, bridge track interaction, sustainability and finite element modelling
abstract paper presentation

Taiwan Water Supply Network’s Seismic Damage Simulation Applying Negative Pressure Treatment
*Kuang-Wu Chou*, Gee-Yu Liu, Chin-Hsun Yeh, and Chang-Wei Huang
Presented by: Associate Researcher Kuang-Wu Chou, National Center for Research on Earthquake Engineering
Keywords: epanet, giraffe, boost, graph theory, teles
abstract paper presentation

**Session 2: Real-time Structural Testing Techniques**
Chaired by Prof. Tony T.Y. Yang

Application of Frequency-domain Evaluation Method in Real-time Hybrid Simulation
*Tong Guo*, Weijie Xu, and Cheng Chen
Presented by: Dr. Tong Guo, Southeast University
Keywords: real-time hybrid simulation, frequency-domain evaluation, computational simulation
abstract paper presentation

Implementation of Nonlinear Control Algorithm for Shaking Table Tests
*Tony T.Y. Yang*, Kang Li, JianYuan Lin, Yuanjie Li, and YiFan Zhang
Presented by: Dr. Tony T.Y. Yang, University of British Columbia
Keywords: sliding mode control, shaking table, kalman filter
abstract paper presentation

Real-time Hybrid Testing with Constrained Unscented Kalman Filter
Tao Wang, and Bin Wu
Presented by: Professor Bin Wu, School of Civil Engineering, Harbin Institute
Keywords: real-time hybrid testing, unscented kalman filter, model updating, bound constraint
abstract paper presentation

Improved Model-based Feedforward and Feedback Control for Real-time Hybrid Simulation
Pei-Ching Chen, Chia-Ming Chang, Billie Spencer, and Keh-Chyuan Tsai
Presented by: Assistant Research Fellow Pei-Ching Chen, National Center for Research on Earthquake Engineering
Keywords: real-time hybrid simulation, adaptive control, model-based tracking control, mr damper
abstract paper presentation

Model-based Delay Estimation Technique for Real-Time Hybrid Testing
Zhen Wang, Bin Wu, Oreste Bursi, Guoshan Xu, and Yong Ding
Presented by: Assistant Professor Zhen Wang, Harbin Institute of Technology
Keywords: real-time hybrid simulation, delay compensation, online delay estimation, least-squares algorithm
abstract paper presentation

15:30 - 16:10
Technical Tour: Visiting NCREE Lab
NCREE Lab

16:10 - 17:40
Session 3: Application of Experimental Results to Structural Design and Analysis (Reinforced Concrete) R101
Chaired by Han-Seon Lee

Experimental Study on Reinforced Concrete Moment-resisting Frames with Infilled Masonry Walls Subjected to Cyclic Loads
Huanjun Jiang, Junjie Mao, and Xiaojuan Liu
Presented by: Prof. Huanjun Jiang, Tongji Univeristy
Keywords: infilled wall, reinforced concrete moment-resisting frame, constructional detail, low-cycle reversed load, seismic performance
abstract paper presentation

Experimental Strain Fields of Reinforced Concrete Walls for Validation of Numerical Models
Anna Birely, Dawn Lehman, and Laura Lowes
Presented by: Assistant Professor Anna Birely, Texas A&M University
Keywords: reinforced concrete, structural walls, non-contact measurement, strain, numerical models
abstract paper presentation

Experimental Testing of Lightly Reinforced RC and Self-centering PT Walls
Richard Henry, Kimberley Twigden, and Yiqiu Lu
Presented by: Dr Richard Henry, University of Auckland
Keywords: concrete wall, canterbury earthquakes, minimum reinforcing, post-tensioned, seismic testing
abstract paper presentation

Earthquake Simulation Tests on a 1:5 Scale 9-Story Piloti-Type RC Residential Building Model
Han Seon Lee, Chang-Bum Kang, Gi-Hyun Jeong, Sang-Ho Lee, and Sang-Hoon Oh
Presented by: Professor Han Seon Lee, Korea University
Keywords: piloti, transfer plate, scale model, earthquake simulation test
abstract paper presentation

Earthquake Simulation Tests on a 1:15 Scale 25-Story RC Flat-Plate Core-Wall Building Model
Han Seon Lee, Sung Hyun Choi, Kyung-Ran Hwang, Yoon-Ho Kim, and Sang-Ho Lee
Presented by: Professor Han Seon Lee, Korea University
Keywords: reinforced concrete, earthquake simulation test, flat plate, special shear wall
abstract paper presentation

Session 4: Application of Experimental Results to Structural Design and Analysis (Structural Control and Retrofit) R103
Chaired by Prof. Shih-Yu Chu
An experimental study on seismic isolation using a leverage-type stiffness controllable system
Chin-Hsun Yeh, Lyan-Ywan Lu, and Shih-Yu Chu
Presented by: PhD Candidate Chin-Hsun Yeh, National Cheng Kung University
Keywords: shaking table test, semi-active isolation, variable stiffness, minimum input energy, leverage theorem
abstract paper presentation

Performance verification of a semi-active mass damper by using shaking table test
Shih-Yu Chu, Lyan-Ywan Lu, Shih-Wei Yeh, and Chih-Hua Peng
Presented by: Associate Professor Shih-Yu Chu, Dept. of Civil Engineering, National Cheng Kung University
Keywords: leverage theorem, semi-active control, stiffness controllable mass damper, discrete-time optimal lqr control, shaking table test.
abstract paper presentation

Seismic Performance of Base-isolated Structures with Rocking Bearing
Chin-Tung Cheng
Presented by: Professor Chin-Tung Cheng, Dept. of Construction Engineering, National Kaohsiung First University of Science and Technology
Keywords: rocking, base-isolation, self-centering, damping ratio, shaking table tests
abstract paper presentation

Low-Damage Earthquake-Resisting Frames Using Steel Sandwiched Buckling-Restrained Braces and Dual-Core Self-Centering Braces
Chung-Che Chou
Presented by: Professor Chung-Che Chou, NTU
Keywords: cyclic test, sandwiched buckling-restrained brace (brb), dual-core self-centering brace (scb)
abstract paper presentation

Seismic Retrofit of Full-scale Rectangular RC Columns Subjected to Incremental Axial Force
Min-Lang Lin, Yin-Han Wu, and Pei-Ching Chen
Presented by: Dr. Min-Lang Lin, NCREE
Keywords: seismic retrofit, cfrp wrapping, cfrp anchors, octagonal steel jacketing
abstract paper presentation

Field Test for School Building Retrofitted by External Steel-Framing System
Fu-Pei Hsiao
Presented by: Dr. Fu-Pei Hsiao, NCREE
Keywords: school building, external steel-framing system, in-situ test, seismic assessment, push-over analysis
abstract paper presentation

17:40 - 18:00
Adjournment

18:30 - 20:00
Welcome Banquet
Conference Room on 14th Floor, Howard Int'l House

2013-11-09

08:30 - 10:00
Session 5: Application of Experimental Results to Structural Design and Analysis (Bracing)
Chaired by Dr. Jeffrey Berman

Seismic Responses of Buckling-Restrained Brace to Gusset Connections in Framed Structures
Pao-Chun Lin, Keh-Chyuan Tsai, Ming-Chieh Chuang, and An-Chien Wu
Presented by: Mr. Pao-Chun Lin, National Center for Research on Earthquake Engineering
Keywords: buckling-restrained brace, gusset plate, frame action, finite element analysis, hybrid test
abstract paper presentation
Cyclic Tests of Three Full-scale Two-story Steel Plate Shear Walls Using Box Columns with or without Infill Concrete  
**Chao-Hsien Li**, Keh-Chyuan Tsai, Hsuan-Yu Huang, and Chih-Han Lin  
Presented by: Mr. Chao-Hsien Li, National Center for Research on Earthquake Engineering  
Keywords: seismic design, spsw, steel plate shear wall (spsw), boundary column, box column, capacity design  
abstract paper presentation

High-mode Buckling of Buckling-restrained Brace Core Plates  
**An-Chien Wu**, Pao-Chun Lin, and Keh-Chyuan Tsai  
Presented by: Assistant Researcher An-Chien Wu, National Center for Research on Earthquake Engineering  
Keywords: buckling-restrained brace, buckling restrainer, high-mode buckling, buckling wavelength, cyclic loading test  
abstract paper presentation

Survey and Testing of Pre-1988 Braced Frame Structures from the West Coast of the United States  
Dan Sloat, Charles Roeder, Dawn Lehman, and Jeffrey Berman  
Presented by: Associate Professor Jeffrey Berman, University of Washington  
Keywords: braced frame, retrofit, evaluation, steel connections  
abstract paper presentation

Evaluation of the Seismic Performance of Two-Story Concentrically Braced Frames with Weak Beams  
**Andrew Sen**, Dan Sloat, Lingli Pan, Charles Roeder, Dawn Lehman, and Jeffrey Berman  
Presented by: Dr. Jeffrey Berman, University of Washington  
Keywords: braced frame, retrofit, repair, seismic, multi-story  
abstract paper presentation

Seismic Behavior of a Full-Scale Special Concentrically Braced Frame: Hybrid Simulation under Design Earthquake and Maximum Considered Earthquake  
**Jiun-Wei Lai**, and Stephen Mahin  
Presented by: Director and Professor Stephen Mahin, Pacific Earthquake Engineering Research Center  
Keywords: hybrid simulation, concentrically braced frame, full-scale test, seismic design  
abstract paper presentation

**Session 6: Hybrid Simulation**  
Chaired by Prof. Chia-Ming Chang

Analysis and Evaluation of Smart Hybrid Simulation with Parameter Adaptation  
Cheng Chen, Nelly Avramova, Frank Sanchez, and Chris Pong  
Presented by: Professor Chris Pong, San Francisco State University  
Keywords: hybrid simulation, modelling error  
abstract paper presentation

Substructuring Techniques for Hybrid Simulation of Complex Structural Systems through Collapse  
**M. Javad Hashemi**, Maikol Del Carpio Ramos, and Gilberto Mosqueda  
Presented by: Mr. Maikol Del Carpio Ramos, University at Buffalo  
Keywords: hybrid simulation, collapse, complex structures, substructuring technique, overlapping domain  
abstract paper presentation

Large-Scale Hybrid Simulation of a Steel Moment Frame Building from the Onset of Damage through Collapse  
**Maikol Del Carpio Ramos**, M. Javad Hashemi, and Gilberto Mosqueda  
Presented by: Graduate Student Researcher Maikol Del Carpio Ramos, State University of New York at Buffalo  
Keywords: hybrid simulation, large-scale testing, steel moment frames, structural collapse, substructuring  
abstract paper presentation

Performance Assessment of RC Frames with HCT Brick Infill Walls Rehabilitated with MRM by Using Pseudo Dynamic Test Protocols  
**Pourang Ezzatfar**, B. Binici, O. Kurc, Erdem Canbay, Haluk Sucuoglu, and G. Ozcebe  
Presented by: Mr. Pourang Ezzatfar, Middle East Technical University  
Keywords: seismic performance, pseudo dynamic test, consecutive earthquake loadings, mesh reinforced mortar  
abstract paper presentation
Pseudo-dynamic Testing of Self-centering Steel Plate Shear Walls

Patricia Clayton, Daniel Dowden, Chao-Hsien Li, Jeffrey Berman, Michel Bruneau, Laura Lowes, and Keh-Chyuan Tsai
Presented by: Graduate Research Assistant Patricia Clayton, University of Washington
Keywords: pseudo-dynamic, large-scale testing, post-tensioned, rocking connections, steel plates
abstract  paper  presentation

Hybrid Simulation of a Seismically-excited Four-span Curved Bridge

Chia-Ming Chang, Thomas Frankie, Pedro Silva, David Sanders, Daniel Kuchma, and Billie Jr.
Presented by: Prof. Chia-Ming Chang, Earthquake Engineering R.& T. Center, Guanzh
Keywords: hybrid simulation, four-span curved bridge, must-sim facility, high-precision positioning control, non-contact instrumentation
abstract  paper  presentation

10:00 - 10:20
Break
Lobby

10:20 - 11:50

Session 7: Application of Experimental Results to Structural Design and Analysis (General)
R101

Study on Relationship between Yield Strength Coefficient & Structure Destructiveness
Shaoge Cheng, Tiehua Shi, Caoming Tang, and Pei Liu
Presented by: Prof. Shaoge Cheng, China Academy of Building Research
Keywords: seismic appraisal, compound seismic capacity, yield strength coefficient, destructiveness
abstract  paper  presentation

Effect of Fillet Radius Size on Ductile Fracture of Steel Beam-to-Column Connection with Large Weld Defects
Hanbin Ge, Lan KANG, and Shinki HADA
Presented by: Professor Hanbin Ge, Meijo Univ., Japan
Keywords: ductile crack, ductile fracture, beam-to-column connection, fillet radius, weld defect
abstract  paper  presentation

The Establishment of Dynamic P-Y Curve in Pile Foundation Based on Shaking Table Tests
Peizhen Li, Shenglu Cao, Daming Zeng, and Xilin Lu
Presented by: Associate Prof. Peizhen Li, Tongji University
Keywords: shaking table test, pile-soil interaction, dynamic p-y curve, pile foundation
abstract  paper  presentation

Study on Dynamic Behavior of Bridge Pile in Dry and Saturated Sand through Shaking Multi-layer Shear Box Test
Yu-Chi Sung, Kuo-Chun Chang, Cheng-Hsing Chen, Tzou-Shin Ueng, Chia-Han Chen, Shiue-Yi Dung, Kuang-Yen Liu, and Yi-Tsung Chiu
Presented by: Professor Yu-Chi Sung, National Taipei University of Technology
Keywords: bridge, pile, excess pore pressure
abstract  paper  presentation

Experimental Study on Seismic Performance of a Controllable Rocking Reinforced Concrete Frame
Liang Lu, Xilin Lu, F.B. Zhu, and Junjie Chen
Presented by: Mr. Junjie Chen, Tongji University
Keywords: rocking joint rocking structure, seismic structure, post-tensioning pre-stress
abstract  paper  presentation

Mechanical Behaviors of Precast Concrete Sandwich Pannels after Exposure to Fire
Li Zhijie, and Xue Weichen
Presented by: Doctor candidate Li Zhijie, Dept. of Civil Engineering, Tongji University
Keywords: precast concrete sandwich panel, frp connector, after fire, test, flexural capacity
abstract  paper  presentation
Session 8: Novel Testing, Measuring, and Monitoring Techniques in Structural/Geotechnical Engineering  
Chaired by Dr. Fang-Yao Yeh

- Dazhi Bridge Safety Monitoring Demonstration Project  
  Presented by: Dr. Zheng-Kuan Lee, National Center for Research on Earthquake Engineering  
  Keywords: bridge safety monitoring, bridge elevation profile, optic-fiber sensor  
  abstract paper presentation

- Experimental Study on Large-Scale Joints of Ring Beams and RC-CFSTL Columns for Tall Buildings  
  Presented by: Master Haiyan Yu, State Key Laboratory of Disaster Reduction in Civil Engineering, Tongji University  
  Keywords: rc-cfst laminated column, ring beam, cyclic test, radius-to-width ratio, reinforcement ratio  
  abstract paper presentation

- Mixed-Variable Control for Shear Tests on Massive Reinforced-Concrete Walls  
  Presented by: Dr. Francisco Molina, European Commission, Joint Research Centre  
  Keywords: reinforced concrete, shear wall, cyclic testing, mixed-variable control, nuclear power plant  
  abstract paper presentation

- Dynamic Similitude Law Design of Shaking Table Model Test for High-rise Steel Structures  
  Presented by: Prof. Tiehua Shi, China Academy of Building Research  
  Keywords: similitude law, shaking table test, high-rise steel structure  
  abstract paper presentation

- Experimental Investigation on CFRC for Strain Measurement and Damage Detection  
  Presented by: Dr. and Research Fellow Fang-Yao Yeh, National Center for Research on Earthquake Engineering  
  Keywords: cfrc, self-sensing, strain measurement, damage detection  
  abstract paper presentation

- Field Dynamic Testing of Civil Infrastructure - Literature Review and a Case Study  
  Presented by: Research Assistant Pierre-Adrien Opinel, Tongji University  
  Keywords: field testing, dynamic testing, literature review, wind turbine testing, laser sensor  
  abstract paper presentation

11:50 - 13:00  
Lunch (Standing Buffet)  
Lobby

13:00 - 14:30  
Session 9: Novel Measurement, New Facility, and Structural Behaviors  
Chaired by Prof. Alberto Pavese

- Measurement of residual stresses in fabricated square high strength steel tubes using neutron diffraction method  
  Presented by: Dr. Fidelis Mashiri, University of Western Sydney  
  Keywords: residual stress, fabricated square columns, high strength steel, welded sections  
  abstract paper presentation

- Design, Implementation and Validation of a Real-Time Dynamic Hybrid Testing System Mainly Oriented to Seismic Isolated Structures  
  Presented by: Dr. Igor Lanese, EUCENTRE  
  Keywords: real-time, hybrid testing, sub-structuring, shake table, base isolated structure  
  abstract paper presentation
Dynamic Testing of a Mixed RC-URM Building

Simone Peloso, Katrin Beyer, Alberto Pavese, and Marco Tondelli
Presented by: Prof. Alberto Pavese, University of Pavia
Keywords: dynamic testing, shake table, mixed structure
abstract paper presentation

Seismic Testing and Grading of Ductile Iron Water Pipes

Gee-Yu Liu, Lap-Loi Chung, Pao-Ching Chou, and Chin-Tse Cheng
Presented by: Dr. Gee-Yu Liu, National Center for Research on Earthquake Engineering
Keywords: ductile iron pipe, seismic capacity, seismic grade, iso 16134
abstract paper presentation

Session 10: Innovative Software Development for Structural Experiments

Chair by Prof. Yuan-Sen Yang

Preliminary Framework for Reporting Damage in Reinforced Concrete Structures to Enhance Data Archival and Reuse

Anna Birely
Presented by: Assistant Professor Anna Birely, Texas A&M University
Keywords: reinforced concrete, data archival, data reuse, nees, damage
abstract paper presentation

A Semantic Technology-Based Information Management System for Earthquake Engineering Projects and Experiments

Md. Rashedul Hasan, Feroz Farazi, Oreste Bursi, and Md Reza
Presented by: Professor Oreste Bursi, University of Trento
Keywords: ontology, knowledge base, earthquake engineering, semantic web and owlml
abstract paper presentation

A Software Framework for Quasi-static Structural Testing

Kung-Juin Wang, and Keh-Chyuan Tsai
Presented by: Dr. Kung-Juin Wang, National Center for Research on Earthquake Engineering
Keywords: hybrid simulation, structural testing, quasi-static, software framework, pseudo-dynamic, object-oriented
abstract paper presentation

An image analysis method on crack observations of a cylinder RC pier

Yuan-Sen Yang, Chung-Ming Yang, Chang-Wei Huang, and Chiun-Lin Wu
Presented by: Prof. Yuan-Sen Yang, National Taipei University of Technology
Keywords: image analysis, rc piers, crack observations
abstract paper presentation

Trends and Needs for the Development of Refined, Unified Experimental Researches

Dun Wang, Xilin Lu, and Wensheng Lu
Presented by: Prof. Wensheng Lu, State Key Laboratory of Disaster Reduction in Civil Engineering, Tongji University
Keywords: refining experiment, unified experimental program, cooperation and communication, data-sharing, database
abstract paper presentation

14:30 - 15:00

Break

15:00 - 15:35

Keynote Speech: Oreste S. Bursi

Chair by Prof. Kuo-Chun Chang

Advances in Pseudo-Dynamic Testing of Complex Structures Based on Model Reduction Techniques

Oreste Salvatore Bursi, Giuseppe Abbiati, Mohamed Reza, and Enrico Cazzador
Presented by: Prof. Oreste Salvatore Bursi, University of Trento, ITALY
Keywords: pseudo-dynamic testing, model reduction, piping systems, reinforced concrete bridges
abstract paper presentation
15:35 - 16:10

**Keynote Speech: David T. Lau**  
Chaired by Prof. Kuo-Chun Chang  

Developments on Seismic Retrofit of Reinforced Concrete Shear Walls with FRP  

*David Lau*  
Presented by: Prof. *David Lau*, Calleton University  
Keywords: abstract  paper  presentation

16:10 - 16:20

Break

16:20 - 16:55

**Keynote Speech: Billie F. Spencer Jr.**  
Chaired by Prof. Keh-Chyuan Tsai  

Advances and Innovations at the Multi-axial Full-scale Substructure Testing and Simulation (MUST-SIM) Facility  

*Billie Spencer*  
Presented by: Prof. *Billie Spencer*, University of Illinois  
Keywords: hybrid simulation, must-sim facility, ui-simcor, advanced instrumentation, lbcb  
abstract  paper  presentation

16:55 - 17:30

**Keynote Speech: Shyh-Jiann Hwang**  
Chaired by Prof. Keh-Chyuan Tsai  

In-situ Dynamic Tests of Reui-Pu School Buildings in Taiwan  

*Yuan-Tao Weng*, Tsung-Chih Chio, and Shyh-Jiann Hwang  
Presented by: Prof. *Shyh-Jiann Hwang*, National Taiwan University  
Keywords: cyclic loading test, school buildings, in-situ test, pseudo-dynamic test  
abstract  paper  presentation

17:30 - 17:50

**Close Ceremony**  
Chaired by Prof. Kuo-Chun Chang

More Papers

The following 4 papers will not be presented in 5AEESE but will be included in the proceedings.

Experimental Study on Shear Behavior of High Strength Concrete and HRBF500 Steel Beams without Web Reinforcement  
*Xianguo Ye*, Tianqi Lei, Xun Chong, and Junqi Huang  
Keywords: beam without web reinforcement, shear behavior, double high strength beams  
abstract  paper

A Novel Strategy for the Hybrid Simulation of Stiff Structures  
*Xenofontas Palios*, Elias Strepelias, and Stathis Bousias  
Keywords: hybrid simulation, force control, stiff structures, continuous pseudo-dynamic method  
abstract  paper

Full state control via simulation for real-time dynamic substructuring test
Zhenyun Tang, Matt Dietz, Zhenbao Li, and Colin Taylor

Keywords: real-time dynamic substructuring, dynamics of transfer system, full state compensation via simulation, experimental testing

Abstract paper

Ultimate Strength of Composite Beam with Web Openings Subjected to Combined Interaction of Negative Bending and Axial Tension

Mahesan Bavan, Shahrizan Baharom, and Siti Osman

Keywords: composite beam with web openings, 3d non-linear fem models, ultimate limit state, failure mode

Abstract paper