Preface

The International Conference on Behaviour of Steel Structures in Seismic Areas, called STESSA, has reached its ninth edition. It is a specialty conference in the field of seismic resistant steel structures, held every three years.

The ninth edition of STESSA has been organized by the University of Canterbury (Department of Civil and Natural Resources Engineering, Christchurch, New Zealand), together with the University of Auckland (Department of Civil and Environmental Engineering, Auckland, New Zealand) and the Steel Construction New Zealand, in cooperation with the University of Naples "Federico II" (Department of Structures for Engineering and Architecture, Naples, Italy).

Christchurch (New Zealand) was selected for the venue of the Conference in the current 9th edition. Previous editions were held in Timisoara (Romania, 1994), Kyoto (Japan, 1997), Montreal (Canada, 2000), Naples (Italy, 2003), Yokohama (Japan, 2006), Philadelphia (United States, 2009), Santiago (Chile, 2012) and Shanghai (China, 2015).

Results of recent research from all over the world in the field of steel structures in seismic areas are presented through 137 papers by experts from 26 countries (Algeria, Argentina, Australia, Belgium, Canada, Chile, China, Colombia, Ecuador, France, Greece, Hong Kong, India, Indonesia, Iran, Italy, Japan, New Zealand, Portugal, Romania, Slovakia, South Korea, Switzerland, Taiwan, Turkey, UK, USA). Papers are published as two pages extended abstract in hard copy and as full paper in electronic copy on a USB device. The full paper collection on USB is published on "Key Engineering Materials", a peer reviewed journal, by TTP (Trans Tech Publications Ltd), indexed by SCImago Journal & Country Rank (SJR), which provides a full open access to the authors. The conference proceedings are subdivided into chapters corresponding to the working sessions of the STESSA2018 Conference, representing the following main topics of the conference:

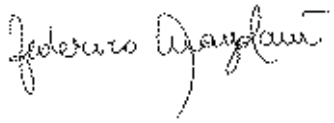
1. *Performance based design of structures*: methods for seismic and robustness design, collapse risk and loss assessment of the main seismic-resistant steel structures.
2. *Behaviour of connections*: influence of connections on the structural response, traditional and innovative joints, fabrication rules.
3. *Behaviour of members and components*: buckling phenomena, design overstrength, failure modes, capacity design criteria, hysteretic behaviour, cold-formed sections, analysis of beam and floor systems.
4. *Experimental studies*: bracing systems, MRF, BRB, traditional and innovative connections, dissipative devices, cold-formed structural systems, nonstructural components, hollow sections members, shake table tests, static and dynamic tests.
5. *Numerical modelling*: bracing systems, MRF, tall buildings, cold-formed structures and sections, floor systems, connections, viscous dampers, dissipative systems.
6. *Structural systems:* bracing systems, MRF, steel plate shear walls, special devices, dual systems, cold-formed structures, collapse analysis, seismic design.
7. *Mixed and composite structures*: mixed members, slabs and walls made of steel and reinforced concrete, concrete filled steel tube (CFST) constructions.
8. *Buckling restrained braces*: low-cycle fatigue performance, seismic design, deformation measuring devices, finite element modelling, effects of out-of-plane displacements, seismic stability, behaviour factor, design guidelines, fabrication rules.

All rights reserved. No part of contents of this paper may be reproduced, processed or transmitted in any form or by any means without the written permission of Trans Tech Publications Ltd, www.scientific.net. (#0-14/02/26,00:26:12)

9. *Passive control*: viscous dampers, magneto-rheological devices, innovative connections, base isolated structures, low-damage dissipaters.
10. *Case studies*: BRB, MRF, braced frames, industrial buildings, office towers, existing structures, metal shear panels, arch bridges.
11. *Assessment and retrofitting*: seismic repairing and retrofitting of members and structures by means of steel based systems.
12. *Codes, standards and design guides*: remarks on international codes, comparison among standards, new design formulations.

International experts have been invited as keynote speakers: Michel Bruneau (University of Buffalo, USA), Charles Clifton (University of Auckland, New Zealand), Stephen Hogg (Aurecon New Zealand Ltd), Raffaele Landolfo (University of Naples "Federico II", Italy), Guo Qiang Li (Tongji University, China), Gregory MacRae (University of Canterbury, New Zealand), Toru Takeuchi (Tokyo Institute of Technology, Japan), and Robert Tremblay (Polytechnique Montréal, Canada). The full keynote lectures are published in the hard copy volume.

The Chairmen wish great success for this STESSA2018 Conference edition, for enhancing the development and the realization of steel structures in seismic prone countries, promoting a strong and fruitful synergy among all the stakeholders, involving scientists, professionals, companies and authorities to continue the excellent worldwide programme of improving the resilience of steel structures in seismic areas



Federico M. Mazzolani

Gregory A. MacRae

G. Charles Clifton

Committees

Chairman Federico M. Mazzolani
University of Naples "Federico II"

Co-Chairmen Gregory A. MacRae
University of Canterbury
G. Charles Clifton
University of Auckland

Local Organising Committee

G. Charles Clifton, University of Auckland
Chin-Long Lee, University of Canterbury
Geoffrey Rodgers, University of Canterbury
Gregory A. MacRae, University of Canterbury
James Lim, University of Auckland
Kevin Cowie, Steel Construction New Zealand
Nandor Mago, NZ Heavy Engineering Research Ass.
Reagan Chandramohan, University of Canterbury
Rebecca Symonds, Steel Construction New Zealand
Stephen Hicks, NZ Heavy Engineering Research Ass.
Timothy Sullivan, University of Canterbury
Sean Gledhill, Aurecon NZ

Local Technical Committee

Dario Pietra, Holmes
Geoff Bird, BECA
Geoff Chase, University of Canterbury
Julian Ramsey, Raumoko Solutions
Tim Shannon, Lewis Bradford
Tony Abu, University of Canterbury

Scientific Secretariat

Beatrice Faggiano, University of Naples "Federico II", Naples Italy
Antonio Formisano, University of Naples "Federico II", Naples, Italy

Conference Secretariat

Rebecca Symonds, Steel Construction New Zealand

International Scientific Committee

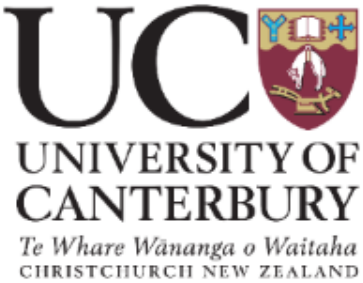
Akira Wada	Tokyo Institute of Technology	Tokyo, Japan
Amr Elnashai	University of Houston, Penn State University	Houston, USA
Andre Plumier	University of Liege	Liege, Belgium
Antonio Formisano	University of Naples "Federico II"	Napoli, Italy
Aurel Stratan	Politehnica University of Timisoara	Timisoara, Romania
Beatrice Faggiano	University of Naples "Federico II"	Napoli, Italy
Bozidar Stojadinovic	ETH - Swiss Federal Institute of Technology,	Zurich, Switzerland

Carlos Aguirre	Universidad Tecnica Federico Santa Maria	Valparaiso, Chile
Carlos E. Ventura	University of British Columbia	Vancouver, Canada
Charles Roeder	University of Washington	Seattle, USA
Claudio Amadio	University of Trieste	Trieste, Italy
Dan Dubina	Politechnic University of Timisoara	Timisoara, Romania
Daniel Grecea	Politehnica University of Timisoara	Timisoara, Romania
Dipti Ranjan Sahoo	Indian Institute of Technology Delhi	New Delhi. India
Edoardo Marino	University of Catania	Catani, Italy
Elena Mele	University of Naples “Federico II”	Napoli, Italy
Evangelos Efthymiou	Aristotle University of Thessaloniki	Thessaloniki, Greece
Florea Dinu	Politehnica University of Timisoara	Timisoara, Romania
Gaetano Della Corte	University of Naples “Federico II”	Naples, Italy
Gianfranco De Matteis	“Vanvitelli” University of Campania	Aversa, Italy
Gregory MacRae	University of Canterbury	Christchurch, New Zealand
Gustavo Ayala	Universidad Nacional Autonoma de Mexico	Mexico City, Mexico
Ioannis Vayas	National Technique University of Athens	Athens, Greece
James Ricles	Lehigh University	Bethlehem, Pennsylvania, USA
Jean Marie Aribert	INSA Rennes	Rennes, France
Jose Miguel Castro	University of Porto	Porto, Portugal
Larry Fahnestock	University of Illinois	Urbana-Champaign, USA
Luigi Fiorino	University of Naples “Federico II”	Naples, Italy
Luis Calado	Instituto Superior Tecnico	Lisbon, Portugal
Mamoru Iwata	Kanagawa University	Yokohama, Japan
Maria Garlock	Princeton University	Princeton, New Jersey, USA
Mario D’Aniello	University of Naples “Federico II”	Naples, Italy
Masayoshi Nakashima	Kyoto University	Kyoto, Japan
Mauricio Sarrazin	University of Chile	Santiago de Chile, Chile
Michel Bruneau	University of New York	Buffalo, USA
Pedro Rojas	ESPOL—Catholic University	Guayaquil, Ecuador
Peng Liu	ARUP	Beijing, China
Raffaele Landolfo	University of Naples “Federico II”	Naples, Italy
Ricardo Herrera	University of Chile	Santiago de Chile, Chile
Robert Tremblay	Ecole Polytechnique of Montreal	Montreal, Canada
Stephen Mahin	University of California	Berkeley, USA
Su-Wen Chen	Tongji University	Shanghai, China
Toru Takeuchi	Tokyo Institute of Technology	Tokyo, Japan
Vincenzo Piluso	University of Salerno	Salerno, Italy

International Advisory Committee

Abolhassam Astaneh-asl	University of California	Berkeley, USA
Ahmed Elghazouli	Imperial College	London, UK
Akihiko Kawano	Kyusyu University	Fukuoka, Japan
Alberto Mandara	"Vanvitelli" University of Campania	Aversa, Italy
Attilio De Martino	University of Naples "Federico II"	Naples, Italy
Charles Clifton	University of Auckland	Auckland, New Zealand
Christoph Adam	University of Innsbruck	Innsbruck, Austria
Constantin Christopoulos	University of Toronto	Toronto, Canada
Daniel Dan	Politehnica University of Timisoara	Timisoara, Romania
Dimitri E. Beskos	University of Patras	Patras, Greece
Eduard Ayrumyan	Melnikov Central Research and Design Institute of Steel Structures	Moscow, Russia
Enrique Alarcon	Universidad Politecnica de Madrid	Madrid, Spain
Francisco Lopez-Almansa	Technical University of Catalonia	Barcellona, Spain
Gabriel Valencia	Universidad Nacional de Colombia	Bogotà, Colombia
Gian A. Rassati	University of Cincinnati	Cincinnati, USA
Gianvittorio Rizzano	University of Salerno	Salerno, Italy
Gulay Askar	Bogazici University	Instanbul, Turkey
Guo-Qiang LI	Tongji University	Shanghai, China
Hiroshi Akiyama	University of Tokyo	Tokyo, Japan
Jerome Hajjar	Northeastern University	Boston, Massachusetts, USA
Kazuhiko Kasai	Tokyo Institute of Technology	Tokyo, Japan
Keh-Chyuan Tsai	National Taiwan University	Taiwan, China
Kober Helmuth	Technical University of Civil Engineering	Bucharest, Romania
Lian-Jin Bao	East China Architectural Design & Research Institute	Shanghai, China
Lucia Tirca	Concordia University	Montreal, Canada
Luis Da Silva	University of Coimbra	Coimbra, Portugal
Mario Fontana	ETH, Swiss Federal Institute of Technology	Zurich, Switzerland
Masanori Fujita	Yamaguchi University	Yamaguchi, Japan
Michael D. Engelhardt	University of Texas	Austin, USA
Mohammed Hjiaj	INSA Rennes	Rennes, France
Motohide Tada	Osaka University	Osaka, Japan
Myung-ho Yoon	Kongju National University	Gongju, Korea
Richard Sause	Lehigh University	Bethlehem, USA
Roberto Leon	Georgia Institute of Technology	Atlanta, USA
Rodolfo Sarragoni	University of Chile	Santiago, Chile
Satoshi Yamada	Tokyo Institute of Technology	Tokyo, Japan
Yi-Yi Chen	Tongji University	Shanghai, China

Sponsors


UC
UNIVERSITY OF
CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND


SCNZ
STEEL CONSTRUCTION
NEW ZEALAND


THE UNIVERSITY OF
AUCKLAND
NEW ZEALAND


Sesoc


EQC
EARTHQUAKE COMMISSION


ComFlor


HERA
innovation in metals


Quake Centre
Delivering Industry Solutions