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NEW ZEALAND SOCIETY FOR EARTHQUAKE ENGINEERING

NEW ZEALAND SOCIETY FOR EARTHQUAKE ENGINEERING
2023 ANNUAL TECHNICAL CONFERENCE

2023

Facing the Seismic Challenge

Conference Programme

NEW ZEALAND SOCIETY FOR
EARTHQUAKE ENGINEERING
ANNUAL TECHNICAL CONFERENCE

19–21 April 2023
Sir Owen G Glenn Building
University of Auckland

Day 1: Wednesday 19 April 2023

08:00-17:00	**Registration** Room: Level 1, Atrium, Sir Owen G Glenn Building, University of Auckland		
09:00-10:30	**Mihi Whakatau and Conference Opening** **Toka Tū Ake EQC Keynote Speaker** **Title: Modeling socio-economic dimensions of large urban earthquakes to inform decision-making** Speaker: Stephanie Chang, University of British Columbia, Canada Chair: Caleb Dunne **Toka Tū Ake EQC Ivan Skinner Award Presentation** Room: Lecture Theatre 098, Sir Owen G Glenn Building, University of Auckland		
10:30-11:00	**Morning Tea Break** Room: Level 0, Exhibition Foyer		
11:00-12:30	**O1A Structural Dynamics and Shake Table Testing** Room: Lecture Theatre 098 Chair: Quincy Ma	**O1B Landslides and SSI** Room: Lecture Theatre OGGB3 Chair: Rolando Orense	**O1C Design and Construction** Room: Lecture Theatre OGGB4 Chair: Andrew Thompson
	O1A.1 Shaking Table Tests on RC Frames strengthened with Simplified Friction Damper Muhammad Haroon	**O1B.1 Liquefaction induced kinematic loads on piles - a literature review and recommendations for design** Bhavesh Rama	**O1C.1 Seismic design for temporary works: Recommendations for a Temporary Works forum NZ design note** Tom Watson
	O1A.2 Shake-table testing of resilient, low-cost seismic isolators based on rolling rubber spheres Antonios Katsamakas	**O1B.2 Earthquake Design Pressures from Soil Interaction on Building Basement Walls** John Wood	**O1C.2 Developing Construction 4.0 transformation of Aotearoa New Zealand's construction sector** Kaveh Andisheh
	O1A.3 A Practical Approach to Design Supplemental Damped Isolation Systems Kiran Makan	**O1B.3 Optimisation through performance-based design and soil-structure interaction** Luke Storie	**O1C.3 Lincoln University Waimarie building: An application of friction damping devices with recentring for low damage design** Ashkan Hashemi, Chris Wallington
	01A.4 Comparison of optimal versus convenient distribution methods for design of viscous damper up the building height Ali Rad	**O1B.4 Optimising seismic resilience assessments - Part II:Integrating geophysical and geotechnical investigations** Lizzie Ingham, Nick McConachie	**O1C.4 Understanding and Improving the Seismic Resilience of Hospital Buildings** Dave Brundson
	01A.5 A Review of the State of Practice for Fluid Viscous Damper Applications in North America and New Zealand Nathan Canney	**O1B.5 Modelling of residential house perimeter foundation beams subjected to ground deformations** Max Dawson	**O1C.5 Wellington Children's Hospital - a different approach to a seismic restraint project** Ignatius Black
	01A.6 Optimum service and seismic structural protection with adaptive dampers and base isolators for immediate occupancy after the earthquake Marcel Gruber	**O1B.6 Simplified approach to predict road blockages caused by co-seismic landslides** Amelia Lin	**O1C.6 Post disaster building functionality: preliminary findings of a systematic review** Megan Boston
12:30-13:30	**Lunch** Room: Level 0, Exhibition Foyer		

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13:30-15:00	**O2A Concrete frames and walls** Room: Lecture Theatre 098 Chair: Alex Shegay	**O2B Seismicity and Loading** Room: Lecture Theatre OGGB3 Chair: Tony Holden	**O2C Structural Modelling and Design** Room: Lecture Theatre OGGB4 Chair: Max Stephens
	O2A.1 Seismic Performance Comparison of New Zealand and Japanese Concrete Moment Frames Nicole Buck	**O2B.1 Trends in systematic site residuals with geomorphic categories for New Zealand ground-motion instrument sites** Ayushi Tiwari	**O2C.1 Evaluate the risk performance of base-isolated buildings using NZSEE/MBIE isolation design guidelines** Claire Dong
	O2A.2 Testing of heavily damaged reinforced concrete walls repaired using concrete and steel replacement Gonzalo Muñoz Arriagada	**O2B.2 Estimates of site periods from mHVSR analysis of IRIS temporary seismograph networks** Andrew Stolte	**O2C.2 Source of numerical non-convergence in the analysis of bilinear SDOF systems** Nicholas Morris
	O2A.3 Seismic Behaviour of Slender Rectangular Reinforced Concrete Walls based on analytical methods Arsalan Niroomandi	**O2B.3 Site-specific seismic hazard analysis - development and application of new seismic hazard estimates for use in engineering applications** Stuart Orchard, Merrick Taylor	**O2C.3 How to assemble elemental damping?** Chin-Long Lee
	O2A.4 Experimental study on the structural performance and damage characteristics of repaired flexural RC members Kota Miura	**O2B.4 GeoNet's Shaking Layer Tool: Automatic generation of maps of near-real time ground shaking for post-event response** Nick Horspool	**O2C.4 Investigating the Effect of Stiffness on the Seismic Performance of Structures** Liam Pledger
	O2A.5 Dynamic analysis of tall reinforced concrete walls designed with minimum vertical reinforcement Tianhua Deng	**O2B.5 Method for the explicit consideration of ground motion duration in NZS 1170.5** Vishvendra Bhanu	**O2C.5 Seismic Ratcheting Considerations** Gregory MacRae
	O2A.6 Behaviour of Unreinforced R.C. Beam-Column Joints Under Bidirectional Loading Amir Moshref	**O2B.6 International alignment and update of the New Zealand earthquake intensity scale** Andrew Charleson	**O2C.6 "Modal crimes" in structural engineering** Athol J. Carr
15:00-15:30	**Afternoon Tea Break** Room: Level 0, Exhibition Foyer		
15:30-17:00	**Panel Discussion: Risk Communication** Dave Brunsdon, Kestrel Group; Lauren Vinnell, Massey University; Kelvin Tapuke, Massey University; Anna Cardno, GNS Science Chairs: Julia Becker & David Johnston **NZSEE Awards: NZSEE/QuakeCoRE Emerging Women Leaders in Earthquake Engineering Award Presentation; NZSEE Research Scholarship Presentation; Otto Glogau Award Presentation; Bulletin Service Award** Room: Lecture Theatre 098		
17:00-17:30	**NZSEE Annual General Meeting** Room: Lecture Theatre 098		
17:30-19:30	**Welcome Reception and Poster Session** Room: Level 0, Exhibition Foyer		DonoBrace®

Day 2: Thursday 20 April 2023

08.30-17:00	**Registration** Room: Level 1, Atrium		
09:00-10:00	**Park and Paulay Keynote Speaker** **Title: Navigating Seismic Hazard Updates and Performance Target Changes** Speaker: John Hooper, Director of Earthquake Engineering, Magnusson Klemencic Associates, USA Chair: Rajesh Dhakal Room: Lecture Theatre 098		
10:00-10:30	**Morning Tea Break** Room: Level 0, Exhibition Foyer		
10:30-11:30	**Plenary 1: Resilient Buildings** Caleb Dunne, Toka Tū Ake EQC; Charlotte Brown, Resilient Organisations; Dave Brunsdon, Kestrel Group; John Hare; Holmes Group; Ken Elwood, MBIE; Hugh Cowan, Hugh Cowan Consulting; Shannon Abeling, University of Auckland; Rob Jury, Beca; Helen Ferner, Immediate Past President NZSEE Chair: Hugh Cowan Room: Lecture Theatre 098		
11:30-12:30	**Plenary 2: MBIE update and Joint Committee for Seismic Assessment of Existing Buildings** Ken Elwood, MBIE; Rob Jury, Beca; Charlotte Brown, Resilient Organisations; Dave Brunsdon, Kestrel Group; Phil Clayton, Beca; Andy Thompson, Holmes; Nicola Borgfeldt, MBIE Chair: Ken Elwood, MBIE Room: Lecture Theatre 098		
12:30-13:30	**Lunch and He Tohu Pūpū Seismic Design Competition** Room: Level 0, Exhibition Foyer		
13:30-15:00	**O3A Steel Structures** Room: Lecture Theatre 098 Chair: Charles Clifton	**O3B Geotechnical Assessment and Design** Room: Lecture Theatre OGGB3 Chair: Liam Wotherspoon	**O3C Connections and Non-Structural Design** Room: Lecture Theatre OGGB4 Chair: Andrew Baird
	O3A.1 Development, verification, and validation of a buckling-fatigue steel material model Junan Mou	**O3B.1 Seismic design of an XblocPlus® revetment using multi-model approach** Mikias Yohannes	**O3C.1 Using holistic design to improve the seismic performance of non-structural elements, building resilience and reduce embodied carbon emissions** Jan Stanway
	O3A.2 Predictive models for changes in reinforcement characteristics due to strain ageing effects Alex Shegay	**O3B.2 A quantitative risk assessment of seismic slope stability for a tailings dam** Vis Yuanzhi	**O3C.2 Advanced seismic design of concrete-to-concrete structural connections** Dorian Borosnyoi-Crawley
	O3A.3 Seismic Application of Fillet and Partial Penetration Butt Welds Hafez Taheri	**O3B.3 Displaced But Not Moved: Performance-Based Foundation Design** Lars Schmidt, Isabella Barbalich	**O3C.3 Design of Mixed Angle Screw CLT Hold-Down Connections to New Zealand Timber Standards** Thomas Wright
	O3A.4 A Prescriptive Method for the Design of New Steel Moment Frame Structures with Supplemental Damping Nathan Canney	**O3B.4 Innovative Resin Injection Ground Improvement to Build Up Seismic Resilience of Existing Water Structures** Paulo Alves	**O3C.4 Seismic design of suspended lightweight ceilings – what's the ductility?** Jasin Long
	O3A.5 Residual Stress Effects on Steel Column Seismic Behaviour Gregory MacRae	**O3B.5 Influence of remedial ground densification on seismic site amplification** Romain Meite	**O3C.5 Seismic Restraint of Non-Structural Elements – Evolving Design Thinking** Mark Browne, Dani Paxson

Day 2: Thursday 20 April 2023

	O3A.6 Finite Element Convergence Study of the Asymmetric Friction Connection (AFC) in the Optimised Sliding Hinge Joint (OSHJ) Fatemeh Alizadeh	**O3B.6 Effect of Periodic Unit Cell Volume on Attenuation Zones of One-Dimensional Meta-material based Periodic Foundation** Sanjay Kumawat	**O3C.6 A Review of Practice-Oriented Methods for Estimating Seismic Demands on Parts and Components** Kieran Haymes
15:00-15:30	**Afternoon Tea Break** Room: Level 0, Exhibition Foyer		
15:30-17:00	**Plenary 3: Advances in Geotechnical Earthquake Engineering** Liam Wotherspoon, University of Auckland Doug Mason, WSP Saskia de Vilder, GNS Science Chair: Brabha Brabhaharan Room: Lecture Theatre 098		
18:30-Late	**Conference Dinner** Sponsored by D&H Steel Construction Ltd **Awards: Distinguished Members - Fellows and Life Members of the Society** **John Hollings Seismic Resilience in Practice Award Presentation** Princes Ballroom, Pullman Hotel		

Posters being presented in Poster Session: Wednesday 19 April 17.30 – 19.30

No.	Poster Title	Presenter
P.01	A displacement-based design method of low-damage dual systems with hysteretic and nonlinear viscous energy dissipation	Dr Anqi Gu
P.02	MOOD: A complete framework for achieving sustainability in seismic regions	Dr Arun Mankavu-Puthanpurayil
P.03	Feasibility of capacity spectra method for analysis of low damage structural systems with friction connections	Dr Ashkan Hashemi
P.04	Learning Importance Sampling Distributions via Normalizing Flows for Estimating Rare-Event Failure Probabilities	Dr Erik Johnson
P.05	A New Rocking Concrete Shear Wall with Self-Centring Friction Connections	Dr Farhad Mohammadi Darani
P.06	Applicability of Simplified CPT-Based Liquefaction Assessment to CentrePort Gravels	Dr Riwaj Dhakal
P.07	Performing Structural Assessment using Acoustic Measurements	Dr Zhaoshuo Jiang
P.08	Numerical parametric analysis of gravity column base-plate connections	Jin Chang Winston He
P.09	Using 3D geological models to create maps of estimated Vs30 and site period	Matthew Hill
P.10	Numerical Investigation of Australasian Cold-Formed Steel strap-braced walls under lateral and vertical load	Miss Ankeeta Karmakar
P.12	Deformability of lap splices in RC structural walls	Mr Charles Kerby
P.13	Optimising seismic resilience assessments - Part I: A geotechnical assessment based on integrated site investigations and nonlinear dynamic analyses	Mr Ioannis Antonopoulos
P.14	Framework Development for a Hybrid Geotechnical-Geospatial Liquefaction Assessment Model	Mr Kristian Azul
P.15	Local behaviours and seismic performance evaluation of steel bar lap splices of concrete columns	Mr Mahesan Bavan
P.16	Review and suggestions on timber buildings with hybrid lateral force resisting systems	Mr Mikhail Gedyma
P.17	Examples of ground improvement applications for earthquake design	Mr Mikias Yohannes
P.18	Dynamic Behaviour of Interlocking Plastic-block Structure Using Shake Table	Mr Niaz Khan Mr Ilyas Khan
P.19	Low Damage Wall To Floor Connections For Seismic Resilient Timber Structures	Mr Soheil Assadi
P.20	Design Considerations for Buckling Restrained Braces in Timber Frames Subject to Out of Plane Deformations	Mr William Dorrance Mr Matthew Huang
P.21	High capacity glued-in rod connections in Cross-Laminated Timber (CLT) structures	Mr Younes Shirmohammadli
P.22	Component Test on Frictional GripNGrab Device	Mrs Kiran Rangwani
P.23	Enhancing earthquake and tsunami preparedness and response in Kura Kaupapa Māori/Schools in Tairāwhiti and Waiāriki, Aotearoa New Zealand	Professor David Johnston
P.24	Meet EDDIE – QuakeCoRE's new earthquake test dummy	Professor David Johnston
P.25	Multistage Friction Connections	Professor Gregory Anthony MacRae
P.26	Three-dimensional numerical simulation of tsunami-borne debris-loads on bridges	Professor Ian Buckle
P.27	Experimental Validation of Real-Time Hybrid Substructuring for a Seismically Excited Building using an Inertial Shaker Transfer System	Professor Richard Christenson

Day 3: Friday 21 April 2023

08:30-17:00	**Registration** Room: Level 1, Atrium		
09:00-10:30	**Plenary 4: Rū ana te whenua!: Te Ao Māori perspective of earthquakes** Dan Hikuroa, University of Auckland Chair: Tūmanako Fa'aui Room: Lecture Theatre 098		
10:30-11:00	**Morning Tea Break** Room: Level 0, Exhibition Foyer		
11:00-12:30	**O4A Timber Structures** Room: Lecture Theatre 098 Chair: Ashkan Hashemi	**O4B Liquifaction and Characterisation** Room: Lecture Theatre OGGB3 Chair: Andrew Stolte	**O4C Assessment and Retrofit** Room: Lecture Theatre OGGB4 Chair: Enrique del Rey Cast
	O4A.1 Seismic Damage States and Damage Quantification of Light Timber Framed Walls in Residential Houses Angela Liu	**O4B.1 Accounting for the Influence of Intrinsic Soil Properties and State Variables on Liquefaction Triggering** Russell Green	**O4C.1 Experimental proof of the effectiveness of timber in the seismic retrofit of URM buildings** Ivan Giongo
	O4A.2 Earthquake Protection of Residential Buildings: New Resilient System for Light Timber Framing Pouyan Zarnani	**O4B.2 Mitigation of liquefaction-induced lateral spread ground displacements using an in-ground pile wall** Anthony Rolfe	**O4C.2 Case Study for Assessment a Unique Reinforced Concrete Encased Steel Plate Building in Wellington** Amir Moshref
	O4A.3 The next generation of drywall construction for low-damage design Scott Menegon	**O4B.3 Miniature Prototype Development and Installation Parameters Design of Subsurface Compacted Rubble Raft (SCRR): Wide-ground Improvement Technique Solving Severe Liquefaction Risks** Zhaodong Du	**O4C.3 Retrofit and Repair of Reinforced Concrete Columns with Active Confinement** Julián Rincón
	O4A.4 Establishing the Transverse Load Capacity of a Timber-framed Classroom Block Dave Brundson	**O4B.4 Assessment of lateral spread potential using smeared strengths of liquefied/non liquefied soils** Emily Peebles	**O4C.4 Response of Retrofitted 3D RC Frames under Dynamic Loading Conditions** Jong-Hun Woo
	O4A.5 Multidirectional cyclic testing of self-centering cross-laminated timber shear wall sub-assemblies James Ricles	**O4B.5 Performance assessment of shallow founded buildings on liquefiable soils** Andrea Ham	**O4C.5 Seismic strengthening of RC walls using FRP to prevent axial failure** Zhibin Li
	O4A.6 Effect of uncertainties in collapse assessment of coupled CLT walls with energy dissipators as couplers and resilient hold-downs Setu Raman Agarwal	**O4B.6 Vs30 Assessments: Understanding the Underground** Lizzie Ingham, Nick McConachie	**O4C.6 Innovative Retrofit Solution for Exterior Unreinforced R.C. Beam-Column Joints** Amir Moshref
12:30-13:30	**Lunch** Room: Level 0, Exhibition Foyer		

Day 3: Friday 21 April 2023

13:30-15:00	**O5A Structural Response** Room: Lecture Theatre 098 Chair: Lucas Hogan	**O5B Concrete and Bridges** Room: Lecture Theatre OGGB3 Chair: Rick Henry	**O5C Societal Perceptions and Expectations** Room: Lecture Theatre OGGB4 Chair: Patrick Cummuskey
	O5A.1 A Sensitivity Study of the Design Parameters Affecting the Global Stability of Buckling-Restrained Braced Frames Brandt Saxey	**O5B.1 Area Ratio or Volumetric Ratio: Which is better for quantifying the confinement of concrete?** Devesh Kumar Jaiswal	**O5C.1 Public expectations of damage and disruption to existing multi-storey buildings in earthquakes** Catalina Miranda
	O5A.2 Chevron Buckling Restrained Brace Frame Seismic Behaviour Considering Out-of-Plane Effects Toby Simpson	**O5B.2 Cyclic behavior of older concrete columns reinforced with high-performance fiber reinforced cementitious composites** Sang Whan Han	**O5C.2 Achieving earthquake-safe buildings – an educational initiative for developing nations** Andrew Charleson
	O5A.3 Avoiding moat wall pounding of base-isolated buildings using D3 viscous dampers Nikoo Hazaveh	**O5B.3 Elongating plastic hinge element for nonlinear analysis of RC structures using OPENSEES** Rajesh Dhakal	**O5C.3 Societal Expectations for Functional Recovery of Primary and Secondary School Buildings** Megan Boston
	O5A.4 Effect of serviceability and over-strength mechanism on seismic response of low damage structures Ashkan Hashemi	**O5B.4 Site-specific seismic hazard evaluation of critical bridge infrastructure in Cebu, Philippines** Francis Jenner Bernales	**O5C.4 Risk thresholds in the built environment - is occupying a building an extreme sport?** Caleb Dunne
	O5A.5 CLT panels for the seismic and energy retrofit of existing RC buildings Francesco Smiroldo	**O5B.5 Seismic hazard analysis for a bridge across Marikina River with consideration of near-fault effects** Patrick Adrian Selda	**O5C.5 Reimagining Community Resilience through a Te Ao Maori Worldview** Ezra Dunlop
	O5A.6 Earthquake strengthening clay brick masonry parapets – proof-tested solutions Marta Giaretton	**O5B.6 Evaluation of prioritization schemes for bridge stock assessment** Roberto Nascimbene	**O5C.6 A Case Against Increased Seismic Performance Legislation for NZ Buildings** Gregory MacRae
15:00-15:30	**Afternoon Tea Break** Room: Level 0, Exhibition Foyer		
15:30-17:00	**Plenary 5: Getting on the Same Page – Various Perspectives on Sustainable and Resilient Design** Antonia Reid, MBIE Richard Naish, RTA Studio Mark Willard, Ministry of Education Chairs: Max Stephens and Charlotte Toma		
17:00-17:15	**Conference Awards: Best Conference Paper Award; Best Conference Poster Award; NZSEE/SCNZ Best Steel Award Presentation; NZSEE/NZ Timber Design Society Best Paper Award Presentation** Conference Close Room: Lecture Theatre 098		

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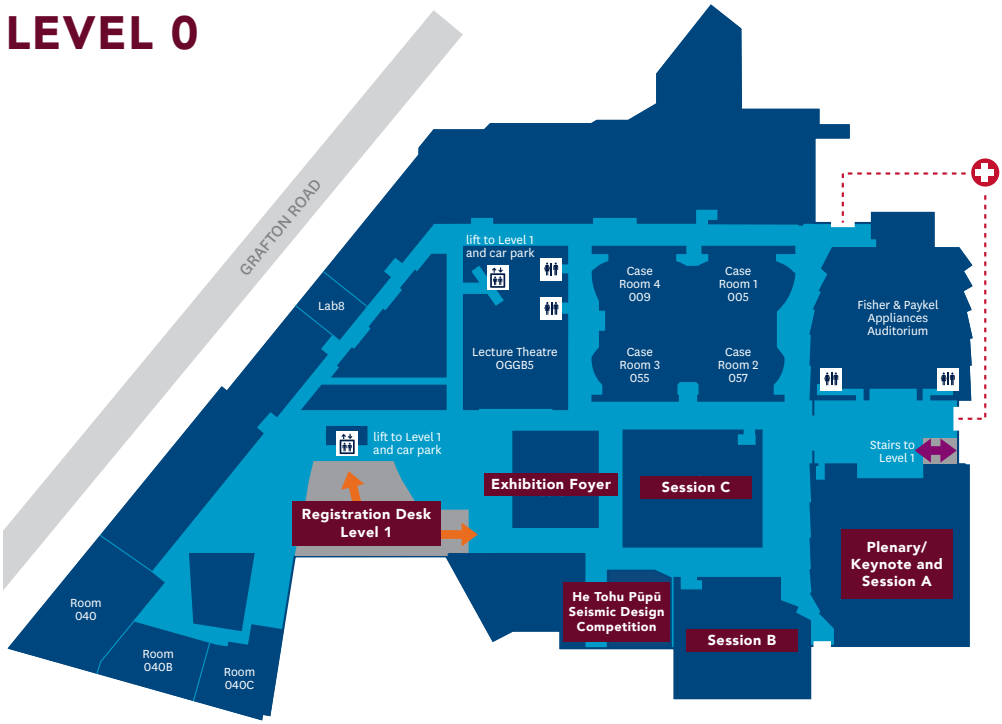
LEVEL 0



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