11th International Symposium on Impact Engineering (ISIE2023)

Conference Programme

Organized by

Curtin University

UTS UNIVERSITY OF TECHNOLOGY SYDNEY

CIMP Centre for Infrastructural Monitoring and Protection

GUANGZHOU UNIVERSITY

Perth, Western Australia

3rd – 5th December 2023

Acknowledgements

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Committee on Impact in
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ISIE

Preface

The 11th International Symposium on Impact Engineering (ISIE 2023), to be held on 3-5 December 2023 in Perth, Australia, is jointly organized by Curtin University in Australia, Guangzhou University in China and University Technology Sydney in Australia. The conference is supported by the International Association of Protective Structures and the Committee on Impact in The Society of Materials Science, Japan.

Following the success of previous ISIEs, ISIE 2023 will provide a platform for researchers and engineers working on the protection of engineering infrastructure (including buildings, bridges, ships, pipelines, dams, etc.) against natural and man-made explosions and impact actions (such as earthquakes, projectile impacts, and vehicle and ship impacts) to present and share research results and new engineering applications, and exchange ideas for research and practice. The themes of the conference include:

1) Impact and Blast Loads on Structures
2) Explosion Caused by High Explosives, Gas and Dust
3) Numerical Simulation and Modelling
4) Shock and Wave Propagation
5) Material Behaviour at High Strain Rate
6) Dynamic Behaviour of Structural Elements
7) Vehicle or Ship Impact with Structures
8) Impact on Structures Induced by Earthquake
9) Risk Assessments under Impact and Blast Threats
10) Protective and Innovative Materials and Structures
11) Structure Strengthening and Retrofitting

Contributions of original papers related to the above topics were invited. A total of 278 abstracts from over 20 countries were received. Delegates were given the choice of either submitting a full paper or abstract only. Every abstract or paper was peer-reviewed by members of the Scientific Committee to ensure the quality of submissions. Finally, 178 papers/abstracts, including 6 keynote lecturers from world-renowned researchers, were selected for the conference program and presentations. An e-version of the proceedings will also be distributed to all participants. Following the conference, selected papers will be recommended for potential publication in a special issue of the International Journal of Protective Structures.

The organizers are grateful to the supporters and sponsors of ISIE 2023, and the committee members for promoting the conference and reviewing abstracts and papers. Thank you also to all the delegates for preparing papers and choosing to present their work at the conference, which reflects the enormous research efforts of all the authors in recent years, and to all those who have helped during the process.

Hong Hao

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Prof. Chengqing WU, Univ of Tech Sydney, Australia

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Dr. Zhijie HUANG, Curtin Univ, Australia
Dr. Cheng XU, Curtin Univ, Australia

Keynote Presentations (In alphabetical order)

Professor James S. Davidson, Department of Civil and Environmental Engineering, Auburn University, USA

Lecture Title

Professor Jim Davidson is the Gottlieb Professor of Structural Engineering at Auburn University, USA. His technical specialties are in the areas of structural engineering and structural mechanics, with an emphasis on advanced computational methods for analysing structures subjected to large strains at high strain rates. Dr. Davidson's research and industry experiences are varied and include sponsorship from a broad range of US agencies and industry organizations. He has served as chair or member of more than 100 PhD and Masters student committees, authored and co-authored over 50 technical journal publications, and presented his research at approximately 100 conferences around the world. He currently serves on several conferences and editorial boards, including the International Journal of Protective Structures and the International Association of Protective Structures.

A/Prof. Takeshi Iwamoto, Academy of Science and Technology, Hiroshima University, Japan

Lecture Title: An Instrumented Taylor Impact Test to Obtain the Stress-strain Curves of Materials at the Hyper Velocity

Associate Professor Dr. Iwamoto completed the undergraduate program provided by the Department of Mechanical Engineering, School of Engineering at Kobe University in 1993. After that, he got advanced in the Master's program at the Graduate School of Engineering, Kobe University. As soon as finishing the program in 1995, he has started his academic life as a research associate at School of Engineering, Hiroshima University. In 2000, he received the degree of Doctor (Engineering) from Graduate School of Natural Sciences at Kobe University through the RONPAKU system, which is the Japanese original system to obtain the Ph.D. degree from Japanese universities through the submission of a dissertation without matriculating a doctoral course, under a supervision of Prof. Yoshihiro Tomita. In 2005, he joined the Laboratoire de Physique et Mécanique des Matériaux, Université de Metz in France as a visiting scholar for one year. Then, he found an upgraded position as an assistant professor in 2007 and promoted as an associate professor in 2009 at Graduate School of Engineering, Hiroshima University. His research interests are thermo-mechanical behaviour of phase transforming ferrous materials at higher strain rate studied by computational and experimental approaches including impact and dynamic testing, constitutive modelling, etc. As well as his major work, modifications of impact testing methods belong to his curiosity. Around 80 papers as a co-author were published in scientific journals with peer reviews. He received 6 awards from Japanese Societies such as Japan Society for Technology of Plasticity and The Society of Materials Science, Japan. He was invited professors in France and China.

Keynote Presentations (In alphabetical order)

Professor Bassam A. Izzuddin, Department of Civil and Environmental Engineering, Imperial College London, UK

Lecture Title: Effective Dynamic Contact Analysis using Parallel Domain Decomposition

Professor Bassam Izzuddin is a Professor of Computational Structural Mechanics and Head of the Computational Structural Mechanics group in the Department of Civil and Environmental Engineering at Imperial College London. He is also the founder and developer of ADAPTIC, an adaptive static and dynamic structural analysis program for high-fidelity modelling of steel, concrete, composite and masonry structures. His research focuses on modelling whole buildings and masonry arch bridges under service and extreme loading conditions, such as due to earthquake, fire and blast. A key feature of his work has been extensive national and international collaboration with fellow academics and leading players in the structural engineering industry, leveraging ADAPTIC to set the international agenda on several fronts. He has also made determined steps towards developing simplified design-oriented assessment techniques, including pioneering work on structural robustness, and proposing analogies which enhance the understanding by engineers of complex nonlinear structural phenomena.

Professor Yulong Li, Department of Aeronautical Structure Engineering, Northwestern Polytechnical University (NPU), China

Lecture Title: Electromagnetic Hopkinson bar: A powerful tool to study mechanical behaviour of materials at high strain rates

Professor Yulong Li is the Dean of Civil Aviation School and a Chair Professor in Department of Aeronautical Structure Engineering in Northwestern Polytechnical University (NPU), China. He received his Ph.D. degree in Solid Mechanics from NPU in 1992 and became a Professor in 1995. From 1996 to 2000 he worked as a post-doctor and subsequently a visiting scholar in University of California San Diego and Johns Hopkins University (JHU). He was a visiting professor of Tokyo University of Science in Japan, a visiting professor of Université Pierre et Marie Curie of France and a visiting professor of The Johns Hopkins University of USA. His research interests include dynamic response and failure of structures under impact loading, constitutive relationship for materials, experimental techniques in impact dynamics, as well as numerical simulation of materials and structures under impact. He has authored more than 400 papers, as well as 20 patents and 4 book chapters. He is current Sub-Committee Member for the Chinese Society of Aeronautics and Chinese Society of Mechanics. He is Editor Board Member for several journals including J. Dynamic Behaviour of Materials, Int.J. Impact Engineering, Acta Mechanica Sinica, etc.

Keynote Presentations (In alphabetical order)

Professor Guoxing Lu, School of Engineering, Swinburne University of Technology, Australia

Lecture Title: Origami Structures and Materials: Energy Absorption and Impact Mechanics

Professor Guoxing Lu is President of International Society of Impact Engineering and Director of Impact Engineering Laboratory at Swinburne University of Technology, Melbourne, Australia. Professor Lu obtained his PhD in 1989 from the University of Cambridge, supervised by Professor CR Calladine (FRS, FREng). After one-year post-doctoral research at Cambridge, he worked as a faculty member at Nanyang Technological University, Singapore, and presently is Professor of Impact Engineering. His research interests are energy absorption of novel structures and materials, mechanical properties of materials at high strain rates, impact mechanics and most recently origami structures and metamaterials. He has ~300 journal publications and one monograph co-authored with Professor Tongxi (TX) Yu, Energy Absorption of Structures and Materials, Elsevier, 2003. He has 12500 citations with an H-index of 58. He is an Associate Editor of International Journal of Impact Engineering and a member of editorial board of International Journal of Mechanical Sciences, Thin-Walled Structures, Composites B, Scientific Reports, Journal of Sandwich Structures and Materials and others. He is a Fellow of Royal Aeronautical Society (UK) and Associate Dean Research, School of Engineering at Swinburne.

Professor Gerald Nurick, Department of Mechanical Engineering, University of Cape Town, South Africa

Lecture Title: Experimental investigation of steel plates subjected to underwater blasts: Determining 'holing'

Professor Nurick has been working in the field of impact dynamics for over 35 years. During this period, he has supervised over 70 Post-Doctoral, PhD and MSc students, who are now spread around the world. Professor Nurick has served on the Editorial Boards of the International Journal of Impact Engineering, the Latin American Journal of Solids and Structures, Journal of Results in Engineering, and the International Journal of Protective Structures. In 2016 and 2022 (six year review period) Professor Nurick was awarded an A-Rating from the NRF (National Research Foundation) of South Africa. A-rating is given to researchers who are unequivocally recognised by their peers as leading international scholars in their field for the high quality and impact of their research outputs. At the Assembly of the ISIE (International Society of Impact Engineering) in 2016, Professor Nurick was one of the inaugural group of five elected as Honorary Members of ISIE for lifetime significant contributions to and the development and growth of Impact Engineering activities.

Professor Nurick is a Fellow of the University of Cape Town, Fellow of the South African Academy of Engineers, Honorary Fellow of South African Institution of Mechanical Engineering, Honorary Member of the International Society of Impact Engineering and a Life Member of the Indian Society of Theoretical and Applied Mechanics.

Keynote Presentations (In alphabetical order)

Professor Tongxi Yu, Department of Mechanical and Aerospace Engineering,
The Hong Kong University of Science and Technology, Hong Kong SAR

Lecture Title: Rigid-Plasticity Revisited: Elastic Effect on Dynamic Deformation of Structures under Pulse Loading

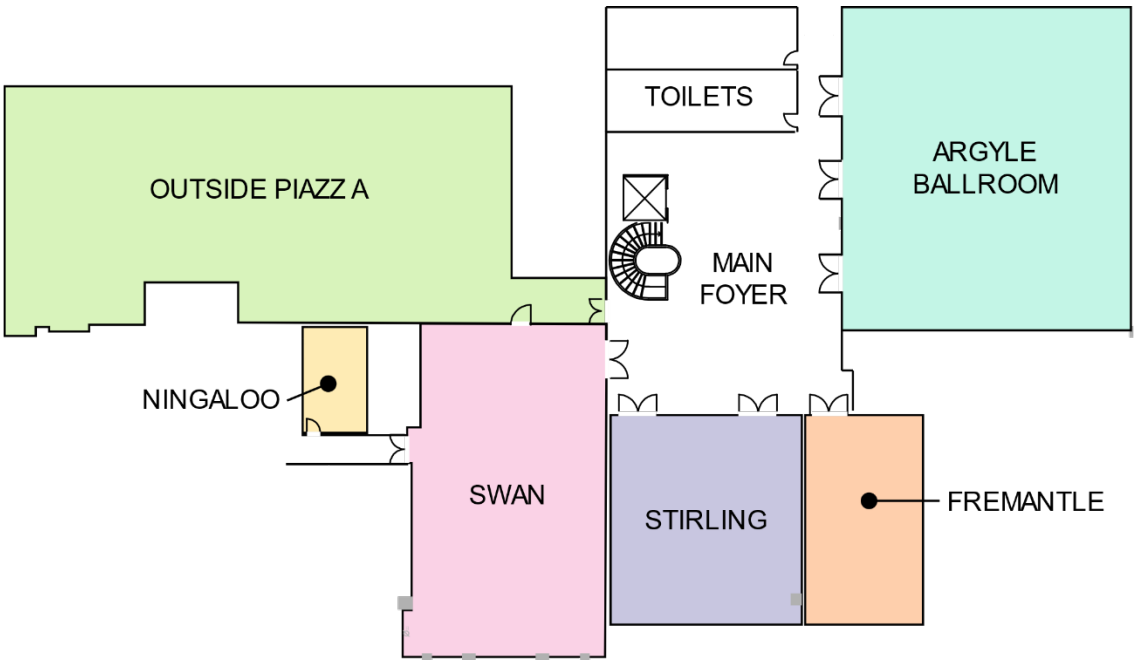
Professor Tongxi Yu (T.X. Yu) is an Emeritus Professor of Mechanical and Aerospace Engineering at the Hong Kong University of Science and Technology (HKUST). Before his retirement in July 2010, he was Chair Professor of Mechanical Engineering, Associate Vice-President for Research & Development and the Dean of Fok Ying Tung Graduate School at HKUST. He got his PhD from Cambridge University in 1983. In 1984-1991, he was a professor and the Director of the Solid Mechanics Division at Peking University. In 1991-1995, he worked as a Reader at UMIST, Manchester, UK. After joined HKUST in 1995 as professor of mechanical engineering, he served as Associate Dean of Engineering (1998-2000) and the Head of Department of Mechanical Engineering (2002-2007). After his retirement, he continued to serve HKUST as Senior Advisor to President (or to VP-RD) on part-time basis and as Acting Dean of Engineering (2015-2016). In various time periods, he also worked with more than 10 universities in China, Singapore and Australia as honorary/guest professor.

Professor Yu's research interest has been focused on impact dynamics, engineering plasticity, energy absorption, textile and cellular materials, and nano-composites. In these fields, he has published 5 textbooks, 3 scientific monographs (all published in both English and Chinese), 420 journal papers, 250 international conference papers and 8 patents. The total citation is 15,000+ with H-index being 60. Over many years, he played core editorial roles in International Journal of Mechanical Sciences and International Journal of Impact Engineering. He is Fellow of ASME, IMechE and HKIE, as well as Overseas Fellow of Churchill College, Cambridge, UK. Due to his outstanding academic achievement, he was awarded Doctor of Science (ScD) by Cambridge University in 1995, and got the China Higher Education Science and Technology Award (1st Class) in 2001. In 2021, HKUST awarded him a prestigious University Honorary Fellowship.

Guidance

Conference Venue

Level 1, Parmelia Hilton Perth
Address: 14 Mill Street, Perth, WA, Australia



Argyle Ballroom – Opening ceremony, keynote and parallel sessions, and banquet

Swan Room –Parallel sessions

Stirling Room –Parallel session

Fremantle Room - Parallel session

Welcome Reception

Date: 3rd December 2023 Time: 18:00 – 21:00
Venue: Outdoor Piazza, Level 1, Parmelia Hilton Perth

Conference Banquet

Date: 4th December 2023 Time: 18:30 – 23:30
Venue: Argyle Ballroom, Parmelia Hilton Perth

Wifi connection

Network: Honors **Password:** Dec24!

Program

***Note: GS-General Session; SS-Special Session**

Sunday, 3rd December 2023

17:30-21:00	**Registration**
18:00-21:00	**Welcome function** *(Outdoor Piazza, Level 1, Parmelia Hilton Perth)*

Monday, 4th December 2023

8:00-8:30	**Registration**			
8:30-9:00	**Opening ceremony** *(Argyle Ballroom)* **Welcome to Country: Freda Ogilvie (Whadjuk / Balladong Noongar Elder)** **Official Welcome: Professor Hong Hao (ISIE2023 Chair)** **Opening Address: Professor Mark Ogden (Pro Vice-Chancellor, Curtin University)**			
9:00-10:30 (30 mins each keynote)	**Keynote presentation** *Argyle Ballroom* **Chairs: Professor Tianjian Lu and Professor Chengqing Wu** **"Rigid-Plasticity Revisited: Elastic Effect on Dynamic Deformation of Structures under Pulse Loading" by Professor Tongxi Yu** **"An Instrumented Taylor Impact Test to Obtain the Stress-strain Curves of Materials at the Hyper Velocity" by Associate Professor Takeshi Iwamoto** **" Effective Dynamic Contact Analysis using Parallel Domain Decomposition" by Professor Bassam A. Izzuddin**			
10:30-10:50	**Morning tea**			
	Argyle Ballroom	*Stirling Room*	*Fremantle Room*	*Swan Room*
10:50-12:35 **Session 1 (15mins each presentation)**	**GS1 Structural behaviour under dynamic loads (Chairs: D.P. Thambiratnam and Xiaowei Chen)**	**GS2 Dynamic loads (Chairs: S. Chung Kim Yuen and Velmurugan Ramachandran)**	**GS3 Structural behaviour under dynamic loads (Chairs: Tuan Ngo and K.M. Tse)**	**SS02-Part I Impact Behavior of Materials at Micro- and Nano-scales (Chairs: Xianqian Wu and Zhengjin Wang)**
	Paper No.118 Response of Masonry Buildings to Vehicular Crashes and Mitigation Strategies by M. Asad, **T. Zahra**, THT. Chan, Y, Zhuge and **DP. Thambiratnam**	**Paper No.013** The behaviour of a blast-driven ball bearing embedded in cylindrical explosive – the effect of placement of ball bearing by M.M. Hoare, **S. Chung Kim Yuen**, R.A. Govender, T.J. Cloete, and P.H. van der Merwe	**Paper No.119** Robust Design of CFS Connections to Prevent Progressive Collapse in Mid-Rise Buildings by Rajendra Prasad Bohara, Tan-Trac Nguyen, Tu Le, Huu-Tai Thai, and **Tuan Ngo**	**Paper No.056** High-velocity micro-particle impact on double-network hydrogels by Chen Duan, Jinlei Dong, Xianqian Wu, and **Zhengjin Wang** **(SS02** Invited Talk**)**

	Paper No.047 An analysis of projectile hypervelocity impact on honeycomb sandwich shields based on the finite element and smoothed-particle hydrodynamics adaptive method by Ying Chen and **Xiaowei Chen**	**Paper No.275** Indentation Performance, Crashworthiness Characteristics, and Multi-Objective Optimisation of the Auxetic Metamaterial by Niranjan Chikkanna, Shankar Krishnapillai, and **Velmurugan Ramachandran**	**Paper No.065** Evaluation of combat helmet performance against ballistic impact-induced head injuries – experimental and numerical investigation by **K.M. Tse**, M. Rodriguez-Millan, I. Rubio, A. Olmedo, J.A Loya, and M.H Miguélez	**Paper No.073** Micron-thick Carbon Nanotube Films with the Highest Impact Resistance via Micro-ballistic Impact by Kailu Xiao, Peifei Zhang, **Dongmei Hu**, Chenguang Huang, and Xianqian Wu
	Paper No.018 Vulnerability Analysis of Steel-concrete Composite Bridges under Combined Actions of Explosion and Fire by **Pan Yanyang**, Tian Wenyi, Jiang Jinghui, and Xia Chaoyi	**Paper No.033** Novel Measurement Method for Micro-Impact Testing Based on Electromagnetic Phenomena by **Tadaharu Adachi** and Yuki Nalata	**Paper No.125** A biomechanical evaluation of 'liquid' helmet for traumatic brain injury mitigation by Qifang Hu, Guoxing Lu, and **K.M. Tse**	**Paper No.058** Multi-scale modeling of ballistic performance of Kevlar fabrics under the impact of projectiles at different length scales by **Zhaoyang Hou,** Chen Duan, and Zhengjin Wang
	Paper No.002 Foreign object damage of the leading edge of aeroengine blades: an experimental, numerical and theoretical investigation by **Hongbo Zhang** and Dayong Hu	**Paper No.240** Damage Characteristics of Ship's Double-Layer Structure Subjected to Underwater Explosion by **Yuanxiang Sun**	**Paper No.088** Impact induced damage on reinforced concrete beam under cryogenic freeze-thaw cycles by **Kaiyi Chi**, Jun Li, and Chengqing Wu	**Paper No.063** Copper Hardness at 103 to 108 s-1 Strain Rates by **Y.P. Song**, X.Q. Wu, and C.G. Huang
	Paper No.039 Failure Analysis of Four-Corner-Clamped Laminated Glass (FCC-LG) Subjected to Blast Loading by **Yu Luo** , Suwen Chen , and Xing Chen	**Paper No.061** Data-Driven Super-Resolution Reconstruction of Two-Dimensional Blast Pressure Fields by **Yang Huang**, Shaojun Zhu, and Suwen Chen	**Paper No.089** Research on Taxiing Vibration Characteristics and Vibration Suppression Method of Wheel-ski Landing Gear Aircraft by **Qiaozhi Yin**, Zemin Niu, Hao Sun, Xiaohui Wei, and Hong Nie	**Paper No.066** Transverse impact properties of monofilaments by **Xudong Lei** and Xianqian Wu
	Paper No.004 Study on Crash Absorption by Ribbed Circular Tube for Railway Carbody in the Event of Level Crossing Accident by **Tomohiro okino**, and Hiroyuki sato	**Paper No.238** Experimental and numerical study of gas explosion from semi-submersible platform by **Jihao Shi**, He Zhang, Asif Sohail Usmani and Guoming Chen	**Paper No.113** Real time steel bridge blast analysis for the surface blast explosion by **Ashish Kumar Chaudhary** and Muthulingam Subramaniyan	**Paper No.165** Multiple Impact-Resistant 2D Covalent Organic Framework by **Weizhe Hao**, Yushun Zhao, Gong Cheng, Xiaodong He, Chao Sui, and Chao Wang
	Paper No.209 Design of novel multi-phase heterogeneous lattice materials with enhanced mechanical properties by **Fan Yang**, Yijie Bian, Puhao Li, and Hualin Fan	**Paper No.079** Numerical analysis of shell charge of underwater explosion shock wave initiation belt by **Haojun Qu**	**Paper No.117** Development of bio-inspired cladding for protecting civil structures against close-in explosion by **Tung T. Tran**, Ngoc San Ha, Duong Tran-Thanh, Jonathan Farley, and Luke Pascoe	**Paper No.255** Scaling law and high-performance design for impact resistance of metallic glass by **Yujie Cheng**, Jinlei Dong, Chenguang Huang, and Xianqian Wu
12:35-13:45	**Lunch**			

	Argyle Ballroom	*Stirling Room*	*Fremantle Room*	*Swan Room*
	SS03 Advance numerical simulation in designing of protective structures (Chair: Damith Mohotti)	**GS4 Material behaviour under dynamic loads (Chairs: Weifu Sun and Dong Ruan)**	**SS01-Part I Experimental techniques of dynamic properties of materials under complex loading conditions (Chairs: Yazhou Guo, Tao Suo and Yulong Li)**	**SS02-Part II Impact Behavior of Materials at Micro- and Nano-scales (Chairs: Xianqian Wu and Zhengjin Wang) and GS**
13:45-15:30 **Session 2**	**Paper No.194** Numerical modelling of dynamic energy absorbing behaviour of selective laser melting printed alsi7mg menger fractal inspired porous structures by Madhusha Bogahawaththa, **Damith Mohotti**, Paul J. Hazell, and Hongxu Wang **(SS03** Invited Talk**)**	**Paper No.008** Mechanical properties of corrugated lattice structures under compressive loading by **Weifu Sun** and Hang Zhang	**Paper No.093** Waveform Shaping Technique of Electromagnetic Hopkinson Bar by Jingbo Wang, Kaixiang Yang, **Yazhou Guo**, Weibin Wang, Tao Suo, and Yulong Li **(SS01** Invited Talk**)**	**Paper No.153** Mechanical Properties of Single and Assembled Carbon Nanotubes by **Yunxiang Bai**, Ming Quan Zhu, Fei Wei, and Zhong Zhang **(SS02** Invited Talk**)**
	Paper No.193 Prediction of blast-induced positive peak incident pressure using artificial neural networks by Chamodi Widanage, Kasun Wijesooriya, Chi King Lee, and **Damith Mohotti**	**Paper No.068** Influence of different density grading approaches on the mechanical response of additively manufactured lattice structures by C. Rodrigo, S. Xu, Y. Durandet, and **D. Ruan**	**Paper No.246** Peridynamic simulation for the damage patterns of glass considering the influence of rate-dependence and pre-defects - International Symposium on Impact Engineering by **Jinjin Xu**, Zihao Yang, Zhen Wang, Xuan Wang, Yulong Li, and Jieqiong Zhang	**Paper No.057** Energy Absorption of hydrogel films under micro-particle impact by **Chen Duan**, Jinlei Dong, Xianqian Wu, and Zhengjin Wang
	Paper No.190 Numerical Comparison of Hydrogen Deflagration and Detonation Events for Protective Structures by **Steven Linforth** and Tuan Ngo	**Paper No.069** Strain rate dependence of 3D printed continuous fiber reinforced composites by Jiahui Li, Shanqing Xu, Yvonne Durandet, and **Dong Ruan**	**Paper No.095** Research and Application of an Impact Fatigue Experimental Technology Based on Stress Wave Cyclic Loading by **Jianping Yin**, Xuanfu He, Zhibo Wu, Zhuang Miao, and Yinggang Miao	**Paper No.064** Geometrical Scaling Law for Laser-Induced Micro-Projectile Impact Testing by **Z.P. Gu**, Y.J. Cheng, K.L. Xiao, K. Li, X.Q. Wu, Q.M. Li, and C.G. Huang
	Paper No.195 Modelling blasts in computational fluid dynamics (CFD) - a simplified approach by D. Mohott, **K. Wijesooriya**, and S. Weckert	**Paper No.014** A continuum constitutive model for static and impact crushing of density-graded cellular material by Y.Y. Ding, **Z.P. Sun**, and V.P.W. Shim	**Paper No.135** Investigation of Evaluation of Dynamic Fracture Toughness Using Digital Image Correlation by **Shuichi Arikawa**, Shun Hattori, and Kenshin Kojika	**Paper No.154** Carbon nanotube composites with excellent impact resistance by **Mingquan Zhu**, Yunxiang Bai, Xianqian Wu, and Zhong Zhang
	Paper No.168 Analytical model on compressive arch action of PC sub-structures under column removal scenario by **Yintong Bao** and Kanghai Tan,	**Paper No.025** Data-physical Hybrid-driven prediction of peak stress in dynamic tension of concrete under the coupling of rate effect and size effect by **Yifan Liu**, Jie Zhang, Tingting Zhao, Zhiyong Wang, and Zhihua Wang	**Paper No.159** Compression-based training process to improve shape memory effect in Fe-Mn-Si alloy under impact loading by Qian Sun, **Yuto Kamo**, and Takeshi Iwamoto	**Paper No.160** Improving impact resistance of cover glass by ion exchange: a computational investigation by **Haihui Ruan** and Wei Wang

	Paper No.167 Numerical investigation on collapse performance of non-seismic designed PC beam-column joints based on advanced component-based joint model by Kanghai Tan and **Yintong Bao**	**Paper No.042** Rationally-designed self-shaped ceramics through heterogeneous green body compositions by **Zizhen Ding**, Hala Zreiqat, and Mohammad Mirkhalaf	**Paper No.245** A Method for Obtaining Model Parameters by **Jiali Ma**, Ziqi Li, and Yazhou Guo	**Paper No.180** A Theoretical Model of Impact Protection of Polyurethane Foam by **Huifeng Xi**
	Paper No.192 Numerical Study on High Speed Impact Resistant Rubberised Concrete Road Barriers by Sachinthani Karunarathna, **Steven Linforth**, Xuemei Liu, Ali Kashani, and Tuan Ngo	**Paper No.139** Design of Experiments and Numerical Validation of Additively Manufactured Blast-Resistant Lattice Structures by **Henrique Ramos**, Erik Pickering, Sara AlMahri, Kapil Krishnan, Jide Oyebanji, Zhongwei Guan, Genevieve Langdon, and Rafael Santiago	**Paper No.271** Rebound mechanism and control of hard main roof in deep mining roadway in Huainan Mining Area by **Denghong Chen**, Xinzhu Hua, **Pengfei Sheng** and Zhiqiang Yin	**Paper No.214** Preparation and impact dynamics characteristics of Titanium based lightweight composite materials by **Ning Luo**, Hanliang Liang, Yabo Chai, and Jianan Zhou
15:30-16:00	**Afternoon tea**			
16:00-17:45 **Session 3**	***Argyle Ballroom***	***Stirling Room***	***Fremantle Room***	***Swan Room***
	SS09 Shock behavior of materials and structures (Chairs: Paul J Hazell and Hongxu Wang) and GS	**GS5 Material behaviour under dynamic loads (Chairs: Qing Li and Jianguang Fang)**	**SS01-Part II Experimental techniques of dynamic properties of materials under complex loading conditions (Chairs: Yazhou Guo, Tao Suo and Yulong Li) and GS**	**SS07 Design, modeling and characterization of Mechanical Metastrtucture (Chairs: Changye Ni and Tianjian Lu) and GS**
	Paper No.198 Experimental Techniques for Interrogating the Shock Response of Materials by **Paul J Hazell**, **Hongxu Wang**, and JP Escobedo **(SS09** Invited Talk**)**	**Paper No.077** Explicit phase field fracture in elasto-plastic solids: rate and stress state dependencies by **Jianguang Fang**, Chengqing Wu, and Qing Li	**Paper No.204** Research on dynamic mechanical properties of concrete under different cooling conditions after high temperature by **Wei Wang**, Zhonghao Zhang, and Xiangyun Xu **(SS01** Invited Talk**)**	**Paper No.100** Multiple impacts of UHMWPE laminated plates: Numerical simulation by Jianhong Zhang, Rui Zhang, **Changye Ni**, Qiang Liu, Man Zhu, and **Tianjian Lu (SS07** Invited Talk**)**
	Paper No.097 Method of Constant Amplitude Cyclic Loading for Dynamic Mullins Effect Using a Modified SHTB System by **Wenxuan Du**, Qiong Deng, Jianping Yin, Zhibo Wu, and Yinggang Miao	**Paper No.083** Analytical Model for Predicting Fracture of Toughened Glass Panels by Hailstone Impact by **Yiwen Cui**, Nelson Lam, Shuangmin Shi, Guoxing Lu, Emad Gad, and Lihai Zhang	**Paper No.247** Comparative study on the dynamic compressive, tensile and flexural properties of soda-lime silicate glass-International Symposium on Impact Engineering by **Bin Jiang**, Yi Ding, Yazhou Guo, and Yulong Li	**Paper No.161** Dynamic Compression Behavior and Energy Absorption of Multi-walled Tube and Reinforced Aluminum Foam by Zhijia Zhang, Yongjing Wang, **Feng Jin**, Qiancheng Zhang, and **Zhenyu Zhao (SS07** Invited Talk**)**

	Paper No.150 Numerical Modelling of a Material Reactivity at High-Velocity Impact by **A.D. Resnyansky**	**Paper No.098** Dynamic behavior and a modified ductile fracture model of GH4169 at high strain rate and elevated temperature by **Miao Cao** and Jun Liu	**Paper No.248** Comparative study on the water droplet impact erosion behavior between stretched and casted aeronautical PMMA -International Symposium on Impact Engineering by **Xuan Wang**, Shengrong Chen, Jinjin Xu, Yulong Li, Guozhong Gao, and Jun Chen	**Paper No.257** Crushing Behaviour and Energy Absorption of Origami Tubes by Jianjun Zhang, Xiangxin Dang, **Jianxiang Wang**, and Guoxing Lu
	Paper No.250 Investigation of the Dynamic Mechanical Properties of Silicone Rubber Materials Filled with Silicon Micro-Particles by **Zhibo Wu**, He He, Lanting Liu, Wenxuan Du, Jianping Yin, and Yinggang Miao	**Paper No.105** Tailoring the dynamic instability behaviors of pure Tungsten via texture evolution by Xiukai Kan, Jingui Zhong, **Jianguo Li**, and Tao Suo	**Paper No.249** Ductile fracture of 2024-T4 Al related to stress triaxiality and lode angle-International Symposium on Impact Engineering by **Yi Ding**, Bin Jiang, Yazhou Guo, and Yulong Li	**Paper No.175** On Interlaminar fracture and cracking analysis of ultra-high molecular weight polyethylene fiber reinforced composite laminates by **Jian Deng**, Pengcheng Xiao, **Zengxian Wang**, Guangran Shao, Youlei Peng, and Tianjian Lu
	Paper No.015 An investigation of shock wave propagation in layered composites of different orientations by **Suman Shah**, Paul J. Hazell, Hongxu Wang, Juan P. Escobedo, Ali A.H. Ameri, and Jianshen Wang	**Paper No.129** Dynamic tensile properties of low-carbon steels used in road safety barriers and rate-dependent Johnson-Cook model by **Hoang Vu Le**, Fukun Xia1, Shanqing Xu, Dong Ruan, Hing-Ho Tsang, John Wheatland	**Paper No.259** Hopkinson Techniques for the impact fatigue experiments by K.B. Yuan, **W.G. Guo**, B.L. Li, S.H. Zhao, and J.H. Yang	**Paper No.133** Dynamic behavior of a 3D ceramic-based metamaterial with hollow nanolattices by **Jian Wei**, Yue Shen, **Haoxiang Wang**, Chaoyang Deng, Jinling Gao, Biwei Deng, Qi Wu, Jiagui Liu, and Tianjian Lu
	Paper No.096 Rate-dependent Tensile Mechanical Behavior of Polyurethane-urea Modified by Polyamide Acid Under Wide Strain Rate Loading by **He He**, Qiong Deng, Wenxuan Du, and Yinggang Miao	Paper No.176 Response and energy absorption characteristics of foam concrete under blast loads by **Yixuan Gao**, Xudong, Zu, Zhengxiang Huang, and Qiangqiang Xiao	**Paper No.075** On the Rear Stress Wave Loading from Hopkinson bar by Jianping Yin, Xuanfu He, **Zhongbin Tang**, Zhibo Wu, and **Yinggang Miao**	**Paper No.016** Post-blast experimental investigation of mechanical properties in Austenitic 316L, Ferritic 430, Duplex 2205 stainless steel, and Domex steel 700 S. Gholizadeh, **S Chung Kim Yuen**, S. L. George
	Left blank for banquet setup	**Paper No.267** Impact protection performance of amorphous alloy nanofilm by **Mingqiang Jiang**	**Paper No.273** A FEM-SPH Approach for the Simulation of blast-induced craters in calcareous sand foundation by **Jie Huang**, Zhouhong Zong, and Tuozhan Wu	**Paper No.277** Novel bionic snail shells to enhance energy absorption capabilities of thin-walled structures by **Tengfei Kuai**, Bing Feng Ng, and Rui Guo
18:30-23:30	**Banquet** ***(Argyle Ballroom, Parmelia Hilton Perth)***			

Tuesday, 5th December 2023

8:30-10:00	**Keynote presentation** ***Argyle Ballroom*** **Chairs: Professor Masaaki Itabashi and Associate Professor Wensu Chen** **"Electromagnetic Hopkinson bar: A powerful tool to study mechanical behavior of materials at high strain rates" by Professor Yulong Li** **"Origami Structures and Materials: Energy Absorption and Impact Mechanics" by Professor Guoxing Lu** **"Experimental investigation of steel plates subjected to underwater blasts: Determining 'holing'" by Professor Gerald Nurick**			
10:00-10:30	**Morning tea**			
10:30-12:15 **Session 4**	***Argyle Ballroom***	***Stirling Room***	***Fremantle Room***	***Swan Room***
	GS6 Structural behaviour under dynamic loads (Chairs: Norimitsu Kishi, Lihai Zhang and Yimiao Huang)	**SS06-Part I Frontiers of researches on impact engineering in Japan (Chair: Nobuaki Kawai)**	**SS05 Dynamic failure behaviors of fiber reinforced composite materials and structure (Chairs: Xin Li, Pengfei Wang and Zhenhua Song) and GS**	**GS7 Structural behaviour under dynamic loads (Chairs: Suwen Chen and Xihong Zhang)**
	Paper No.171 Impact response behavior of RC beams strengthened in flexure with FRP sheets having equal axial stiffness under low-velocity impact loading by **Norimitsu Kishi**, Masato Komuro, and Tomoki Kawarai	**Paper No.054** Impact Compressive Deformation Behavior of Artificial Pumice for Reinforcement of Shelter against Ballistic Ejecta by **Kohei Tateyama**, **Hiroyuki Fujiki**, Hisashi Sasaki, Nagahisa Ogasawara, and Hiroyuki Yamada **(SS06** Invited Talk**)**	**Paper No.254** Dynamic behavior of fiber metal composite structures by **Xin Li (SS05** Invited Talk**)**	**Paper No.109** Mechanical Behaviors of PVB- and Ionomer-Laminated Glass under Static and Blast Loads by **Xing Chen**, Yu Luo, and **Suwen Chen**
	Paper No.126 Dynamic Cross Tension Test of Resistance-Spot-Welded Joint of Electric-Arc-Furnace Steel Sheets by **Masaaki Itabashi**	**Paper No.048** Puncturer properties of thin film material at wide range of displacement rates by **Takinori Ueno**, **Hiroyuki Yamada**, and Nagahisa Ogasawara	**Paper No.060** Mechanical properties and failure mechanism of hierarchical helical carbon nanotube fibers under different strain rates by **Yangfan Wu**, **Pengfei Wang**, and Songlin Xu	**Paper No.242** Numerical Prediction of Direct Shear Failure in Fixed-end RC Beams Subjected to Close-in Blasts by **Ravi Mudragada** and Pradeep Bhargava
	Paper No.138 Uniform Blast Loading of Partially Supported Glass-Fibre Reinforced Polymer Panels by **Shivasi Mashau**, Christopher J von Klemperer, Steeve Chung Kim Yuen, and Genevieve S Langdon	**Paper No.023** Hypervelocity-Impact Damage Formation and Propagation in Multilayered Glass by **Nobuaki Kawai**, Kazuma Watanabe, and Sunao Hasegawa	**Paper No.107** Strength of Adhesively-bonded Dissimilar Materials Measured by Laser Shock Adhesion Test (LaSAT) by Aoi Takagi, Yuichi Hosoya, Kazuma Ogata, Yuto Kasuya, and **Akio Yonezu**	**Paper No.269** Progressive collapse-resistant performance of fully bolted connection with CFST column and composite beam by **Haokun Liu**, Shan Li, and J.Y. Richard Liew

	Paper No.227 The Study of penetrating characteristics of filled ceramic rod structures with corrugated aluminum plates by **Xiaokai Wei** and Xudong Zu	**Paper No.035** Development of technique to imprint sub-micron scale patterns on aluminum foil and plate using explosives and polymer nano-mold by **Shigeru Tanaka**, Kouki Hasegawa, and Kazuyuki Hokamoto	**Paper No.017** Temperature sensitivity of carbon nanotube fiber under dynamic loading by **Deya Wang** and Pengfei Wang	**Paper No.082** Experimental and analytical study on hail impact on aluminium cladding panels by **Shuangmin Shi**, Nelson Lam, Yiwen Cui, Guoxing Lu, Emad Gad, and Lihai Zhang
	Paper No.140 Static and Dynamic Experimental Studies of RC Beam-Column Assemblies under Middle-Column Removal Scenario by Zidong Zhao, **Zhi Yang**, Yi Li, and Hong Guan	**Paper No.050** Numerical analysis of the response of a multistable mechanical metamaterial to dynamic loading by **Rin Nagai**, Tomoaki Tsuji, and Tomohisa Kojima	**Paper No.231** Dynamic Failure Mechanism of Aircraft Composite Structure Under Impact of Hail Ice by **Zhenhua Song**, Dongling Guo, Canwen Yu, Xiaoxun Li, and Qiang Wang	**Paper No.059** Impact of a Ship against a Ring Type Crashworthy Structure by **Hongsheng Yang**, Fenghua Zhou, and Yuxuan Zheng
	Paper No.173 Stress Release Waves and Tensile Fragmentation Size in Viscoplastic Materials by **Bian Xu**, Hongsheng Yang, Yuxuan Zheng, and Fenghua Zhou	**Paper No.106** High-velocity Microparticle Impact Testing using Pulsed Laser Ablation; Understanding the Mechanism of Impact Resistance of Polymers and Grain Refinement of Metallic Materials by Miki Kajihara, Ryo Ichikawa, Hiroto Suzuki, and **Akio Yonezu**	**Paper No.101** Dynamic enhancement induced by interface for additively manufactured continuous carbon fiber reinforced composites by **Lanting Liu**, Qiong Deng, Ruifeng Wang, Xiaobin Hub, Mengjia Su, He He, Yongshuai Wang, and Yinggang Miao	**Paper No.030** Effect of Reflected Waves on Centrifugal model of Concrete Gravity Dam Subjected to Underwater Explosion by **Dequan Lei** and Zhuofeng Li
	Paper No.222 Numerical and Experimental Study of the Viscoplastic Behavior of Auxetic Structures by **Ondrej Jirousek**, Afdhal, and Nela Kr	**Paper No.080** Experimental study on high-velocity impact into granular materials at low gravity by **Masato Kiuchi**, Takaya Okamoto, Yuuya Nagaashi, Yukari Yamaguchi, Sunao Hasegawa, and Akiko M. Nakamura	**Paper No.183** Breaking the Trade-offs Between Different Mechanical Properties in Bio-Inspired Lattice Metamaterials by **Peng Wang**, Fan Yang, Pengfei Li, Ruicheng Wang, and Huali Fan	**Paper No.128** Design optimisation of safety roller barriers by Fukun Xia, Hoang Vu Le, Dong Ruan, Hing Ho Tsang, John Wheatland, and **Shanqing Xu**
12:15-13:30	**Lunch**			
	Argyle Ballroom	***Stirling Room***	***Fremantle Room***	***Swan Room***
13:30-15:30 **Session 5**	**GS8 Structural behaviour under dynamic loads (Chairs: Thong Pham and Kaiming Bi)**	**SS06 -Part II Frontiers of researches on impact engineering in Japan (Chairs: Nobuaki Kawai, Jianjun Zhang) and GS**	**SS11-Part I Recent advances in the protective design of structures against impact and blast loadings (Chairs: Masuhiro Beppu, Yifei Hao and Zhijie Huang)**	**SS04 Additive Manufacturing (3D Printing) in Construction and Protective Structures (Chair: Jonathan Tran) + GS**

	Paper No.237 Effects of Fibre Volume Fraction and Fibre Type on Impact Behaviour of Ultra High Performance Concrete Columns by **Thong M. Pham**, Harrison Hyde, Mayen J. Geu, Gary Goodall, Des Vlietstra	**Paper No.055** Mechanical characterization of Polymeric Lattice Structure Subject to Dynamic Loading by **Tomohisa Kojima**, Ryoya Kuriyama, Takahiro Kawano, Hiroyuki Yamada, Kohei Tateyama, and Tomoaki Tsuji **(SS06** Invited Talk**)**	**Paper No.149** Investigations of autoclaved aerated concrete walls subjected to blast loadings by Chunyuan Liu, **Yifei Hao**, and Shan Liu **(SS11** Invited Talk**)**	**Paper No.157** High-strain rate loading of additively manufactured TPMS metamaterials by **Nejc Novak**, Oraib Al-Ketan, Matej Vesenjak, and Zoran Ren **(SS04** Invited Talk**)**
	Paper No.052 Classification of Impact Force Profiles of Steel Pipes under Low Velocity Drop Weight Impact by Xu Zhang and **Kaiming Bi**	**Paper No.134** Dynamic FEM Analysis for Crashworthiness of Sidewalk-roadway Boundary Columns Considering Strain Rate Dependence by **Tsutomu Umeda** and Koji Mimura	**Paper No.120** Failure Behavior of RC Beams subjected to Close-in Explosion by **Masuhiro Beppu**, Makoto Nagata, and Hiroyoshi Ichino	**Paper No.151** 3D Printed Fiber-reinforced Concrete Structures Subjected to Dynamic impacts by **Jonathan Phuong Tran** and Vuong Nguyen
	Paper No.201 Impact-resistance characteristics of installed rubber cushion for RC beams subjected to consecutive low-velocity impact loading with constant energy by **Tomoki Kawarai**, Masato Komuro, Norimitsu Kishi, and Kentaro Suzuki	**Paper No.012** A Study on Measuring the Impact Force by Using Off-diagonal Component of Piezoelectricity in PVDF by **Chong Gao**, Naoko Sakata, Takeshi Iwamoto, Yoshikazu Tanaka, and Takayuki Kusaka	**Paper No.244** Study on Dynamic Similarity of Elastic Shell during Water Entry by **Haisu Liu**, **Fei Xu**, Wei Feng, and Xinzhe Chang	**Paper No.207** Invertible neural networks for performance-based design of strain-hardening cementitious composites by Jie Yu, Kequan Yu, Jiangtao Yu, and **Yiwei Weng**
	Paper No.184 Applicability of numerical analysis method on steel posts in rockfall protection fence anchored in plain concrete retaining wall under impact loading by **Shigeki Hayashi**, Masato Komuro, Tomoki Kawarai, and Norimitsu Kishi	**Paper No.102** Hypervelocity Impact Behavior of Direct Energy Deposition Fabricated Aluminum, Titanium Alloy, and Their Functionally Graded Materials by **Ziyi Su**, Masahiro Nishida, and Yoshimi Watanabe	**Paper No.187** Numerical simulation on dynamic behavior of diamond-shaped wire net under drop-weight impact loading by **Masato Komuro**, Tomoki Kawarai, and Norimitsu Kishi	**Paper No.218** Additive manufacturing using a body-fitted topology optimization approach by **Zicheng Zhuang** and Yiwei Weng
	Paper No.236 Research on anti-rollover control of helicopter taxiing turning based on lateral-load transfer ratio by **Hao Sun**, Qiaozhi Yin, Jiawei Wang, Zemin Niu, and Xiaohui Wei	**Paper No.265** Ballistic Performance of Origami Sandwich Panels by **Jianjun Zhang**, Buyun Su, and Guoxing Lu	**Paper No.256** Study on mechanical response characteristics of anchorage under dynamic disturbance by **Zhiqiang Yin**, Chao Qi, Jucai Chang, Pengfei Sheng, Denghong Chen, and Zhiyu Chen	**Paper No.026** Improving the impact resistance of protective structures by using bio-inspired fish-scale designs by **Hari Bahadur Dura**, Paul J. Hazell, and Hongxu Wang
	Paper No.229 Effects of Fibers on Impact Performance of Prefabricated Segmental Geopolymer Concrete Beams Prestressed with CFRP Tendons by **Duong T. Tran**, Thong M. Pham, and Hong Hao	**Paper No.213** Experimental Investigation on Localized Impact Resistance of Origami-Inspired Tri-Directional Auxetic Metastructure by **Qiusong Yang**, Zhejian Li, Hong Hao, and Wensu Chen	**Paper No.224** Stress wave attenuation performance of metaconcrete rod structure with low-frequency bandgap by **Cheng Xu**, Wensu Chen, Hong Hao, Thong M. Pham, and Kaiming Bi	**Paper No.174** Integration of Reinforcement in 3D Printed Concrete Beams through Pre-Designed Notch and Post-Reinforcing Method by **Yangyunzhi Gao**, Shenyi Lu, Shin Hau Bong, and Hongjian Du

	Paper No.199 Absorbing effects of cushion rubber on load-carrying behavior of RC beams strengthened in flexure with FRP sheet under impact loading by **Kentaro Suzuki**, Masato Komuro, Tomoki Kawarai, and Norimitsu Kishi	**Paper No.032** Mechanical Properties of Truncated-octahedron-based Metamaterials by **Sachiko Ishida**, Xinyi Zhang, Guoxing Lu, and Kohei Okayasu	**Paper No.123** Local Deformation of RC Slabs Subjected to Projectile Impact by **Koki Mori**, Masuhiro Beppu, and Hiroyoshi Ichino	**Paper No.276** Impact behavior of novel axisymmetric chiral auxetic metamaterial by Anja Mauko, Nejc Novak, Miran Ulbin, Matej Vesenjak, and **Zoran Ren**
	Paper No.108 The Development of Torsional Split Hopkinson Bar Directly Drived by Electromagnetic Force by **Xiquan Jiang**, Chaohao Kan Qianghua Zhang, and Zhengzhong Shi	**Paper No.031** Based on BP Artificial Neutral Network: Prediction of interface bond strength between CFRP layers and reinforced concrete by **AL-Bukhaiti Khalil**,Yanhui Liu, Shichun Zhao, and Daguang Han	**Paper No.049** Effects of polyurea coating on the blast resistant performance of concrete plates under contact explosion by **Hiroyoshi Ichino**, Masuhiro Beppu, Toshiya Yamauchi, and Shuhei Fukui	**Paper No.196** Evaluation of Impact Properties of Metallic Materials for Energy Facilities in Extreme Conditions, **Hyung-Seop Shin**, Kyung-Oh Bae, Un-Bong Baek
15:30-16:00	**Afternoon tea**			
	Argyle Ballroom	***Stirling Room***	***Fremantle Room***	***Swan Room***
	GS9 Material behaviour under dynamic loads (Chairs: Woei-Shyan Lee and Jun Li)	**SS13 Extreme Loading on Structures (Chair: M.A. Iqbal)**	**SS11-Part II Recent advances in the protective design of structures against impact and blast loadings (Chairs: Masuhiro Beppu, Weiqiang Wang and Andrew Lacey) + GS (special)**	**GS10 Material behaviour under dynamic loads (Chairs: Zhengping Sun and Takuma Matsuo)**
16:00-17:45 **Session 6**	**Paper No.009** Impact Deformation Behaviour and Microstructural Evolution of High Entropy Superalloy by **Woei-Shyan Lee**, Wei-Ting Ye, and **Ting-Ju Chen**	**Paper No.094** Numerical prediction of ballistic resistance of reinforced and reinforced-prestressed concrete targets by Kamran and **M A Iqbal (SS13** Invited Talk**)**	**Paper No.116** Failure Mechanism of Steel Pipe Beam with Flange Joints by Static and Dynamic Loading Tests by **Toshiyuki Horiguchi**, Hiroshi Kokuryo, Masuhiro Beppu, and Nobutaka Ishikawa **(SS11** Invited Talk**)**	**Paper No.034** Influence of Deformation Rate and Printing Direction on the Dynamic Response of Additively-manufactured Polymeric Lattices by **Z.P. Sun,** and Y.Y. Ding
	Paper No.081 Comparative Analysis of Modeling Methods for Hydrogen-Air Detonation by **Di Chen**, Chengqing Wu, and Jun Li	**Paper No.090** Performance evaluation of Concentric and Eccentric braces under Earthquake loads by **Prateek Narayan Panda**, Rakshit Selot, Anupam Chakrabarti, and Vipul Prakash	**Paper No.228** Experimental investigation on the behavior of hybrid FRP-concrete-steel double-skin tubular column against contact explosion by **Weiqiang Wang**, Zibo Wang, and Zhilong Xiong	**Paper No.053** Development of a method for detecting corrosion under painted steel sheets using the acoustic emission (AE) method utilizing thermal shock caused by rapid cooling by **Keito Togami** Sunghyuk Choi, and **Takuma Matsuo**
	Paper No.253 A new yield function for typical metals under dynamic complex stress state loading by **Ning Li** and Yazhou Guo	**Paper No.091** Tensile behaviour of concrete subjected to high rate of loading by using split Hopkinson pressure bar by **Mohammad Mohsin Khan** and Mohd. Ashraf Iqbal	**Paper No.104** A comparative study of the responses of twin tunnels to internal BLEVE and TNT explosions by **Ruishan Cheng**, Wensu Chen, and Hong Hao	**Paper No.070** AlCoCrFeNi High Entropy Alloy: fabrication techniques and mechanical properties under the extreme condition by **Ali Arab** and Chunwei Zhang

	Paper No.169 Crushing behavior and energy absorption of sierpinski fractal inspired multi-cellular structures by **Jianxing Hu**, Botao Liu, Jianpeng Zeng, Jiao Jia, and Xianqian Wu	**Paper No.092** Behaviour of Ceramic-Metal Composite Shield under Spherical Projectile Impact by **Kailash Kumar**, M.A Iqbal, and P.K Gupta	**Paper No.155** Advancing Blast Fragmentation Simulation of RC Slabs: A Graph Neural Network Approach by Qilin Li, **Zitong Wang**, Wensu Chen, Ling Li, and Hong Hao	**Paper No.261** Forging Process-Induced Improvements in Dynamic Performance of High-Entropy Alloys by **Bing Du**, Yulong Li, Dongyang Qin, and Muhammad Atif
	Paper No.197 Evaluation of ductile-brittle transition temperature due to thermal pre charged hydrogen in type 304 stainless steel by **Un Bong Baek**, Kyung-Oh Bae, Jeayeong Park, Jong Seo Park, and Thanh Tuan Nguyen	**Paper No.067** Experimental Study of Ballistic Evaluation of Reinforced Concrete Slabs with and without Transverse Reinforcement under Hard Projectile by **Ajay Kumar** and M. A. Iqbal	**Paper No.142** A theoretical fragment model with coupled fracture criterion for concrete block subjected to blast loads by **Shuai Yang,** Jianguo Ning, and Xiangzhao Xu	**Paper No.185** Investigating the Effect of Meso-structures on the Compressive Mechanical Behaviors and Failure Characteristics of Concrete Based on the 3D Meso-scale Finite Element Analysis by Wangjia Wei, **Yingqian Fu**, Xinlu Yu, Xinlong Dong, and Fenghua Zhou
	Paper No.003 Effect of steel fiber orientation on dynamic compression properties of UHPC based on finite element analysis by **Yekai Yang** and Chengqing Wu	**Paper No.085** Strain Rate Effect on Compressive Strength of Normal and Ultra-High Strength Concrete by **Mohit Bisht** and M A Iqbal	**Paper No.219** High Rate Compression Tests of Laser Sintered Polymeric Materials by **Zoltan Major**, Michael Lackner, Anna Hössinger-Kalteis, Jan Falta, Tomas Fila, Ondrej Jirousek, Fatma Karayagiz, and Ubiratan Santos Freitas	**Paper No.084** Estimation of Propagation Paths of Acoustic Emission Wave in Composite Cylinder by **Asuka Ohashi** and Takuma Matsuo
	Paper No.226 Influence of FRP SIP Formworks on Impact Response and Capacity of Advanced Bridge Deck by **Emad Pournasiri**, Thong M. Pham, and Hong Hao	**Paper No.114** Experimental study of double containment structures with steel liner of Indian PHWR against hard missile impact by **Mohd Asif** and M.A.Iqbal	**Paper No.220** High Rate Tensile Tests of Thermoplastic Composites by **Zoltan Major**, Andreas Kapshammer, Michael Lackner, Johannes Künstler, János Birtha, Máté File, and Tamás Mankovits	**Paper No.251** Performance of Green Concrete Mixes Containing Slag Cement and Recycled/Lightweight Aggregates against High-velocity Projectile Impact by **Jie Zhang** and Leong Hien Poh
17:45-18:00	**Closing ceremony**			

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