

Parallel Sessions

Tue, 20 Sep. 16:45-18:15	S1	Projects and material of tension & membrane structures(WG6-1)		
	Chair(s): Naoya Miyasato and Xiaofeng Wang			
	ID	Speaker	Title of the paper	Author(s)
	12	Shichang Zhang	Analysis and design of the accessory structure under the large deformation of a flexible roof	Shichang Zhang, Xiaoming Xu, Gao Feng, Peng Huang, Bin Luo, Weizhou Shi, Qing Fang
	29	Lichen Wang	Experimental research on mechanical properties of CFRP tendons-wedge loaded under transverse compressive loading	Lichen Wang, Xiwen Zheng
	304	Zhengyi Kong	Experimental and numerical analysis of construction process for a saddle-shaped canopy roof in a large stadium	Zhitao Li, Dongyun Jia, Congying Gan, Qinglin Tao, Chenxiao Zhang, Zhengyi Kong, Rencai Jin
	343	Liulu Guo	Study on mechanical properties of prestressed steel cables	Liulu Guo, Hongbo Liu, Zhihua Chen
	393	Migico Sing	PTFE Membrane Roof over Tennis Court of Royal Selangor Golf Club Kuala Lumpur Malaysia	Migico Sing, Kok Keong Choong, Azri Hariz Che Malid, Chong Kiat Ng
	474	Marta Karczewska	BIM in tensile membrane construction: Towards interoperability in a parametric environment	Marta Karczewska
	S2	Realized Metal Projects (WG8-1)		
	Chair(s): Zhi Ma and Xiaoqun Luo			
	ID	Speaker	Title of the paper	Author(s)
	162	zhangjianing cheng	Design and analysis of an aluminum alloy spatial structure on Sansha Island	Zhangjianing Cheng, Xiaonong Guo, Shaohan Zong
	169	Yunjun Li	Mechanical behavior of the complex intersection steel roof truss in TNFC stadium	Jian Xie, Minghua Wang, Yunjun Li;Shiyu Yang
	261	Yingying Shang	Research on key construction technology of large-span orthogonal arch truss hyperbolic roof	Yingying Shang, Zunsheng Xing, Yiyu Zhang, Shangrui Jia, Suyu Liu
	535	Xi Zhu	Structure design of the steel roof of Hangzhou Xiaoshan International Airport Terminal 4	Jian Zhou, Xi Zhu, Ruifeng Wang
	559	Yang Xiao	National Ski Jumping Center (Xue Ruyi) Overall design strategy for the structure	Yang Xiao, Ge Jiaqi, Li Qingxiang, Miao Lei, Cui Juan, Zhu Duo'e, Yang Zhenrong

Tue, 20 Sep. 16:45-18:15	S3	Concepts for Sustainable Innovation in Construction of Timber and Bio-based Spatial Structures -1 (WG 12-1)		
	Chair(s): Tetsuo Yamashita and Yinlan Shen			
	ID	Speaker	Title of the paper	Author(s)
	52	Nicolas Prevost	Building crossings in wicker: flexible construction of a post-formed footbridge in active bending stiffened during service phase	Nicolas Prevost, Marc Leyral, Marc Hymans, Albin breugnot, Quentin Chef, Sylvain Ebode, Wided Cherif
	140	Koichi Imamura	Buckling experiment of timber arches formed by bending	Koichi Imamura, Tetsuo Yamashita
	143	Lasse W. Rahbek	Stock optimization of naturally curved wood logs on freeform truss structures	Lasse W. Rahbek, Carsten R. Terp, Umberto Alibrandi, Poul H. Kirkegaard
	171	Gengmu Ruan	Planar rectangular, slide-in reciprocal frame structures using salvaged timber and wooden nails	Gengmu Ruan, Günther H. Filz, Gerhard Fink
	408	Denis Grizmann	Characterization of mechanical properties and numerical modeling approaches for mycelium composites	Denis Grizmann, Ulrich Spittel, Dana Saez, Martin Trautz, Anett Werner
	547	Sokol Phon	Basic research on structural properties of bamboo arched reciprocal frame structure with joinery by means of PVC pipe	Sokol Phon, Sovannara Srun, Yilin Lee, Koichiro Ishikawa
	S4	Computational methods for spatial structures and collapse (WG 13-1)		
	Chair(s): Carlos Lazaro and Jianguo Cai			
	ID	Speaker	Title of the paper	Author(s)
	15	Shuxiang Zhang	TCTM - Analysis program of complex thin-walled member based on Umansky and Vlasov theory	Shuxiang Zhang, Qilin Zhang, Yanke Tan;Xinye Li, Zhiguo Chang
	70	Zhijie Zhang	Research on the collapse performance and collapse capacity improvement method of fabricated free-form single-layer grid shell	Zhijie Zhang, Ruoqiang Feng
	116	Yusuke Sakai	A shape design method of discrete cylindrical structures tiled with auxetic hexagonal units	Yusuke Sakai, Makoto Ohsaki
	160	Simon Thissen	Numerical analysis of sheet metal folded sandwich core structures	Simon Thissen, Marcel Görz, Peter Middendorf
	545	Yuxiang Cai	Parallelized implementation of finite particle method for structural collapse analysis in urban area	Yuxiang Cai, Yanfeng Zheng , Jingzhe Tang,Yaozhi Luo

Tue, 20 Sep. 16:45-18:15	S5	Sustainable Heritage: Challenges and Strategies in the Preservation and Conservation of 20th Century Historic Concrete Shells-1(WG17/WG5-1)		
	Chair(s): Marisela Mendoza and Stefano Gabriele			
	ID	Speaker	Title of the paper	Author(s)
	88	Matthew Gordon	Reality capture and site-scanning techniques for material reuse planning	Zhijia Xiong, Matthew Gordon, Brandon Byers, Catherine De Wolf
	115	Masafumi Tanaka	A study on the structural system and history of the Former Kagawa Prefectural Gymnasium	Masafumi Tanaka, Noriyuki Kawanishi, Mituo Inagaki, Ryoich Shibata
	161	Jonathan M. Broyles	Revisiting the Viipuri Library: Assessing performance and design trade-offs in custom ceiling geometry	Jonathan M. Broyles, Ian P. Self, Nathan C. Brown
	232	Yuta Koda	Preliminary research of preprocessing of images for ceiling damage inspection using machine learning	Yuta Koda, Ken’Ichi Kawaguchi, Teruhiro Mizumoto, Yuki Matsuda
	485	Mauricio Luzuriaga	Cristo del Consuelo church in Ecuador by Luis Monsalve. A replica of Candela's San Vicente de Paúl chapel	Mauricio Luzuriaga
	S6	Aluminum Alloy Structures - 1		
	Chair(s): Huiyong Ban and Yuanwen Ouyang			
	ID	Speaker	Title of the paper	Author(s)
	202	Ruoqiang Feng	Application of 6A13-T6 high-strength aluminum alloy grid structure	Ruoqiang Feng, Changjun Zhong
	250	Jiaojie Ying	Preparation of technical specification for aluminum alloy space frame structures	Hongbo Liu, Jiaojie Ying, Yuechen Xiong, Zihua Chen
	345	Wenhao Shi	Research status and prospect of modular rapid detachable biological detection aluminum alloy building structure system	Zihua Chen, Wenhao Shi, Hongbo Liu
	523	Fengjie Tan	Comparison of mechanical performance and stable capacity between aluminum alloy- and steel spatial grid structure in the process of fire	Fengjie Tan, Jiachun Cui

Tue, 20 Sep. 20:00-21:30	S7	Masts and Towers (WG4)		
	Chair(s): Christopher Robeller and Xudong Zhi			
	ID	Speaker	Title of the paper	Author(s)
	5	Christopher Robeller	Castanea Sativa Reciprocal Frame, inspired by Friedrich Zollinger	Christopher Robeller
	51	Jun Gong	Effect of fold-line transmission tower-line system on seismic responses of long-span truss structures in UHV substation	Jun Gong, Yongbo Shao, Xudong Zhi, Yipeng Du
	175	Patrick Schäferling	Topological optimization of lightweight tower systems for onshore wind turbines	Patrick Schäferling, Matthias Beckh
	S8	ETFE Film Applications (WG6-2)		
	Chair(s): Stefan Lehnert and Jianhui Hu			
	ID	Speaker	Title of the paper	Author(s)
	39	Hiroshi Aruga	New ETFE film with a glass-like appearance for architectural applications	Hiroshi Aruga, Atsushi Nomura, Kazuhiro Tanishima
	75	Lemei Wang	Design and construction of a large-span integrally tensioned structure with ETFE roof	Lemei Wang, Tao Wei, Wenying Zhang, Jinsong Xiao
	220	Yongsheng Yan	Experimental study on the photoelectric-photothermal-mechanical properties of new PV-ETFE foils	Yongsheng Yan, Wujun Chen, Jianhui Hu, Jian Zhang, Xuetao Zhao
	249	Jinhe Chen	Influence of high and low temperatures on tensile properties of ETFE film	Jinhe Chen, Minger Wu, Hiroshi Aruga
	268	Xiaofeng Wang	Influence of wrinkling deformation on the bearing capacity of ETFE cushions	Xiaofeng Wang, Xujing Cao, Yang Na, Qingshan Yang
	392	Xiaoqun Luo	Comparison of application of STFE and ETFE membrane material in roof structures	Jiangyu He, Xiaoqun Luo, Qilin Zhang

Tue, 20 Sep. 20:00-21:30	S9	Buckling of Metal Spatial Structures - 1 (WG8-2)		
	Chair(s): Hua Deng and Xiongyan Li			
	ID	Speaker	Title of the paper	Author(s)
	134	Midori Hashimoto	Elastic buckling mode of cylindrical lattice shell roofs made of H-shaped steel	Midori Hashimoto, Tetsuo Yamashita
	315	Baoxin Liu	Approximate Equation for Evaluating Global Buckling Load of Single-Layer Cylindrical Space Frames with Crossing Pattern	Baoxin Liu, Pei-Shan Chen, Xiangdong Yan, Jialiang Jin
	330	Yang Zheng	Stability analysis of cable-stiffened latticed shells	Yang Zheng, Pengcheng Li, Shibo Chu, Hao Wang, Bin Jian, Zhigang Zhang
	333	Xiaoxin Qian	Buckling characteristics of key parts of 1.5-layer space frames with lap-units	Xiaoxin Qian, Jialiang Jin, Pei-Shan Chen
	S10	Concepts for Sustainable Innovation in Construction of Timber and Bio-based Spatial Structures -1 (WG 12-2)		
	Chair(s): Minjuan He and Yinlan Shen			
	ID	Speaker	Title of the paper	Author(s)
	142	Takuo Nagai	Study on mechanical properties of reed and bending-active characteristics of reed-bundled column	Takuo Nagai
	287	Jingxian Zhao	Research Progress and Engineering Practice of Glulam Space Frame Structures	Zhihua Chen, Jingxian Zhao, Hongbo Liu, Shixing Zhao, Shuheng Yang, Jinyuan Liu
	384	Ana Gatóo	Physical to digital: Understanding the flexibility of engineered timber through kerfing	Ana Gatóo, Antiopi Koronaki, Michael H. Ramage
	411	Liam Lasting	Terrene: Sustainable Shellular Structures	Liam Lasting, Isabella Lee, Laia Mogas Soldevila, Masoud Akbarzadeh
	431	Markus Hudert	Deep Learning enhanced robotic fabrication of timber-to-timber connections with densified hardwood nails	Markus Hudert, Morten From Elvebakken, Mark Meagher, László Mangliár, Xuping Zhang, Lukas Esterle
	486	Cong Zhang	Damaged timber dowel-type connections and the application of self-tapping screw reinforcement	Cong Zhang, Su-duo Xue

Tue, 20 Sep. 20:00-21:30	S11	Optimisation Methods (WG 13-2)		
	Chair(s): Kai Bletzinger and Ruoqiang Feng			
	ID	Speaker	Title of the paper	Author(s)
	34	Ruoqiang Feng	Finding diverse and competitive designs of truss structures	Ruoqiang Feng, Qi Cai
	37	Shaojun Zhu	Generating kinematically-stable 2d trusses for topology optimization by reinforcement learning and graph-embedding	Shaojun Zhu, Makoto Ohsaki, Kazuki Hayashi
	170	Abtin Baghdadi	Application of the geometrical-based mathematical method for classification and investigation of two-dimensional structural elements toward using additive manufacturing	Abtin Baghdadi, Neira Babovic, Harald Kloft
	253	Yafeng Wang	Topology optimization of active structural systems	Yafeng Wang, Ole Sigmund
	300	Vahid Koliyae	Optimization of architectural and structural parameters of tall buildings in the early stage of design regarding along wind effect: considering outrigger structural system and architectural plan shapes	Vahid Koliyae, Matin Alaghmandan, Farzad Barazandeh
	396	Bunji Izumi	A systematic mapping study of the optimization methods of structures in architectural design	Bunji Izumi, Nathalie Labonnote, Anders Rønnquist, Bendik Manum
	S12	Advanced Manufacturing and Materials, 3D-Printing and Molding-1 (WG21-1)		
	Chair(s): Arno. Pronk and Jianguo Cai			
	ID	Speaker	Title of the paper	Author(s)
	61	Lukas Gosch	A controlled shaping method through the shrinkage of clay	Lukas Gosch, Hana Vašatko, Julian Jauk, Elizabeta Šamec, Irena Živcović, Milena Stavríc
	64	Arno Pronk	The Ice Torch	Arno Pronk*, Iranzu V. Marina López de Dicastillo a, Vincent Staat a, Jody Tissen
	92	Abtin Baghdadi	Optimization of building floor beam layout by optimization algorithms regarding the concrete printing techniques	Abtin Baghdadi, Robin Doerrie, Harald Kloft
	122	Arno Pronk	Ice composite research	Au Arno Pronk*, Petricica Marian Lucian, Willem Vissers
	375	Yangqing Liu	Practical calculation method for inertia moment of a curved Miura origami-patterned tube	Yangqing Liu, Qin Yu, Tian Deng, Dongping Mei, Jianguo Cai
	467	Mohamed A. Ismail, Emily Baker	Zip-formwork: Fabrication of shape-optimized concrete structures for the Global South	Mohamed A. Ismail, Nebyu Haile, Caitlin T. Mueller, Edmund O. Harriss, Emily Baker

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S13	Retractable and Other Tension Structures (WG6-3)		
Chair(s): Sudarshan Krishnan, Hiroki Tamai and Jianhui Hu			
ID	Speaker	Title of the paper	Author(s)
48	Shuo Ma	Deployment analysis of a clustered hyperbolic paraboloid cable net	Shuo Ma, Kai Lu, Muhao Chen, Robert E. Skelton
336	Yu Xue	Experimental study of a new cable dome form with continuous cables	Yu Xue, Yaozhi Luo
369	Massimo Majowiecki	The new egyptian army stadium in Cairo: a cable suspended roof structure	Massimo Majowiecki, Stefano Pinardi, Giovanni Berti, Elisa Sammarco, Giuliano Aloisio, Monica Mingozi
405	Mark Waggoner	Micro-Operable ETFE Panels at SoFi Stadium	Mark Waggoner, Jeff Thompson, Martin Jenni, Jeffrey Carpenter
560	Igor G. Siotor, Martin Jenni	Use of Lightweight Technology for Kinetic Architecture	Igor G. Siotor, Martin Jenni, Thomas J. Wuerch
274	Song Yinbo	Configuration measurement and inflating failure analysis of full-scale four-layer ETFE cushion based on 3-D photogrammetry	Song Yinbo, Chen Wujun, Zhao Bing, Hu Jianhui, Lu Jian, Cai Jing
S14	Connection Design of Metal Spatial Structures (WG8-3)		
Chair(s): Kok Keong Choong and Guojun Sun			
ID	Speaker	Title of the paper	Author(s)
13	Yaxin Li	Connection detailing for scissor-type deployable structures	Yaxin Li, Sudarshan Krishnan
53	Niki Georgiou	Comparative analysis of bar linkage systems based on the effective crank-slider method	Niki Georgiou; Marios C. Phocas
295	Ji Ma	Study on mechanical behavior of welded hollow spheres joint with penetrated sleeves in truss string structure	Guojun Sun, Ji Ma, Jinzhi Wu, Su-duo Xue
494	Xiaofei Gao	Study on the failure mechanism and design method of the ear-plate connection join	Xiaofei Gao, Guojun Sun, Rundong Yue, Jinzhi Wu, Yigang Zhang
317	Hao Wang	Mechanical performances of single layer latticed domes with SLO nodes	Dabin Yang, Kai Fan, Yi Sun, Hao Wang
270	Hiroyuki Tagawa	Proposal of arc- and spiral-shaped Miura-ori and its application to the design of large roof architecture	Hiroyuki Tagawa, Nanami Yoshioka, Toshitomo Suzuki

Tue, 20 Sep. 21:45-23:15	S15	Concepts for Sustainable Innovation in Construction of Timber and Bio-based Spatial Structures -3 (WG12-3)		
	Chair(s): Minjuan He and Christopher Robeller			
	ID	Speaker	Title of the paper	Author(s)
	86	Kan Shiratori	Formfinding and buckling analysis of three-way kagome timber latticed shells using general-purpose FE software	Kan Shiratori, Tetsuo Yamashita
	94	Amin Adelzadeh	Structural performance of the grain-informed glued butt joint system for a large-span segmented CLT shell structure	Amin Adelzadeh*, Hamed Karimian-aliabadi, Marcel Muster, Christopher Robeller
	156	Hannes Löschke	Assembly of lamella roof shell structures	Hannes Löschke, Alexander Stahr, Ryan Hallahan, Marius Zwigart
	266	Ken Noda	Structural design of CLT shells interconnected via multidirectional link elements	Ken Noda, Yoshiharu Kanebako
	332	Mingxi Xu	Static stability of single-layer cylindrical glued timber reticulated shells with X-shaped joints	Mingxi Xu, Wenbin Chen, Jie Zhong, Xuhai Li
	360	Eiesuke Mitsuda	Structural design of Suspension-Arch Structures with members cut from the CLT panels, and Development of its joint system	Eisuke Mitsuda, Yunosuke Ohbayashi
	S16	Advanced Manufacturing and Materials, 3D-Printing and Molding-2 (WG21-2)		
	Chair(s): A. Pronk and Yangqing Liu			
	ID	Speaker	Title of the paper	Author(s)
	65	Arno Pronk	Buoycrete, a light-weight concrete	Arno Pronk*, Guido Visch
	84	Tara Habibi	Use of fiber-polymer composites in bending-active structures	Tara Habibi, Landolf Rhode-barbarigos, Thomas Keller
	179	Xiaoyan Teng	Topology optimization of static stiffness for a multi-material structure using multi-revolution scheme	Xiaoyan Teng, Chuangang Wang, Xudong Jiang
	558	Yelda Gin	Robotic 3D printing with earth: A case study for optimisation of 3D printing building blocks	Yelda Gin, Kamal Haddad, Wassim Jabi, Darshil U. Shah, Michael H. Ramage
	362	Man Chen	Design, fabrication, and characterization of composite architected units with embedded 3D-printed lattice	Man Chen, Xianhua Yao, Lihua Zhu, Feng Li, Nan Hu*
	231	Xiaoyang Lin	Design for 3D printing models via layout and geometry optimization considering overhang constraints	Xiaoyang Lin, Jun Ye, Hongjia Lu

Tue, 20 Sep. 21:45-23:15	S17	Innovation in New Concepts and Projects - 1		
	Chair(s): Minger Wu and Jinghai Gong			
	ID	Speaker	Title of the paper	Author(s)
	77	Hamid Eldarwich	Conceptual Investigation on the Effectiveness of Hyperbolic Paraboloid Surfaces for Floating Breakwaters	Hamid Eldarwich, Krisna Pawitan, Maria Garlock
	228	Lin Ai	A method of designing multi-compatibility induced multi-stable morphing structures	Lin Ai, Shukun Yin, Jingjing Yang, Yang Li, Miao Li
	290	Baolian Liu	Topological stereotomic design of systems of interlocking stackable modular blocks for constructing multi-storey funicular masonry buildings	Baolian Liu, Qinglu Chen, Pirouz Nourian, Simona Bianchi, Anjali Mehrotra, Shervin Azadi
	303	Arka P. Reksowardojo	Design of an adaptive rib-stiffened slab equipped with a variable post-tensioning system	Arka P. Reksowardojo, Gennaro Senatore, Manfred Bischoff, Lucio Blandini
	306	Juan G. Oliva	Brick vaults for rural housing in Mexico	Juan G. Oliva, Susana Ezeta, Ramón Abud, Rodolfo Rodríguez, Mario Cruz
	557	Arnaud De Coster	Modular Textile Reinforced Concrete (TRC) shell structures: An exploration through geometrical and structural design	Arnaud De Coster, Tom Van Den Schilden, Lars De Laet And Tine Tysmans
	S18	Disaster Prevention and Mitigation of Spatial Structures-1		
	Chair(s): Kiyoshi Shingu and Xiongyan Li			
	ID	Speaker	Title of the paper	Author(s)
	133	Yan Zhao	Seismic performance of an innovative cold-formed steel framed building	Yan Zhao, Wenying Zhang
	157	Petra Gidak	Geometry generation and modelling of non-standard cross vaults	Petra Gidak, Elizabeta Šamec, Krešimir Fresl, Damir Lazarević
	294	Fengze Li	Seismic capacity and fragility of fire-fighting piping system of large-span transportation hub structure	Fengze Li, Xudong Zhi, Enchun Zhu, Wenliang Li
	298	Bo Huang	Seismic behavior and failure mechanism of reticulated shells considering the influence of support members	Bo Huang, Minglong Fu, Xudong Zhi
	350	Jesus Gerardo Pérez Vega	Nonlinear behavior of concrete shell roofs of different curvature under seismic loads using the finite element method (fem), located in mexico city.	Jesús Gerardo Pérez Vega, Hector Aureliano Sánchez Sánchez
	363	Xianhua Yao	Gradient design and inelastic response of architected slender structures toward multi-stage energy dissipations	Xianhua Yao, Qian Zha, Ruitong Tian, Haifeng Chen, Nan Hu

Wed, 21 Sep. 8:30-10:00	S19	Dynamic Performance and Seismic Response of Metal Spatial Structures - 1 (APCS, WG8-4)		
	Chair(s):Jingyao Zhang and Guojun Sun			
	ID	Speaker	Title of the paper	Author(s)
	38	Toru Takeuchi	Borderless design between seismic isolation and response-controlled structures	Toru Takeuchi
	56	Zetao Zhao	Research on the method of considering concrete substructures of suspen-dome prototype structure in shaking table test scale model	Zetao Zhao, Su-duo Xue, Xiongyan Li
	132	Nobuyuki Yamato	Seismic response controlled structure based on soft-first-story theory for the new national stadium in Japan	Nobuyuki Yamato, Osamu Hosozawa, Isamu Nakakawaji, Taro Mizutani, Shinichiro Kakamoto, Masaki Murase, Takahiro Kanno
	139	Zhiyuan Gao	Seismic performance evaluation method of double layer spatial truss structures with truss walls subjected to earthquake motion	Zhiyuan Gao, Koichiro Ishikawa, Kaisei Takahashi
	321	Yoshiki Takashima	Yield seismic intensity and seismic performance of pin supported arch structures	Yoshiki Takashima, Naoki Wakayama, Shoji Nakazawa, Yuji Takiuchi, Shiro Kato
	340	Xuhai Li	Seismic responses of double-layer cylindrical reticulated shells under near-fault velocity pulse-like ground motions	Xuhai Li, Jie Zhong, Mingxi Xu, Wenbin Chen
	S20	Cable Structures (WG6-4)		
	Chair(s): Naoya Miyasato and Minger Wu			
	ID	Speaker	Title of the paper	Author(s)
	103	Ningyuan Zhang	Error sensitivity analysis and multiple error coupling analysis for cable-supported grid structure with an internal compression ring	Ningyuan Zhang, Bin Luo, Minquan Zhang, Haixia Liu
	150	Kun Zu	Research on mechanical property and construction technology of spoke tension structure with single-double-combined layer cable	Kun Zu, Bin Luo, Yanhao Hu
	205	Jiaqi Yang	Tensioning simulation and experiment study of the upper-layer crossed wheel-spoke cable-strut structure	Jiaqi Yang, Guangyi Zhou, Yue Wu, Dongfang Li, Huazhang Zhou, Da Qiao
	278	Xu Zhu	Research on multi-step form finding analysis method of single layer spoke cable structure	Guojun Sun, Xu Zhu, Jinzhi Wu, Xiang Zhang, Jie Hu
	504	Yurong Shao	The influence of production and construction errors on single-layer spoke cable structure	Jinzhi Wu, Yurong Shao, Guojun Sun, Xiang Zhang
	507	Yanxia Zhang	Experimental study on static performance of fully-assembly ridge-tube threading cable with annular-struts cable dome	Yanxia Zhang, Ailin Zhang, Guanghao Shangguan, Wenjun Yuan, Jie Wang, Ming Zou, Hao Ma, Lixin Shao

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S21	Designing Structures with Computational Methods (WG13-3)		
Chair(s): Anahita Khodadadi and Yao Chen			
ID	Speaker	Title of the paper	Author(s)
104	Xingye Wang	A Practical Method for Shape and Size Optimization of Space Arch Truss	Xingye Wang, Xiaonong Guo
138	Hideyuki Takashima	Creation method for tree-like pillar based on genetic algorithm	Hideyuki Takashima, Bingjie Tang
267	Ken Noda	Link element arrangement for CLT shells	Ken Noda, Toshiaki Kimura
327	José Luis Encarnación Miranda	Prefabricated modular pavilion of architectural concrete	José Luis Encarnación Miranda, Juan Gerardo Oliva Salinas, Ronan Bolaños Linares, Mauricio Enrique Reyes Castillo, Carlos Arce, Enrique Hernández, Andrés Vazquez, Eduardo Ruiz Vallejo
469	Jingyao Zhang	Structural morphology of 2D tree-like supporting structures	Jingyao Zhang, Yuji Nomura
S22	Form-Mobility Relationship: the Study of the Interdependency of Structural Geometry and Transformability (WG15-1)		
Chair(s): Tomohiro Tachi and Jianguo Cai			
ID	Speaker	Title of the paper	Author(s)
55	Tianhao Zhang	Preliminary research on shape determination for curved crease origami using bending deformation	Tianhao Zhang, Ken'ichi Kawaguchi
225	Kentaro Hayakawa	Form generation of rigid origami reflecting the mean curvature and feature lines of target surface	Kentaro Hayakawa, Makoto Ohsaki
258	Yuan Liao	Deployability and structural performance of spatial scissor units made of zigzag bars	Yuan Liao, Yuan Li, Sudarshan Krishnan
312	Mostafa Akbari	Continuous Approximation of Shellular Funicular Structures	Mostafa Akbari, Masoud Akbarzadeh
414	Huizhong Zhang	Zero Poisson's ratio origami structure inspired by Kresling tube	Huizhong Zhang, Wenxing Huang, Xiaoyu Xu, Jianguo Cai, Jian Feng
438	Jingyuan Hu	Effects of Singular Polygons on the Structural Performance of Irregular Kagome Gridshell with Continuous Rods	Jingyuan Hu, Weixin Huang

Wed, 21 Sep. 8:30-10:00	S23	Life-Cycle Design and Assessment of Shell and Spatial Structures (WG18)		
	Chair(s): Kok Keong Choong and Yingying Zhang			
	ID	Speaker	Title of the paper	Author(s)
	25	Xiaoshun Wu	Expanding dynamic responses triggered by step excitations for spatial trusses	Xiaoshun Wu, Chi Zhu, Runhui Cheng, Tao Zou
	176	Benjamin Schmid	The hanging model for the Mannheim Multihalle and its digital twin	Benjamin Schmid, Christiane Weber, Baris Wenzel, Eberhard Möller
	214	Penghao Yu	Research on key technologies of intelligent monitoring and detection of operation and maintenance security of glass curtain wall	Yingying Zhang*, Penghao Yu, Ziqi Chen
	383	Guansen Dong	Compressive sensing of wind speed data of large-span spatial structures using time-shift strategy	Guan-sen Dong, Hua-ping Wan, Yaozhi Luo*
	387	Jingyu Zhao	Reconstruction of missing structural health monitoring data using attentive neural processes	Jingyu Zhao, Yaozhi Luo
	412	Xi Zhao	High-fidelity measurement and analysis of constructional errors of long-span spatial prestressed steel structures	Xi Zhao, Ailin Zhang, Jie Wang, Yanxia Zhang, Guanghao Shangguan, Hao Ma

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10:30-12:00

S24	Pneumatic Structures-1 (APCS, WG6-5)		
Chair(s): Ken'ichi Kawaguchi and Xiongyan Li			
ID	Speaker	Title of the paper	Author(s)
218	Jiabao Li	Force analysis of stratospheric airship with inflatable rings	Jiabao Li, Tiane Li, Haotian Xue, Xuliang Cheng, Yifeng Zhou
243	Takara Muto	Experimental research of axial elasticity and loading capacity of air-inflated tubes with low slenderness ratio	Takara Muto, Ken'ichi Kawaguchi
247	Ningrui Wang	Bending-wrinkling and reliability analysis of inflated beams	Ningrui Wang, Minger Wu
263	Fu Zhang	Beam finite element for nonlinear analysis of inflatable tubes	Fu Zhang, Minger Wu
319	Zhen Zhang	Initial shape analysis and experimental study of air-supported membrane structure considering cable-membrane contact	Zhen Zhang, Xiongyan Li, Su-duo Xue, He Yanli
398	Yuki Ozawa	Fabrication and loading tests of semi-rigid airmat beam structures	Yuki Ozawa, Nagiko Hirotonia
S25	Mechanical Properties and Health Monitoring of Metal Strucures (WG8-5)		
Chair(s): Tetsuo Yamashita and Guojun Sun			
ID	Speaker	Title of the paper	Author(s)
23	Zhi Ma	An MPPCA approach for anomaly detection of a retractable roof structure	Zhi Ma, Yaozhi Luo, Chung-Bang Yun, Hua-Ping Wan
93	Abtin Baghdadi	Sensitive load areas in steel truss arches regarding geometrical and material nonlinearity	Abtin Baghdadi, Shaghayegh Ameri, Harald Kloft
130	Zhiqiang Li	Research on the design and construction technology of an aluminum alloy string spatial structure	Yuanwen Ouyang, Zhiqiang Li, Xiaowei Liu, Liqui Qiu, Ruixiong Li , Xiaoqun Luo
415	Jie Xu	Structural health monitoring of large-spatial structure based on unmanned aerial vehicle images	Jie Xu, Xuan Liu, Pengpeng Jia, Qinghua Han
509	Guanghao Shangguan	Experimental study on structural performance of innovative modular fully-assembly ring-truss steel structural system	Ailin Zhang, Guanghao Shangguan, Yanxia Zhang, Wenjun Yuan, Ming Zou, Jie Wang, Hao Ma, Lixin Shao
514	Tengteng Zheng	Study on bearing capacity performance of the new type of honeycomb plate hollow floor	Tengteng Zheng, Kun Qian, Liangjian Yuan, Caiqi Zhao

Wed, 21 Sep.
10:30-12:00

S26	Optimisation, Form Finding and Parametric Design (WG15-2)		
Chair(s): Hua Deng and Ruoqiang Feng			
ID	Speaker	Title of the paper	Author(s)
69	Yulin Xiong	A high-resolution bi-directional evolutionary structural optimization method for gridshell structures	Yulin Xiong, Xin YAN, Hongjia Lu, Yi Min Xie
189	Iasef Md Rian	Fractal-Based Perforation Morphology and Structural Optimization of Perforated Steel Beams	Iasef Md Rian, Abdullah Ibrahim
192	Hiroyuki Shiomi	Form-finding analysis of funicular shells using eccentricity reduction method	Hiroyuki Shiomi, Kenji Yamamoto
292	Marina Konstantatou	Applications of graphic statics to the plastic design of reinforced concrete structures	Marina Konstantatou, Miguel Fernández ruiz, Pierluigi D’acunto
454	Fereshteh Khojastehmehr	A review on the curvature and geometrical patterns of elastic gridshells: potentials for structural optimization and architecture	Fereshteh Khojastehmehr, Mohammad Hassan Saleh Tabari, Günther H. Filz
554	Hua Chai	Structural form-finding of multi-span undulating funicular beam structure	Hua Chai, Mohammad Bolhassani, Masoud Akbarzadeh
S27	Snow and Ice Engineering (WG21-3)		
Chair(s): Arno Pronk and Qingwen Zhang			
ID	Speaker	Title of the paper	Author(s)
66	Arno Pronk	Structural behavior and realization of a monumental ice structure in China for IASS/APCS2022	Arno Pronk*, Qingpeng Li, Elke Mergny, Yilling Zhou
199	Shuoyong Yang	Design optimization of complex ice shell based on machine learning model driven by construction logic and performance simulation	Shuoyong Yang, Peng Luo, Yue Wang, Chenghu Xin, Xuanyu Wang
291	Rui Li	Experiment investigation of snow loads on Qiyang airport terminal roof based on a new similarity criterion	Rui Li, Qingwen Zhang, Feng Fan
296	Yuanyuan Li	Probabilistic modeling of 10-min mean wind speed for the purpose of analytical simulation of snowdrift	Yuanyuan Li, Huamei Mo, Feng Fan
318	Jialin Zou	Wind tunnel test and CFD simulation of snowdrift on an air-supported membrane structure	Zou Jialin, Sun Xiaoying, Wu Yue
420	Haoming Huang	Multistable grid shell as a flexible and reusable formwork for the sustainable construction of snow and iced structures	Haoming Huang, Jian Wen, Zhixiong Huang, Xiaofan Gao, Yangsheng Lin, Lu Xiong, Nan Hu

Wed, 21 Sep. 10:30-12:00	S28	Aluminum Alloy Structures - 2		
	Chair(s): Hongbo Liu and Ruoqiang Feng			
	ID	Speaker	Title of the paper	Author(s)
	195	Shaozhen Chen	Study on out-of-plane flexural behavior of aluminum alloy gusset joints after fire	Shaozhen Chen, Xiaonong Guo
	198	Zhongxing Wang	Buckling behaviour and design of aluminium alloy I-sections in fire	Zhongxing Wang, Mengyu Li, Qinghua Han
	349	Huiyong Ban	Tensile tests on high-strength aluminum alloy at elevated temperatures	Huiyong Ban, Weijia Tian
	519	Xinhang Zhi	Structural behaviour of 7A04-T6 high-strength aluminium alloy CHS stub columns under axial compression	Xinhang Zhi, Yuanqing Wang, Beibei Li, Yuanwen Ouyang, Huanxin Yuan, Ying Zhang

Wed, 21 Sep. 16:15-17:45	S29	Future Challenges in the Design and Construction of Shell Structures for Low or Zero Carbon - 1 (WG5-1)		
	Chair(s): Stefano Gabriele and Joshua Schultz			
	ID	Speaker	Title of the paper	Author(s)
	82	Homam Spartali	Stress redistribution capacity of textile-reinforced concrete shells folded utilizing parameterized waterbomb patterns	Homam Spartali, Jan Dirk van der Woerd, Josef Hegger, Rostislav Chudoba
	90	Abtin Baghdadi	Application of energy method to investigate the stability of structural shells and arches with the threshold capacity	Abtin Baghdadi, Mahmoud Heristchian, Harald Kloft
	100	Toshiaki Kimura	Form finding for free-curved RC shell using multi-objective optimization considering structural performance and formwork manufacturability	Toshiaki Kimura, Shuhei Ogawa, Sei Hayashi, Tatsuya Muto, Kozo Yamasaki, Yusuke Sakai, Tomoyuki Gondo
	201	Yuchao Zhao	Digital construction technology of double helix spatial free-form concrete thick shell of Shanghai Grand Opera House	Yuchao Zhao, Ming Zhang, Qilin Zhang, Jie Cai
	481	Chuanping Liu	Practice and research of complex concrete reticulated shell structure in high speed railway station	Chuanping Liu, Mengdi Liu *, Jian Jia
	450	Marisela Mendoza	Felix Candela’s architectural heritage at the intersection of sustainable development	Marisela Mendoza, Mariana Esponda, Juan Ignacio del Cueto Ruiz-Funes, Andrés López, N.Cassandra Ruiz-Gómez
	S30	Pneumatic Structures-2 (WG6-6)		
	Chair(s): Ken'ichi Kawaguchi and Yingying Zhang			
	ID	Speaker	Title of the paper	Author(s)
	110	Fei Yan	Collapse property of Air-supported structures	Su-duo Xue, Fei Yan, Guojun Sun
126	Junbin Zhao	Research on the wind-induced failure mechanism of an inflatable membrane structure	Zhaoqing Chen, Junbin Zhao, Keye Yan, Yue Wu, Lixiang Tang	
277	Zhihao Li	Simulation deployment behavior of air-inflated fabric arches based on modified Control Volume method	Guojun Sun, Zhihao Li, Su-duo Xue, Xiongyan Li	
335	Keye Yan	Experimental study on aeroelastic response of air-supported membrane structures	Keye Yan, Yue Wu, Zhaoqing Chen	
524	Yan Pang	A simulation method of weld seams for precise forming of inflated membrane structure	Yan Pang; Jinghai Gong; Guozhi Qiu	

Wed, 21 Sep.
16:15-17:45

Wed, 21 Sep. 16:15-17:45	S31	Buckling of Metal Spatial Structures - 2 (WG8-6)		
	Chair(s): Huiyong Ban and Xudong Zhi			
	ID	Speaker	Title of the paper	Author(s)
	32	Lin Yuan	Local buckling strength of high-strength aluminum alloy H-sections under combined compression and major-axis bending	Qilin Zhang, Lin Yuan, Yuanwen Ouyang
	137	Hua Deng	Arranging active bars to improve stability of loaded pin-bar mechanisms	Hua Deng, Wei Wang, Zijian Wang
	177	Yuto Kato	Evaluation on plastic buckling load of axially compressed latticed cylinders	Yuto Kato, Tetsuo Yamashita
	479	Hao Lin	Structural stability analysis of eye of the yellow sea, a large-span arched pedestrian bridge	Hao Lin, Zhihua Chen, Xiaodun Wang, Hongbo Liu, Ken’ichi Kawaguchi, Minoru Matsui
	S32	Computational Methods for Additive Manufacturing and Origami (WG13-4)		
	Chair(s): Makoto Ohsaki and Yao Chen			
	ID	Speaker	Title of the paper	Author(s)
	108	Davide Tanadini	Exploring the potential of equilibrium-based methods in additive manufacturing: the Digital Bamboo pavilion	Davide Tanadini, Patrick Ole Ohlbrock, Marirena Kladeftira, Matthias Leschok, Eleni Skevaki, Benjamin Dillenburger, Pierluigi D’Acunto
	121	Deyan Quan	Prototyping parametrically designed fiber-reinforced concrete façade elements using 3D printed formwork	Deyan Quan, Christiane M Herr, Davide Lombardi, Ziyue Gao; Jun Xia
	125	Teong Yen Tong	Free-form folded shell structure inspired by no-crease origami	Teong Yen Tong, Kok Keong Choong
	147	Yao Chen	Design and fatigue life prediction of origami creases	Jiaqiang Li, Yao Chen, Jian Feng, Pooya Sareh
	148	Yao Chen	Stretch responses of kirigami inspired metamaterials based on rotating units	Yue Sun, Ruoqi He, Yao Chen, Jian Feng, Pooya Sareh
	550	Yinan Xiao	A structure- and fabrication-informed strategy for the design of lattice structures with Injection 3D Concrete Printing	Yinan Xiao, Yuchi Shen, Norman Hack, Pierluigi D'Acunto

Wed, 21 Sep. 16:15-17:45	S33	Prototyping: Physical and Virtual Model Making and Fabrication (WG15-3)		
	Chair(s): Hiroki Tamai and Rupert Maleczek			
	ID	Speaker	Title of the paper	Author(s)
	276	Mingyu Sun	Micro-structural biomimetic: new perspective of shell structural morphology innovation	Mingyu Sun
	364	Pan Liu	Design and assembly of origami-inspired modular adaptive flow regulations	Nan Hu, Pan Liu, Weining Mao, Zhantu Gan, Dongdong Zhao
	400	Yuanyuan Li	Programmable origami bolt tightening robot	Yuanyuan Li, Qian Zhang, ;Xiaohui Zhang, Jianguo Cai;Jian Feng
	407	Lu Zhu	Conceptual design and fabrication of modular deployable origami structures for architectural-scale applications	Lu Zhu, Peng Qiu, Zhixiong Huang, Yiwei Yin, Yikang Hong, Guangyi Xie, Dongdong Zhao, Nan Hu
	468	Katherine A. Liapi	Expandable cube: A reciprocal reconfigurable structure for the activation of public spaces	Katherine A. Liapi, Katerina Voukelatou, Elena Ckrysanthakaki
	S34	Teaching of Shell and Spatial Structures facilitating Innovation, Sustainability and Legacy (WG20)		
	Chair(s): Alireza Behnejad, Juan Gerardo Oliva Salinas and Koichiro Ishikawa			
	ID	Speaker	Title of the paper	Author(s)
	114	Anahita Khodadadi	Open educational resources in structural engineering education	Anahita Khodadadi
	146	Yi Lin Lee	The mechanical properties of bamboo arched reciprocal structure based on parameters of configurations	Yi Lin Lee, Sovannara Srun, Sokol Phon, Koichiro Ishikawa
	155	Chie Matsuo	Timber 1/10 scaled model of Yakushiji's West Tower built by Mamoru Kawaguchi Laboratory	Chie Matsuo
	308	Elisa Drago Quaglia	Tradition and heritage on teaching of shell and spatial structures in Mexico	Juan Ignacio del Cueto Ruiz-Funes, Juan Gerardo Oliva Salinas, Elisa Drago Quaglia, Marcos J. Ontiveros Hernández
	397	Denis Zastavni	What is the legacy of structural design expertise? The parametric design approach to high-rise buildings.	Denis Zastavni, Mark P. Sarkisian, Jean-Philippe Jasienski, Luca Sgambi
	421	Thian-Siong Choo	Design-Translate-Manufacture-Assemble framework for designing and building a segmented plywood shell	Thian-Siong Choo

Wed, 21 Sep. 20:00-21:30	S35	Mechanical Behavior of Tension Structures (WG6-7)		
	Chair(s): Massimo Majowiecki and Wujun Chen			
	ID	Speaker	Title of the paper	Author(s)
	40	Akira Tanaka	The effect of changing boundary conditions at the arch End on the structural behavior of String Crescent Structure	Akira Tanaka
	60	Naoya Miyasato	Study on the basic structural characteristics of hp type cable-net structure consisting of hexagonal mesh	Naoya Miyasato, Akira Okada, Shuzo Hiroishi, Asami Matsuda; Koki Matsumoto
	72	Karim Abedi	A parametric study on the instability behavior of a new hybrid cable dome	Karim Abedi, Rasoul Asghari, Mohammad Reza Chenaghlou, Behzad Shekastehband
	149	Yao Chen	Automatic design of origami patterns for deployable conical structures using deep neural network	Yao Chen, Weiyang Fan, Li Wan, Jian Feng, Pooya Sareh
	285	Manyu Deng	Influence study of members' area-loss in cable-strut structures	Manyu Deng, Xingfei Yuan
	322	Weijing Zhang	Progressive collapse analysis of Levy type open cable domes	Weijing Zhang, Pengwei Li
	S36	Dynamic Performance and Seismic Response of Metal Spatial Structures -2 (WG8-7)		
	Chair(s): Toru Takeuchi and Xian Xu			
	ID	Speaker	Title of the paper	Author(s)
	20	Yuki Terazawa	Computational morphogenesis based on generalized response spectrum analysis considering both dead load and seismic response of metal gridshell with buckling-restrained braces	Yuki Terazawa, Atsuya Niimi, Deepshikha Nair, Toru Takeuchi
	26	Deepshikha Nair	Preliminary seismic design of double-layered domes with nonlinear multistorey substructures	Deepshikha Nair, Yuki Terazawa, Toru Takeuchi
	136	Wenxuan Zhao	Seismic behavior of a single-layer spherical lattice shell structure with superelastic-friction pendulum bearings	Wenxuan Zhao, Peng Zhuang, Shiqi Sun
	279	Shuo Xiao	Numerical simulation on seismic performance of suspen-dome structure	Shuo Xiao, Guojun Sun, Jinzhi Wu, Linling He, Longjun Li
	356	Susumu Yoshinaka	Vibration control of large-span arch structure, Eye of the yellow sea, by Houde damper system using mass of double floor	Susumu Yoshinaka, Ken'ichi Kawaguchi, Minoru Matsui, Zhihua Chen, Xiaodun Wang
	500	Yang Li	Static and seismic performance analysis of the long-span full-steel structure of a gymnasium	Jinzhi Wu, Yang Li, Guojun Sun, Mingliang Liu, Yijun Hou

Wed, 21 Sep. 20:00-21:30	S37	Computational Methods for Shell Design and Geometrical Methods (WG13-5)		
	Chair(s): Anahita Khodadadi and Ruoqiang Feng			
	ID	Speaker	Title of the paper	Author(s)
	28	Makoto Ohsaki	Gaussian curvature flow for constant Gaussian curvature surface with triangular mesh	Makoto Ohsaki, Kazuki Hayashi, Yoshiki Jikumaru, Takashi Kagaya, Yohei Yokosuka
	71	Iurii Vakaliuk	Initial numerical development of design procedures for TRC bioinspired shells	Iurii Vakaliuk, Tom Goertzen, Silke Scheerer, Alice C. Niemeyer, Manfred Curbach
	206	Shinnosuke Fujita	Discrete surface control using amount of change in surface gradient	Shinnosuke Fujita, Kairi Saito
	210	Minghao Bi	Creating novel dynamic architectural forms from kinetic elastica-ruled surfaces	Minghao Bi, Yunzhen He, Zhi Li, Ting-Wei Lee, Yi Min Xie
	357	Xiao Xiao	Free-form deformation based isogeometric shape optimisation of thin-shell structures	Xiao Xiao, Fehmi Cirak
	391	Kam-Ming Mark Tam	Trans-topological learning and optimisation of reticulated equilibrium shell structures with Automatic Differentiation and CW Complexes Message Passing	Kam-Ming Mark Tam, Tom VAN Mele, Philippe Block
	S38	Geometry: Describing and Controlling (complex) Geometry, Including Parametric Design (WG15-4)		
	Chair(s): Niels De Temmerman and Jinghai Gong			
	ID	Speaker	Title of the paper	Author(s)
	74	Ryo Watada	Design of N-fold-symmetric multi-layered hinge frame deployable from bundle to surface of revolution	Ryo Watada, Makoto Ohsaki
	81	Rupert Maleczek	Rapid prototyping for non-developable discrete and semi-discrete surfaces with an overconstrained mobility	Rupert Maleczek, Kiumars Sharifmoghaddam, Georg Nawratil
	158	Serenay Elmas	The structural geometry of a beam element from 4 torqued strips: A comparison to standardized profiles and applications	Serenay Elmas, Günther H. Filz, Athanasios A. Markou
	394	Zherui Wang	A polyhedral approach for the design of a compression-dominant, double-layered, reciprocal frame, multi-species timber shell	Zherui Wang, Masoud Akbarzadeh
	409	Boxu Chen	Research on the parametric design and optimization of the hexagon-cell shell structure	Boxu Chen, Lingling Li, Rui-nan Zhang, Sitong Yu
	437	Serge Monnot	5 Platonic bodies, 5 Chinese elements: two isomorphic expressions of the same general system?	Serge Monnot

Wed, 21 Sep. 20:00-21:30	S39	Sustainable Heritage: Challenges and Strategies in the Preservation and Conservation of 20th Century Historic Concrete Shells-2 (WG17/WG5-2)		
	Chair(s): Marisela Mendoza and Atsushi Mutoh			
	ID	Speaker	Title of the paper	Author(s)
	33	Mohammad Bolhassani	Structural muqarnas: Reconstructing muqarnas using graphic statics	Hossein Kamyab; Mansour Yegane; Mohammad Bolhassani
	46	Federico Bertagna	Gengo Matsui: the contribution of a structural engineer to post-war Japanese architecture	Federico Bertagna, Viktoriya Maleva, Alessandro Garzanti, Yasumasa Shimizu, Federico Bertagna
	87	Zhen Lu	Dynamic characteristics and shaking table tests on suspend-dome structure with the center-hung scoreboard	Zhen Lu, Xiongyan Li, Renjie Liu, Suduo Xue
	101	Valentina Beatin	Why collapsed ancient hellenic temples? the case study: athena pronaia tholos at delphi.	Valentina Beatin, Valentina Beatini, Attilio Pizzigoni, Vittorio Paris
	120	Jelena Milosevic	A continuum between sculptural and structural form in the sutjeska memorial	Jelena Milosevic, Jelena Milošević, Miodrag Nestorović
	127	Yangyang Li	Measuring and comparing digital images of a historical Japanese reinforced concrete dome obtained by using LiDAR and SfM	Yangyang Li, Atsushi Mutoh, Ken'ichi Kawaguchi, Yosuke Nakaso, Shinya Matsumoto
	S40	Innovation in New Concepts and Projects - 2		
	Chair(s): Juan Gerardo Oliva Salinas and Jianhui Hu			
	ID	Speaker	Title of the paper	Author(s)
	62	Minori Ogoshi	Finite element analysis of the bi-valve shell based on solid and shell elements	Minori Ogoshi, Masaki Teranishi, Doppo Matsubara
	197	Zibin Zhao	Model Selection for Super-Long Span Suspension Mega-Latticed Structures	Zibin Zhao, Qingwen Zhang, Feng Fan
	305	Juan G. Oliva	Bamboo gridshells for rural housing in Mexico	Juan G. Oliva, Magdalena Trujillo, Susana Ezeta, Ramón Abud, María I. Verhulst
	456	Mohammad Hassan Saleh Tabari	Parametric thinking for decision-making in elastic gridshell design	Mohammad Hassan Saleh Tabari, Fereshteh Khojastehmehr, Günther H. Filz
	506	Marta Gil Perez	Coreless filament-wound structures: toward performative long-span and sustainable building systems	Marta Gil Pérez, Christoph Zechmeister, Achim Menges, Jan Knippers
	21	Yuqing Yang	Study on shear strength of partially connected steel plate shear wall	Yuqing Yang, Zaigen Mu, Boli Zhu

Wed, 21 Sep.
21:45-23:15

S41	Tensegrity Structures (WG6-8)		
Chair(s): Sudarshan Krishnan and Renjie Liu			
ID	Speaker	Title of the paper	Author(s)
49	Shuo Ma	Statics of tensegrity systems with arbitrary rigid bodies	Shuo Ma, Muhao Chen, Zhangli Peng, Xingfei Yuan, Robert E. Skelton
211	Shaoxiong Huang	Stress to stiffness response of tensegrity structure networks	Shaoxiong Huang, Xian Xu
265	Meijia Wang	30-strut locomotive tensegrity robot	Meijia Wang, Xian Xu, Yaozhi Luo
355	Yohei Yokosuka	Form-finding of hybrid tensile structures with active bending using finite element technique assuming nodal coordinates	Yohei Yokosuka, Sakura Torigoe, Toshio Honma
423	Yafeng Wang	Equilibrium and stability of general tensegrity structures with rigid bodies	Yafeng Wang, Xian Xu, Yaozhi Luo
S42	Graphical Methods and Funicular Structural Design (WG 13-6)		
Chair(s): Juan Gerardo Oliva Salinas and Kazuki Hayashi			
ID	Speaker	Title of the paper	Author(s)
73	Federico Bertagna	Graphical methods as the key to holistic design: bringing together structural design and solar control strategies	Federico Bertagna, Joseph Schwartz, Pierluigi D'acunto
107	Shuyuan Han	A historical graphical analysis method for rigid frames	Shuyuan Han, Denis Zastavni
174	Francesco Ranaudo	On the thrust line of piecewise-linear-elastic continuous funicular structures	F. Ranaudo, T. Van Mele, P. Block
252	Zifeng Guo	Enhancing structural form-finding through a text-based AI engine coupled with computational graphic statics	Zifeng Guo, Karla Saldana Ochoa, Pierluigi D'Acunto
320	Chuanhao Zhao	Exact solutions for out-of-plane buckling of funicular arches considering warping deformations	Chuanhao Zhao, Wenhao Pan, Yaozhi Luo, Guomin Liu, Wei Chen
389	Kam-Ming Mark Tam	Performance-informed pattern modification of reticulated equilibrium shell structures using rules-based Graphic Statics, CW Networks and Reinforcement Learning	Kam-Ming Mark Tam, Daniel Kudenko, Megha Khosla, Tom Van Mele, Philippe Block

Wed, 21 Sep. 21:45-23:15	S43	Form-Force Relationship: The Study of the Interdependency of Structural Geometry and Mechanical or Kinetic Behaviour (WG15-5)		
	Chair(s): Rupert Maleczek and Marina Konstantatou			
	ID	Speaker	Title of the paper	Author(s)
	85	Daniel Robertz	Semi-symmetric origami waterbomb cell kinematics and tessellation for the design of thin-walled folded shells	Daniel Robertz, Homam Spartali, Wilhelm Plesken, Rostislav Chudoba, Alice C. Niemeyer
	128	Fuki Ono	Growth deformation of surface with constant negative curvature by bending-active scissors structure	Fuki Ono, Tomohiro Tachi
	129	Daiki Iwamoto	A study of form creation and structural performance verification of a large-scale wood masonry structures	Daiki Iwamoto, Joichi Nakakuki, Waikong Lam, Masamichi Sasatani
	329	Yuki Takahashi	Preliminary research of low-cost hysteresis seismic damper using thin steel plate with folding crease for wooden houses	Yuki Takahashi, Ken'ichi Kawaguchi, Masakazu Yokoyama, Tomoyasu Taguchi, Akimitsu Nishino, Yoshiteru Maruyama, Shunji Oya
	348	Xuanzhi Li	Paper Study on a loop-free crossed cable net evolved from the spoke-wheel cable net	Su-duo Xue, Xuanzhi Li, Xiongyan Li, Yue Liu
	365	Hiroki Tamai	The extended affine method for form finding of a spoke wheel system in light of graphic statics	Hiroki Tamai, Kenryo Takahashi
	S44	Sustainable Heritage: Challenges and Strategies in the Preservation and Conservation of 20th Century Historic Concrete Shells-3 (WG17/WG5-3)		
	Chair(s): Stefano Gabriele and Mohammad Bolhassani			
	ID	Speaker	Title of the paper	Author(s)
	233	Kazutaka Uemura	Preliminary Investigations of Early Reinforced Concrete Shells in Japan	Kazutaka Uemura, Ken'ichi Kawaguchi
	244	Orsolya Gaspar	Searching for the engineering optimum: evolution of the topology of the triangulated rebar grid of the Zeiss-Dywidag domes	Orsolya Gaspar, Éva A. Kis
	269	Kaito Eda	Structural characteristics of the central dome of hagia sophia : focused on during reconstruction after the first collapse	Kaito Eda, Fumitoshi Kumazawa
	280	Giulia Boller	Demolition of heinz isler's free-form shell in sargans	Giulia Boller, John Chilton, Ekkehard Ramm, Joseph Schwartz
	284	Christian Stutzki and Joshua Schultz	The Mitchell Park Horticultural Conservatory in Milwaukee, Wisconsin	Joshua Schultz. Gonzaga University, Civil Engineering. schultzj@gonzaga.edu
	539	Junwang Yu	Cylinder, arch, double curved shell—a history of shell structure in chinese buildings around 1960	Junwang Yu, Nu Peng

Wed, 21 Sep. 21:45-23:15	S45	Disaster Prevention and Mitigation of Spatial Structures-2		
	Chair(s): Yue Wu and Bo Chen			
	ID	Speaker	Title of the paper	Author(s)
	251	Bo Chen	Equivalent static wind loads of long-span roofs and application in Chinese building code	Bo Chen, Lu Zhang, Qingshan Yang
	124	Kiyoshi Shingu	The latest status of research on damping characteristics of shell and spatial structures in Japan	Kiyoshi Shingu, Masaki Yukawa, Kiyotoshi Hiratsuka, Norio Kondo, Toshihiro Irie, Hiroaki Eto
	153	Guangxin Lai	Considering cable and membrane collaborative work - influence of friction coefficient between cable and membrane on wind-induced response of air supported membrane structures	Guangxin Lai, Yanli He, Yanguo Zhao, Limei Zhang
	546	Guojun Sun	Experimental investigation of mechanical properties of steel cable at and after elevated temperatures	Guojun Sun, Shuo Xiao, Jinzhi Wu, Xu Zhu
	537	Guowei Wang	Research on the dynamic response and tension loss for cable-net supported glass facade systems under wind-seismic coupling excitations	Guowei Wang, Wensheng Lu, Peng Zhang

Thu, 22 Sep. 14:30-15:30	S46	Future Challenges in the Design and Construction of Shell Structures for Low or Zero Carbon - 2 (WG5-2)		
	Chair(s): Stefano Gabriele and Wujun Chen			
	ID	Speaker	Title of the paper	Author(s)
	151	Atsushi Mutoh	Development of structural elements for thin flat plates and shells using high-performance mortar	Atsushi Mutoh, Kenta Nakane, Shunichi Kaga
	207	Gloria Rita Argento	Different uses of the generalized eccentricity for shells' shapeoptimization: a comparison	Gloria R. Argento, Stefano Gabriele, Valerio Varano
	430	Yasaman Yavaribajestani	Parameter sensitivity analysis of hybrid gridshells with bending-active formwork	Yasaman Yavaribajestani, Michael Herrmann, Simon Schleicher
	470	Andrew South	Adoption of air-supported forms for thin-shell concrete structures: understanding uses, benefits, and barriers to scale	Andrew South, Evan Bingham
	S47	Dynamic Behavior of Tension & Membrane Structures (WG6-9)		
	Chair(s): Susumu Yoshinaka and Xiaofeng Wang			
	ID	Speaker	Title of the paper	Author(s)
	102	Akira Oshiumi	Study on static and dynamic behavior of roof Structures consisting of radially arranged cables under strong winds	Akira Oshiumi, Akira Okada, Naoya Miyasato, Shuzo Hiorishi, Takuto Yagasaki
	223	Zhou Zhang	Aerodynamic characteristics of an umbrella-shaped membrane structure in high turbulence flow	Dong Li, Xiakai Zhou, Zhou Zhang
	359	Tengfei Wang	Nonlinear motion-induced aerodynamic forces on large-scale membrane roofs	Tengfei Wang, Qingshan Yang, Kunpeng Guo
	386	Feixin Chen	Effect of the mass-damping ratio on the wind-induced response of a tension membrane structure based on FSI simulations	Feixin Chen, Tian Li, Qingshan Yang

Thu, 22 Sep. 14:30-15:30	S48	Dynamic Performance and Seismic Response of Metal Spatial Structures -3 (WG8-8)		
	Chair(s): Koichiro Ishikawa and Zhi Ma			
	ID	Speaker	Title of the paper	Author(s)
	145	Hiroyuki Ogata	Nonlinear restoring force characteristics of conventional roof bearings subjected to moment and shear	Hiroyuki Ogata, Tetsuo Yamashita
	181	Lingzhao Meng	Dynamic response research on axially preloaded aluminum alloy circular tubes under lateral impact loadings	Lingzhao Meng, Ximei Zhai, Guangming Cui
	273	Mehdi Poursha	Investigation into the seismic behavior of space structures and extraction of modification factor of seismic responses	Karim Abedi, Mehdi Poursha, Hamed Jafarzadeh, Pouya Heidarian, Ali Abdollahi
	275	Javad. Shaki Masouleha	Dynamic instability analysis of industrial buildings with flat double layer grid floors and walls under impact loading	Karim. Abedi, Javad. Shaki Masouleha
	S49	Concepts for Sustainable Innovation in Construction of Timber and Bio-based Spatial Structures -4 (WG12-4)		
	Chair(s): Minjuan He and Cong Zhang			
	ID	Speaker	Title of the paper	Author(s)
	78	Anand Shah	Assembly-Oriented Design Methodology for Segmented Timber Shells	Anand Shah, Ekin Sila Sahin, Anastasia Malafey , Simon Bechert, Mathias Maierhofer, Jan Knippers, Achim Menges
	323	Lu Xiong	Cable-driven self-assembly of elastic grid formworks toward sustainable shell constructions	Lu Xiong, Xiaofan Gao, Haoming Huang, Jianming Chen
	455	Alexander Curth	Parametric waffle slabs: Optimal geometry materialized with additive construction	Alexander Curth, Ashley Hartwell, Tim Brodesser, Caitlin Mueller
	511	Qiu Zhang	Development of an active bending formwork based on bamboo mortar shells: preliminary results	Qiu Zhang, Fengyang Ye, Zhehui Li, Xinyi Zhu, Zhiyun Shi, Francesco Marmo, Zhi Li, Junsong Wang, Cristoforo Demartino

Thu, 22 Sep. 14:30-15:30	S50	Computational Methods for Membranes and Tensegrity (WG13-7)		
	Chair(s): Jingyao Zhang and Xian Xu			
	ID	Speaker	Title of the paper	Author(s)
	11	Masaaki Miki	Solving bilinear tensor least squares problems and its application to tension-compression mixed form-finding of membrane shells	Masaaki Miki
	167	Gabriela Gonzales Allende	Computational form-finding of a biotensegrity hybrid textile structure	Gabriela Gonzales Allende, Rui Liu, Diane Davis-Sikora, Linda Ohrn-McDaniel
	219	Yota Ohtsuka	Numerical analysis of interaction between air-inflated membrane and water using MPS method for simulation of an inflatable personal shelter in water disaster	Yota Ohtsuka, Ken’ichi Kawaguchi
	347	Ikuto Hukumori	Shape control of tensegrity model mimicking human spine by the potential method	Ikuto Hukumori, Toku Nishimura, Chai Lian Oh, Kok Keong Choong, Jae-Yeol Kim
	S51	Innovation in New Concepts and Projects - 3		
	Chair(s): Jianguo Cai and Yan Lu			
	ID	Speaker	Title of the paper	Author(s)
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