

# Final Scientific Program

**Tuesday June 22, 2010**

## Plenary Lectures

Tuesday, June 22

9:10-11:40

Plenary Lectures			Room A (Aoi)
Chair: Gengdong Cheng (Dalian University of Technology, China)			
9:10-10:00	PL-C	Some Challenging Problems in Structural Optimization	Weihong Zhang (Northwestern Polytechnical University, China)
Chair: Gyung-Jin Park (Hanyang University, Korea)			
10:00-10:50	PL-K	Mobile Harbor: From New Concept to New Technology	Byung Man Kwak (Korea Advanced Institute of Science and Technology, Korea)
Chair: Makoto Ohsaki (Hiroshima University, Japan)			
10:50-11:40	PL-J	Irregularity of Shape and Topology Optimization Problems for Boundary Value Problems and Its Regularization Method	Hideyuki Azegami (Nagoya University, Japan)

## Technical Session 1

Tuesday, June 22

13:20-14:40

1A1 Structural Optimization 1			Room A (Aoi)
Chairs: O-Kaung Lim (Pusan National University, Korea) Jingyao Zhang (Ritsumeikan University, Japan)			
13:20-13:40	C-15	Optimization of an Axially Compressed Ring and Stringer Stiffened Cylinder Structure with the Explicit FEM	Cheng Huang, *Xi Zhang (Beijing Institute of Astronautic System Engineering, China), Bin Wang, Bo Wang (Dalian University of Technology, China)
13:40-14:00	J-28	Uniqueness and Symmetry of Optimal Thickness Distribution of Axisymmetric Shells	*Ryo Watada (Takenaka Corporation, Japan), Makoto Ohsaki (Hiroshima University, Japan), Yoshihiro Kanno (University of Tokyo, Japan)
14:00-14:20	C-07	Cell Size Effect and Optimal Configuration Selection of Sandwich Core	*Gaoming Dai, Weihong Zhang, Jin Zhang (Northwestern Polytechnical University, China)
14:20-14:40	J-84	Spatial Layout of Photovoltaic Cells Supported by a Tree-Like Structure	*Yoshiro Ogi, Ken'ichi Kawaguchi (University of Tokyo, Japan)

1B1 Multiphysics Topology Optimization 1			Room B (Gion)
Chairs: Yonggyun Yu (KAIST, Korea) Masakazu Kobayashi (Toyota Technical Institute, Japan)			
13:20-13:40	K-05	Level Set Based Topological Shape Optimization of Heat Conduction Problems with Design-Dependent Convection Boundary	*Seung-Ho Ahn, Seonho Cho (Seoul National University, Korea)
13:40-14:00	J-66	Topology Optimization for Fluid-Thermal Interaction Problems	*Tadayoshi Matsumori, Atsushi Kawamoto, Tsuguo Kondoh (Toyota Central R&D Labs., Japan)
14:00-14:20	J-59	Thermophotovoltaic Filter Design Using Topology Optimization Method	*Ippei Kawai, Kazuhiro Izui, Shinji Nishiwaki (Kyoto University, Japan), Tsuyoshi Nomura, Shintaro Yamasaki (Toyota Central R&D Labs., Inc., Japan)
14:20-14:40	K-34	Multilayered Structure Sequencing for Sound Transmission Reduction by Using Topology Optimization Method	*Joong Seok Lee (Seoul National University, Korea), Yong Jin Kim (Samsung Electronics Co., Ltd., Korea), Yoon Young Kim (Seoul National University, Korea)

1C1 Metamodeling 1			Room C (Kurama)
Chairs: Gang Li (Dalian University of Technology, China) Eisuke Kita (Nagoya University, Japan)			
13:20-13:40	K-40	Statistical Space-Time Metamodels Based on Double-Loop Multiple Response Approach for Time-Variant Dynamic Response of Structures	Jin Min Lee, *Tae Hee Lee (Hanyang University, Korea)
13:40-14:00	C-42	An Improved Regularization Method for Solving an Ill-Posed Problem of Dynamic-Force Reconstruction in the Time	*Linjun Wang, Xu Han, Jie Liu (Hunan University, China)
14:00-14:20	J-64	Combining Predetermined Models and SVM/RBFN for Regression Problems	*Hirotaka Nakayama (Konan University, Japan), Yeboon Yun (Kansai University, Japan), Yuki Uno (Konan University, Japan)
14:20-14:40	J-95	Complementary Setting of Radius in Convolute Radial Basis Function Networks	*Masao Arakawa (Kagawa University, Japan), Satoshi Kitayama (Kanazawa University, Japan)

## 1D1 Damage Identification and Health Monitoring

## Room D (Sakura)

Chairs: Joocho Choi (Korea Aerospace University, Korea)  
Yoshihiro Kanno (University of Tokyo, Japan)

13:20-13:40	J-04	A Study on the Evaluation of the Health of Infrastructures Using SVM	*Hiroyuki Sugimoto (Hokkai-Gakuen University, Japan), Kohei Furukawa (Yamaguchi University, Japan), Junichi Abe (Hokubu Consultant Co., Ltd., Japan)
13:40-14:00	J-25	The Fundamental Study of Bridge Maintenance Plan by Game Theory (Nash Bargaining Solution)	*Toshiharu Kita (Nihonkai Consultant Co.,Ltd, Japan), Yasuo Chikata (Kanazawa University, Japan)
14:00-14:20	C-37	Structural Non-Linear Damage Identification Using a Linear-Model Based Multi-Point Approximations Method	*Guo Sun, XinglinL Guo (Dalian University of Technology, China)
14:20-14:40	K-53	Probabilistic Detectability-Based Sensor Network Design for Structural Health Monitoring and Prognostics	*Byeng D. Youn, Pingfeng Wang, Chao Hu (University of Maryland, USA)

## 1E1 Robust and Reliability Design 1

## Room E (Tachibana)

Chairs: Dong-Hoon Choi (Hanyang University, Korea)  
Nozomu Kogiso (Osaka Prefecture University, Japan)

13:20-13:40	K-30	Design Optimization of Coupled Torsion Beam Axle Suspensions Considering Kinematic and Compliance Performances and Its Variations	*Gabseong Lee (Hanyang University, Korea), Byung-Lyul Choi (Framax Co. Ltd., Korea), Dong-Hoon Choi (Hanyang University, Korea), Chan-Hyuk Nam, Jae-Yong Park, Ki-Hoon Kim (Korea Automotive Technology Institute, Korea)
13:40-14:00	C-32	Reliability-Based Structural Optimization Considering Failure Probability	*Haitao Ma, Yuxuan Chen, Taicong Chen, Peng Wei (South China University of Technology, China)
14:00-14:20	J-96	Reliability-Based Design Optimization with Confidence Level for Problems with Correlated Input Distributions	*KK Choi, Yoojeong Noh, Ikjin Lee (University of Iowa, USA)
14:20-14:40	K-02	Reliability-Based Optimization of Airfoils Using a Moment Method and Parsec Function	*Jaehun Lee (Koreanair, Korea), Hee Youb Kang (Samsung Electronics Co., Korea), Hyuk Kwon, Byung Man Kwak (KAIST, Korea)

## Technical Session 2

Tuesday, June 22  
15:00-16:20

### 1A2 Structural Optimization 2

Room A (Aoi)

Chairs: Seonho Cho (Seoul National University, Korea)  
Kohju Ikago (Tohoku University, Japan)

15:00-15:20	C-29	Overall Optimization Strategy for Nonlinear Performance Based Seismic Design of Steel Frame Structures	Dagang Lu, *Mingming Jia, Gang Li (Harbin Institute of Technology, China)
15:20-15:40	J-71	Simultaneous Optimal Design of Structural and Control Systems of a Building under Seismic Excitation Using a Design Response Spectrum	*Chihiro Horiguchi, Masayuki Kohiyama (Keio University, Japan)
15:40-16:00	J-52	Does the Optimality Criterion Method Bring the Optimum Shape Solution?	*Yukio Tada (Kobe University, Japan)

### 1B2 Multiphysics Topology Optimization 2

Room B (Gion)

Chairs: Byeng Dong Youn (University of Maryland, USA)  
Tsuyoshi Nomura (Toyota Central R&D Laboratories Inc., Japan)

15:00-15:20	K-37	Topology Optimization of an Expansion Chamber in a Reactive Muffler for Transmission Loss Maximization	*Jin Woo Lee (Ajou University, Korea), Yoon Young Kim (Seoul National University, Korea)
15:20-15:40	C-09	FEM-BEM Based Structural-Acoustic Topology Optimization Using the Mixed Formulation	*Jianbin Du, Xiankai Song (Tsinghua University, China)
15:40-16:00	K-47	Acoustic Topology Optimization of Acoustic Devices by Considering Zweicker's Loudness	*Junghwan Kook, Kummo Koo, Jaeyub Hyun, Sang-Myeong Kim, Semyung Wang (Gwangju Institute of Science and Technology, Korea)
16:00-16:20	K-08	Topology Optimization of a Violin Bridge	*Yonggyun Yu, Byung Man Kwak (KAIST, Korea)

### 1C2 Industrial Application 1

Room C (Kurama)

Chairs: Chunman Chan (Hong Kong University of Science and Technology, China)  
Shinobu Sakai (Kanazawa University, Japan)

15:00-15:20	J-38	Optimal Design of Golf Club Considering the Body Burdens	*Katsuyuki Suzuki (University of Tokyo, Japan), Hisashi Kodama (MRCP Corp., Japan), Chunxiao Wang, Yuta Itagaki (University of Tokyo, Japan)
15:20-15:40	J-68	The Optimization of the Lens Design that Considered the Heat Deformation of the Casing	*Akimitsu Hanzawa, Satoshi Furui (Cybernet Systems Co., Ltd., Japan)
15:40-16:00	J-45	Evaluation Method of Openability Related to Optimum Opening Diameter of Aluminum Beverage Bottles	*Takanori Chihara (Tokyo Metropolitan University, Japan), Satoshi Hirohata, Koetsu Yamazaki (Kanazawa University, Japan)

### 1D2 Ocean Engineering 1

Room D (Sakura)

Chairs: Akihiro Takezawa (Hiroshima University, Japan)  
Mitsuru Kitamura (Hiroshima University, Japan)

15:00-15:20	K-10	RORI Crane System for Mobile Harbor: Design Concept and Procedure	*O-Kaung Lim, Jin-Rae Cho, Eun-Ho Choi, Soon-Wook Hwang, Ki-Chul Han (Pusan National University, Korea)
15:20-15:40	K-23	Size Optimization of the Crane for the Mobile Harbor	*Ui-Jin Jung, Seong-Beom Jeong (Hanyang University, Korea), In-Gwun Jang (Korea Advanced Institute of Science and Technology, Korea), Gyung-Jin Park (Hanyang University, Korea)
15:40-16:00	K-09	Structural Dynamic Analysis of RORI Crane System for Mobile Harbor Subject to Wave-Induced Excitation	*Jin-Rae Cho, O-Kaung Lim, Eun-Ho Choi, Soon-Wook Hwang, Ki-Chul Han (Pusan National University, Korea)
16:00-16:20	C-54	Materials Selection Optimization Design for the Steel-Composite Floating Raft under Dynamics Constraints	*Deqing Yang, Xiaolong Xie (Shanghai Jiao Tong University, China), Wantao Guo (Luoyang Ship Material Research Institute, China)

### 1E2 Aerospace Engineering 1

Room E (Tachibana)

Chairs: Shenyan Chen (Beihang University, China)  
Hiroshi Furuya (Tokyo Institute of Technology, Japan)

15:00-15:20	K-21	Multidisciplinary Optimization with Variable Complexity Models Applied to Conceptual Design of UCAV	Nhu-Van Nguyen, *Seok-Min Choi, Jae-Woo Lee, Yung-Hwan Byun, Jong-Mu Sur, Sangho Kim (Konkuk University, Korea)
15:20-15:40	K-13	Development of the Aircraft Derivative Design Process Using Sensitivity Analysis and Expert System	*Hyeong-Uk Park, Kamran Behdinan, Joon Chung (Ryerson Univ, Canada), Jae-Woo Lee (Konkuk University, Korea)
15:40-16:00	J-89	Aerodynamic Design Optimization of New Conceptual Civil Aircraft	*Takuya Nara, Masahiro Kanazaki (Tokyo Metropolitan University, Japan)
16:00-16:20	K-32	Design and Optimization Study on Compound Gyroplane Aircraft	*Young Jae Lee, Ji Min Kim, Vu Ngoc Anh, Sangho Kim, Jae-Woo Lee (Konkuk University, Korea), In Jae Chung (Agency for Defense Development, Korea)

## Technical Session 3

Tuesday, June 22  
16:40-18:00

### 1B3 Multiphysics Topology Optimization 3

Room B (Gion)

Chairs: Yoon Young Kim (Seoul National University, Korea)

Masakazu Kobayashi (Toyota Technical Institute, Japan)

16:40-17:00	K-46	Acoustical Topology Optimization of Waveguide for Directivity Maximization on Mid-Low Frequency Band Using Evolutionary Weighted Sum	*Jaeyub Hyun, Junghwan Kook, Daesung Kim, Sang-Myeong Kim, Semyung Wang (Gwangju Institute of Science and Technology, Korea)
17:00-17:20	J-24	A Level Set Based Shape Optimization with Respect to Acoustic-Structural Coupling Problem	*Kenzen Takeuchi (Quint, Japan), Takashi Yamamoto, Shinichi Maruyama (Nissan Motor, Japan)
17:20-17:40	K-54	Topology and Shape Design Optimization of Piezoelectric Energy Harvesting Skin	*Byeng D. Yoon, Soobum Lee (University of Maryland, USA)
17:40-18:00	J-58	Level Set Based Topology Optimization Method for Metamaterial Design Problem	*Shintaro Yamasaki (Shibaura Institute of Technology, Japan), Tsuyoshi Nomura, Kazuo Sato (Toyota Central R&D Labs., Japan), Naobumi Michishita, Yoshihide Yamada (National Defense Academy, Japan), Atsushi Kawamoto (Toyota Central R&D Labs., Japan)

### 1C3 Shape Optimization 1

Room C (Kurama)

Chairs: Xicheng Wang (Dalian University of Technology, China)

Hideyuki Azeqami (Nagoya University, Japan)

16:40-17:00	J-78	Dual Phenotype GA for Shape Optimization	*Cuimin Li (Kanazawa University, Japan), Tomoyuki Hiroyasu (Doshisha University, Japan), Koetsu Yamazaki (Kanazawa University, Japan)
17:00-17:20	J-13	Freeform Optimization: A New Capability to Perform Grid by Grid Shape Optimization of Structures	*Juan Pablo Leiva (Vanderplaats Research and Development, Inc., USA)
17:20-17:40	K-04	Isogeometric Shape Optimization of Structures Considering Design-Dependent Loads	*Minho Yoon, Seung-Hyun Ha, Seonho Cho (Seoul National University, Korea)
17:40-18:00	J-47	A Study on Morphogenesis System Considered of Designer's Image	Kazutoshi Tsutsumi (Shibaura Institute of Technology, Japan), *Eriko Kumakawa (Hosei University, Japan)

### 1D3 Multidisciplinary Optimization 1

Room D (Sakura)

Chairs: Tae Hee Lee (Hanyang University, Korea)

Satoshi Kitayama (Kanazawa University, Japan)

16:40-17:00	C-40	Optimization Design for Cryogenic Tank with Insulation Coating	Yiming Zhou, *Bo Wang, Mingfa Ren (Dalian University of Technology, China)
17:00-17:20	K-14	Optimal Design of a Heat Sink for Mobile Telecommunication	*Seung-Hyun Jeong, Hyun-Su Jeong, Yongbin Lee, Dong-Hoon Choi (Hanyang University, Korea)
17:20-17:40	C-28	Multimethod Collaborative Optimization Algorithm and Its Application on Multidisciplinary Design Optimization	*Wencai Luo, Xiaoqian Chen (National University of Defense Technology, China)
17:40-18:00	C-64	Numerical Optimization Techniques for Acoustic Radiation Structures	*Guozhong Zhao, Baoshan Liu (Dalian University of Technology, China)

### 1E3 Aerospace Engineering 2

Room E (Tachibana)

Chairs: Jae-Woo Lee (Konkuk University, Korea)

Nozomu Kogiso (Osaka Prefecture University, Japan)

16:40-17:00	K-24	Preliminary Research on Topology Optimization of Flapping Wing	*Jung-Sun Choi, Liangyu Zhao, Gyung-Jin Park (Hanyang University, Korea), Sunil K. Agrawal (University of Delaware, USA), Raymond M. Kolonay (U. S. Air Force Research Laboratory, USA)
17:00-17:20	K-38	Simultaneous Aero-Structural Design Optimization for High-Aspect-Ratio Wing with Large Deflection Effect	*JeongHwa Kim, Sangook Jun, Do-young Hur, Dong-Ho Lee (Seoul National University, Korea)
17:20-17:40	J-79	Knowledge Discovery for Multi-Disciplinary Design of Silent Super Sonic Transport Based on Efficient Global Optimization	*Masahiro Kanazaki, Noto Seto (Tokyo Metropolitan University, Japan), Shinkyu Jeong (Tohoku University, Japan)
17:40-18:00	J-41	Design Exploration of Helicopter Blade for HSI Noise and Aerodynamic Performance	*Shinkyu Jeong, Toru Sasaki (Tohoku University, Japan), Sanghyun Chae, Kwanjung Yee (Pusan National University, Korea), Takashi Aoyama (Japan Aerospace Exploration Agency, Japan)

## Wednesday, June 23, 2010

### Keynote Lecture

Wednesday, June 23

9:00-10:00

Keynote Lecture			Room A (Aoi)
Chair: Shinji Nishiwaki (Kyoto University, Japan)			
9:00-10:00	Key	Recent Developments in Topology Optimization and Multiphysics Application	Ole Sigmund (Technical University of Denmark, Denmark)

### Sponsor Session 1 and Technical Session 4

Wednesday, June 23

10:20-11:40

2A1 Sponsor Session 1			Room A (Aoi)
Chair: Koetsu Yamazaki (Kanazawa University, Japan)			
10:20-10:40	S-01	Applications of Design Optimization Software HEEDS Professional to Stamping Die Design	*Yuji Kato, Yuko Watanabe, Terumasa Shindo (JSOL, Japan)
10:40-11:00	S-02	Verification of Hybrid Direct Search Strategy Implemented in Optimization Software HEEDS	*Yasuyoshi Umezu, Sunao Tokura, Masaki Miyashita (JSOL, Japan)
11:00-11:20	S-03	An Example of Structural Optimization Using iSIGHT and FINAS/STAR	*Shinkichi Sakai, Yasuhisa Karakida (CTC, Japan)
11:20-11:40	S-04	A Comparison between Optimization Techniques and Taguchi Method in Inverse Analysis	*Takeshi Maejima, Hirofumi Tanaka (CTC, Japan)

2B1 Multiphysics Topology Optimization 4			Room B (Gion)
Chairs: Seungjae Min (Hanyang University, Korea) Akihiro Takezawa (Hiroshima University, Japan)			
10:20-10:40	J-81	Topology Optimized All-Dielectric Cloak in the Optical Frequency Range	*Jacob Andkjær, Ole Sigmund (Technical University of Denmark, Denmark)
10:40-11:00	K-44	Topology Optimization of Magnetic Actuator Considering the Nonlinear Saturation Effect	*Soonok Park, Jeonghoon Yoo (Yonsei University, Korea)
11:00-11:20	J-39	Topology Optimization of Piezoelectric Devices Using the Level Set Method Incorporating Fictitious Interface Energy	*Yi Kang, Lim, Yuji Okamoto, Takayuki Yamada, Kazuhiro Izui, Shinji Nishiwaki (Kyoto University, Japan)
11:20-11:40	J-08	Topology Optimization of an Interior Permanent Magnet Synchronous Motor to Reduce Cogging Torque	*Jae Seok Choi, Kazuhiro Izui, Shinji Nishiwaki (Kyoto University, Japan), Atsushi Kawamoto, Tsuyoshi Nomura (Toyota Central R&D Laboratories Inc., Japan)

2C1 Damage Identification and Health Monitoring			Room C (Kurama)
Chairs: Xiaohong Ding (University of Shanghai for Science and Technology, China) Hiroyuki Sugimoto (Hokkai-Gakuen University, Japan)			
10:20-10:40	K-19	Applying Bayesian Calibration to Identify the Viscoplastic Parameters of Solder Alloy in Microelectronics Package	*Jaechang Kim, Jinhyuk Gang, Dawn An, Jooho Choi (Korea Aerospace University, Korea), Jinwon Joo (Chungbuk National University, Korea)
10:40-11:00	J-53	Development of Life Cycle Design Method for Building Structures Considering Seismic Hazard	*Satoshi Nakata, Hiroshi Ohmori (Nagoya University, Japan)
11:00-11:20	J-03	Study on Repairing Timing of Concrete Structures Received Chloride Induced Damage by Considering Life Cycle Cost	*Manabu Matsushima (Kagawa University, Japan), Masaru Yokota (Shikoku institute of Technology, Japan)
11:20-11:40	K-20	Bayesian Approach for Inverse Estimation of Fatigue Material Parameters Utilizing the Field Test Data	*Chan Young Heo, Dawn An, Jooho Choi (Korea Aerospace University, Korea), Jeongil Jeon (Sammok Kangup, Korea)

## Technical Session 5

Wednesday, June 23

13:00-14:40

### 2A2 Multiobjective Optimization 1

Room A (Aoi)

Chairs: Jun Yan (Dalian University of Technology, China)  
Hirotaka Nakayama (Konan University, Japan)

13:00-13:20	J-92	Multiobjective Truss Topology Optimization by Linear/Sequential Linear Programming Method	*Toyofumi Takada (University of Shiga Prefecture, Japan)
13:20-13:40	K-11	Multi-Objective Optimization of an Automotive Injection Molding Part for Simultaneously Minimizing Injection Pressure, Warping, and Weld Line	Chang-Hyun Park, Hee-Jae Ahn (Hanyang University, Korea), Byung-Gi Pyo (VMTech Co. Ltd., Korea), *Dong-Hoon Choi (Hanyang University, Korea)
13:40-14:00	C-75	Game Method for Multiple Objectives Decision Design	Nenggang Xie, *Lu Wang, Zhong Cheng (Anhui University of Technology, China)
14:00-14:20	J-69	Optimal Shape Design of Flexible Arm by Multi-Objective Optimization Approach	*Takao Muromaki, Yang Xu, Yukio Tada (Kobe University, Japan)
14:20-14:40	C-12	Pareto Frontier Pursuing Method for Multi-Objective Optimizations	*Jichao Gu, Guangyao Li, Long Tang (Hunan University, China)

### 2B2 Multiphysics Topology Optimization 5

Room B (Gion)

Chairs: Kemin Zhou (Huaqiao University, China)  
Atsushi Kawamoto (Toyota Central R&D Laboratories Inc., Japan)

13:00-13:20	C-25	Design of Piezoelectric Energy Harvesting Devices by Applying Topology Optimization Subjected to Broadband Random Vibrations	*Zheqi Lin (Dalian University of Technology, China; State University of New Jersey, USA), Haechang Gea (State University of New Jersey, USA), Shutian Liu (Dalian University of Technology, China)
13:20-13:40	K-42	Structural Design for Torque Ripple Minimization in Interior Permanent Magnet Motors	Jeonghu Kwack, *Seungjae Min, Jung-Pyo Hong (Hanyang University, Korea)
13:40-14:00	K-45	Structural Topology Optimization Using the Genetic Algorithm for the Improvement of Dynamic and Magnetic Characteristics	*Jae Yeob Jung, Jeonghoon Yoo (Yonsei University, Korea)
14:00-14:20	J-72	Topology Optimization of Anti-Scattering Structure for Electromagnetic Wave	*Tsuyoshi Nomura, Shin-ichiro Matsuzawa (Toyota Central R&D Labs, Inc., Japan), Naotaka Uchida, Shinji Nishiwaki (Kyoto University, Japan), Shintaro Yamasaki (Shibaura Institute of Technology, Japan), Kazuo Sato (Toyota Central R&D Labs, Inc., Japan)
14:20-14:40	J-93	Optimum Design of Compliant Actuators Using Level Set-Based Topology Optimization Method	*Takayo Kotani, Takayuki Yamada, Kazuhiro Izui, Shinji Nishiwaki (Kyoto University, Japan)

### 2C2 Industrial Application 2

Room C (Kurama)

Chairs: Masakazu Kobayashi (Toyota Technical Institute, Japan)  
Kenzen Takeuchi (Quint, Japan)

13:00-13:20	C-08	Structural Design Optimization Method of Machine Tool Bed	*Xiaohong Ding, Wei Liu, Yelin Chen (University of Shanghai for Science and Technology, China)
13:20-13:40	J-82	Optimal Design of Product Family Through Commonalization Strategies under Market Mechanism: Its Preliminary Formalization and Investigation	*Ryota Akai, Shun Kamei, Kikuo Fujita (Osaka University, Japan)
13:40-14:00	C-05	Virtual Experiments and Integrated Optimization for a Sheet-Fed Multistage Offset Press	Wenwei Li, *Nan Chen, Guodong Yin, Nianwu Hu, Dong Yang (Southeast University, China), Jin Qian, Xiaoming Sha (Jiangsu Changsheng Group Stock Company, China)
14:00-14:20	J-67	Tolerance Optimization of Optical Product Design	*Azumi Okada (Cybernet Systems Co., Ltd., Japan)



## 2D2 Metamodeling 2

## Room D (Sakura)

Chairs: Hu Wang (Hunan University, China)  
Takanori Chihara (Tokyo Metropolitan University, Japan)

13:00-13:20	C-47	Approximation Based Combined Optimization Methodology	*Yuxing Wei, Xiaoqian Chen, Wencai Luo (National University of Defense Technology, China)
13:20-13:40	C-43	An Improved Quantum-Inspired Evolution Algorithm and Its Application	*Lixing Wang, S. K. Kowk, W.H. Ip (Hong Kong Polytechnic University, China)
13:40-14:00	C-55	Convergence Analysis and Control for Convex Approximation Methods via Chaos Theory	*Dixiong Yang, Pixin Yang (Dalian University of Technology, China)
14:00-14:20	C-44	Optimization Design of Cardiovascular Stent	*Xicheng Wang, Hongxia Li (Dalian University of Technology, China)
14:20-14:40	J-62	Simple Estimate of the Width in Gaussian Kernel with Adaptive Scaling Technique	*Satoshi Kitayama (Kanazawa University, Japan), Masao Arakawa (Kagawa University, Japan), Koetsu Yamazaki (Kanazawa University, Japan)

## 2E2 Robust and Reliability Design 2

## Room E (Tachibana)

Chairs: Nam Ho Kim (University of Florida, USA)  
Tomoyuki Hiroyasu (Doshisha University, Japan)

13:00-13:20	K-17	Comparative Study of Reliability Analysis Techniques on Aircraft Structural Parts	*EunJeong Kim, Dawn An, Jooho Choi (Korea Aerospace University, Korea), Taigon Kim, Gunyoung Lee (Korean air, Korea)
13:20-13:40	J-91	Reliable Process Design of Tension Leveling Process by Means of Taguchi's Method and Stochastic Optimization	*Hiroshi Hamasaki, Kenko Gejima, Fusahito Yoshida (Hiroshima University, Japan), Vassili V. Toropov (University of Leeds, UK)
13:40-14:00	J-10	Robust Truss Topology Optimization with Discrete Design Variables	*Yoshihiro Kanno (University of Tokyo, Japan), Xu Guo (Dalian University of Technology, China)
14:00-14:20	J-56	Robust Topology Optimization for the Worst Load Case	*Satoru Nii, Akihiro Takezawa, Mitsuru Kitamura (Hiroshima University, Japan)
14:20-14:40	C-73	Confidence Single-Level Formulation in Structural Robust Optimization and Its Solution Aspect	*Xu Guo, Jianming Du, Xixin Gao (Dalian University of Technology, China)

## Technical Session 6

Wednesday, June 23

15:00-16:40

### 2A3 Structural Optimization 3

Room A (Aoi)

Chairs: Jianbin Du (Tsinghua University, China)  
Toyofumi Takada (University of Shiga Prefecture, Japan)

15:00-15:20	C-04	A Hybrid Genetic Algorithm for Topological Layout Optimization of High-Rise Residential Buildings with Planar Irregularities	C. M. Chan, *C. F. Yiu (Hong Kong University of Science and Technology, China), G. Li (Dalian University of Technology, China)
15:20-15:40	J-34	Optimum Design of Base-Isolated Structures with One-Degree-of-Freedom Approximation	*Kohju Ikago (Tohoku University, Japan), Koji Uetani (Kyoto University, Japan)
15:40-16:00	J-14	Study on Design Method to Improve Redundancy for Steel Check Dam	*Satoshi Katsuki, Ryo Katade (National Defense Academy, Japan), Joji Shima (SABO Technical Center, Japan)
16:00-16:20	J-22	Development of the Prototype of a New Type of Emergency Bridge Based on the Concept of Optimized Structure	*Ichirou Ario, Y. Tanaka, Y. Furukawa, Y. Chikahiro (Hiroshima University, Japan), M. Nakazawa (Tohoku-Gakuin University, Japan), I. Tanikura, S. Ono (Japan Construction Method and Machinery Research Institute, Japan)
16:20-16:40	J-90	Comparison of Foregoing Methods on Form-Finding of Tension Structures	*Masaaki Miki, Ken'ichi Kawaguchi (University of Tokyo, Japan)

### 2B3 Topology Optimization 1

Room B (Gion)

Chairs: Jeonghoon Yoo (Yonsei University, Korea)  
Fumio Fujii (Gifu University, Japan)

15:00-15:20	J-55	Integration of Shape and Topology Optimizations Based on Phase Field Method	*Akihiro Takezawa, Mitsuru Kitamura (Hiroshima University, Japan)
15:20-15:40	J-26	Application of Topological Derivative to the VOF-Based Topology Optimization Method	*Kazuhisa Abe, Hiroshi Hashimoto, Kazuhiro Koro (Niigata University, Japan)
15:40-16:00	K-41	3D Topology Optimization Based on an Element-to-Node Method for Smoother Contours	*Joon-hyun Song, Cheol Kim (Kyungpook National University, Korea)
16:00-16:20	J-17	Reducing Design Variables in a Multiple Phase Projection Method	*Masaki Otomori (Aisin Aw Co., Ltd, Japan), Shinji Nishiwaki, Kazuhiro Izui (Kyoto University, Japan)
16:20-16:40	C-67	Topology Optimization by Truss-Like Continuum Material Model with Three Groups of Members	*Kemin Zhou, Xia Li (Huaqiao University, China)

### 2C3 Shape Optimization 2

Room C (Kurama)

Chairs: Gengdong Cheng (Dalian University of Technology, China)  
Toshiyuki Ogawa (Tokyo Institute of Technology, Japan)

15:00-15:20	J-29	Shape Optimization of Shells Considering Quantity of Local Geometric Characteristics	*Shinnosuke Fujita (Kanebako Structural Engineers, Japan), Makoto Ohsaki (Hiroshima University, Japan)
15:20-15:40	C-63	A New Parametric Mapping Method for Shape Optimization	*Weihong Zhang, Dan Wang, Jungang Yang (Northwestern Polytechnical University, China)
15:40-16:00	J-75	Computational Morphogenesis of Free Formed Shell	*Ayako Maene (Nagoya University, Japan), Toshiaki Kimura (Sasaki Structural Consultants, Japan), Hiroshi Ohmori (Nagoya University, Japan)
16:00-16:20	J-15	A Non-Parametric Approach to Optimal Form Design of Shell Structures	*Masatoshi Shimoda (Toyota Technological Institute, Japan), Kyohei Iwasa (Kobelco Cranes Co., Ltd., Japan), Satoru Tsukada (Bertec Japan Co., Ltd., Japan)
16:20-16:40	J-35	Structural Morphogenesis for Free Surface Shell Structure by Using Genetic Algorithms with Diversity of Solution	*Daisuke Wada, Toshio Honma (Kagoshima University, Japan)



## 2D3 Industrial Application 3

## Room D (Sakura)

Chairs: Nan Chen (Southeast University, China)  
Yukio Tada (Kobe University, Japan)

15:00-15:20	J-05	Application of Optimization Technique to Various Tire Design Elements	*Yukio Nakajima (Kogakuin University, Japan)
15:20-15:40	K-29	Shape Optimization of Tire Using Kriging	*Dong-Woo Lee, Jong-Kyu Kim, Won-Sik Joo, Kwon-Hee Lee(Donga University, Korea)
15:40-16:00	K-15	Modified Formulation for Automatic Synthesis of Planar Linkage Mechanisms Based on Spring-Connected Block Models	*Gang-Won Jang (Kunsan National University, Korea), Sang Jun Nam, Yoon Young Kim (Seoul National University, Korea)
16:00-16:20	K-01	Optimal Kinematic Design of a Mobile Robotic Platform That Can Navigate the Stairs Based on the Rocker-Bogie	Dongmok Kim, Heeseung Hong, Sun Ho Kim, *Jongwon Kim (Seoul National University, Korea)
16:20-16:40	J-30	Optimization of Geometrical Design on Externally Pressurized Porous Gas Bearings	Chih-Chuan Lee (Chung-Shan Institute of Science and Technology, Taiwan), *Hsien-I You, Kuang-Chung Wu (Nan-Kai University of Technology, Taiwan)

## 2E3 Multidisciplinary Optimization 2

## Room E (Tachibana)

Chairs: Hai Huang (Beihang University, China)  
Masao Arakawa (Kagawa University, Japan)

15:00-15:20	C-76	The Parameter Optimization of Numerical Simulation of the ECAP Test	*Wenxiang Li, Shuguang Liu (Tongji University, China)
15:20-15:40	J-40	Optimal Design of Surface Motor Based on Integrative Optimization	*Junichi Tsuchiya, Keiichiro Yasuda (Tokyo Metropolitan University, Japan)
15:40-16:00	C-20	Design of Two Dimensional Continuum Periodic Materials with Optimized Band-Gap Character	Shutian Liu, *Yu Huang, Heting Qiao (Dalian University of Technology, China)
16:00-16:20	C-23	A New Model for Squeeze-Film Damping of Electrically Actuated Cantilever Microbeam	*Pu Li (Southeast University, China)

## Technical Session 7

Wednesday, June 23  
17:00-18:00

### 2A4 Structural Optimization 4

Room A (Aoi)

Chairs: Jianhua Rong (Changsha University of Science and Technology, China) Kiichiro Sawada (Hiroshima University, Japan)		
17:00-17:20	J-02	Configuration Optimization of Anchoring Devices of Frame-Supported Membrane Structures for Maximum Clamping Force *Taku Nakajima (Kyoto University, Japan), Makoto Ohsaki (Hiroshima University, Japan), Jun Fujiwara, Fumiyoshi Takeda (Taiyo Kogyo Corporation, Japan)
17:20-17:40	J-23	Application to Real Truss Design of Structural Optimization Using Genetic Algorithm *Huaguo Wang, Hiroshi Ohmori (Nagoya University, Japan)
17:40-18:00	J-44	Discrete Optimization of Modular Truss Network in a Constrained Environment *Machi Zawidzki, Ikuko Nishikawa (Ritsumeikan University, Japan)

### 2B4 Topology Optimization 2

Room B (Gion)

Chairs: Cheol Kim (Kyungpook National University, Korea) Kazuhisa Abe (Niigata University, Japan)		
17:00-17:20	C-21	Structural Topology Optimization Using Element-Free Method Yiqiang Wang, *Zhan Kang (Dalian University of Technology, China)
17:20-17:40	C-33	A General Formulation of Maximizing Structural Stiffness *Fei Niu, Shengli Xu, Gengdong Cheng (Dalian University of Technology, China)
17:40-18:00	C-60	Topology Optimization for Wall Frame Design of a Forging Manipulator *Kai Zhang, Gang Li, Zhan Kang (Dalian University of Technology, China)

### 2C4 Industrial Application 4

Room C (Kurama)

Chairs: Jongwon Kim (Seoul National University, Korea) Jiro Sakamoto (Kanazawa University, Japan)		
17:00-17:20	K-03	Design Optimization for Wear in Pin Joints of Backhoe Systems *Nam Ho Kim, Saad Mukras (University of Florida, USA)
17:20-17:40	J-19	A Study on Throw Performance of Roller Type Baseball Pitching Machine and Its Optimization *Shinobu Sakai, Koetsu Yamazaki, Hirotohi Kakuda (Kanazawa University, Japan), Hitoshi Nakayama, Toshikazu Tanabe (Sunaga Kaihatsu Co., Ltd., Japan)
17:40-18:00	K-22	Design Process of a Bicycle Frame Using Structural Optimization Se-Jung Lee, Seong-Beom Jeong, *Gyung-Jin Park (Hanyang University, Korea), Gyu-Bong Lee (Digital Collaboration Service Center, Korea)

### 2D4 Ocean Engineering 2

Room D (Sakura)

Chairs: Deqing Yang (Shanghai Jiao Tong University, China) Katsuyuki Suzuki (University of Tokyo, Japan)		
17:00-17:20	K-51	Overlap-Avoidance Algorithm in Automatic Generation of Ship Structural Drawing WonSun Ruy (InfoGet System, Korea), *YoungSoon Yang, SungTeak Kim (Seoul National University, Korea)
17:20-17:40	J-87	Structural Optimization of the Mid-Ship Section of a Bulk Carrier with Aid of a Three-Dimensional Product Model *Mitsuru Kitamura (Hiroshima University, Japan), Takakazu Nakamori (Namura Shipbuilding, Japan), Kunihiro Hamada, Akihiro Takezawa (Hiroshima University, Japan)
17:40-18:00	K-36	Optimal Shape Design of Floating Body for Minimal Water-Wave Forces *Dooho Lee, Insoo Son (Donggeui University, Korea)

### 2E4 Design Framework

Room E (Tachibana)

Chairs: Wencai Luo (National University of Defense Technology, China) Manabu Matsushima (Kagawa University, Japan)		
17:00-17:20	J-76	Discussion on Design Knowledge Management for Multidisciplinary Analysis and Optimization *Yutaka Nomaguchi, Kosuke Nakashima, Takaya Ono, Kikuo Fujita (Osaka University, Japan)
17:20-17:40	J-42	A Framework for Expensive Optimization Problems in the Presence of Undefined Vectors *Yoel Tenne, Kazuhiro Izui, Shinji Nishiwaki (Kyoto University, Japan)
17:40-18:00	C-53	Design and Implementation of an Extensible Optimization Software Framework *Chunfeng Yang, Biaosong Chen, Yunpeng Li, Sheng Zhang, Hongsong Yan (Dalian University of Technology, China)

## Thursday, June 24, 2010

### Technical Session 8

Thursday, June 24  
9:00-10:20

#### 3A1 Multiobjective Optimization 2

Room A (Aoi)

Chairs: Huiyong Guo (Chongqing University, China)  
Toyofumi Takada (University of Shiga Prefecture, Japan)

9:00-9:20	J-09	Multiobjective Hybrid Optimization-Antioptimization for Force Design of Tensegrity Structures	*Jingyao Zhang (Ritsumeikan University, Japan), Makoto Ohsaki (Hiroshima University, Japan), Isaac Elishakoff (Florida Atlantic University, USA)
9:20-9:40	C-51	Multi Geometrical Scale Optimization for Porous Structure and Material with Multi-Objective of Structural Compliance and Thermo Deformation	*Jun Yan, Jiadong Deng, Zunyi Duan (Dalian University of Technology, China)
9:40-10:00	J-61	Multi-Objective Particle Swarm Optimization Using the Pareto-Fitness Function	*Shohei Habaguchi, Satoshi Kitayama, Koetsu Yamazaki (Kanazawa University, Japan)
10:00-10:20	J-11	Particle Swarm Optimization for Multi-Objective Optimization with Generalized Data Envelopment Analysis	*Yeboon Yun (Kansai University, Japan), Hirotaka Nakayama (Konan University, Japan)

#### 3B1 Topology Optimization 3

Room B (Gion)

Chairs: Sung-Kie Youn (KAIST, Korea)  
Juan Pablo Leiva (Vanderplaats Research and Development Inc., USA)

9:00-9:20	C-74	Stress-Constrained Topology Optimization Via Level Set Approach	Xu Guo, *Weisheng Zhang (Dalian University of Technology, China), Michael Yu Wang (Chinese University of Hong Kong, China)
9:20-9:40	C-35	An Improved Method for Structural Topology Optimization Problems with Stress Constraints	*Jianhua Rong, Bing Feng (Changsha University of Science and Technology, China)
9:40-10:00	C-49	A Level Set Based Method for Topology Optimization of Continuum Structures with Stress Constraint	*Qi Xia, Tielin Shi (Huazhong University of Science and Technology, China), Michael Yu Wang (Chinese University of Hong Kong, China)
10:00-10:20	J-77	Study on a Design Method for a Compliant Vehicle Suspension and Evaluation of Its Feasibility	*Suguru Omoto, Masakazu Kobayashi, Masatake Higashi (Toyota Institute of Technology, Japan)

#### 3C1 Metamodeling 3

Room C (Kurama)

Chairs: Dixiong Yang (Dalian University of Technology, China)  
Masao Arakawa (Kagawa University, Japan)

9:00-9:20	J-54	Development of Evacuation Simulation System for Urban Expressways and Examination of Optimum Evacuation Guide	*Masashi Yamawaki, Wataru Shiraki, Hitoshi Inomo (Kagawa University, Japan), Keiichi Yasuda (Newjec Inc., Japan)
9:20-9:40	J-48	Group Control Algorithm with Non-Overlapping Zoning for Multi Car Elevator	K. Kasugai, T. Kato, *Eisuke Kita (Nagoya University, Japan)
9:40-10:00	C-31	Artificial Neural Networks Embedded Simplex Method for Structural Optimization	*Taicong Chen, Haitao Ma, Peng Wei (South China University of Technology, China)
10:00-10:20	C-70	An Evaluation Method of the Generalization Ability of Surrogate Model	*Xiongfeng Zhu, Wencai Luo, Wei Yue-Xing (National University of Defense Technology, China)

#### 3D1 Global Optimization

Room D (Sakura)

Chairs: Jin-Rae Cho (Pusan National University, Korea)  
Ryohei Yokoyama (Osaka Prefecture University, Japan)

9:00-9:20	J-36	Efficient Global Optimization of Blade Stiffened Composites with Buckling Constraint	Akira Todoroki, Masato Sekishiro, *Ryosuke Matsuzaki (Tokyo Institute of Technology, Japan)
9:20-9:40	J-06	An Enhanced Enumeration Method for Global Optimization of Discrete Truss Structures with a Structural Reanalysis	*Kiichiro Sawada, Akira Matsuo (Hiroshima University, Japan)
9:40-10:00	C-27	An Application of Automatic Grouping Genetic Algorithms in Design Optimization of Pile Foundations	Gengdong Cheng, *Xiaofeng Liu, Bo Wang (Dalian University of Technology, China), Shuzhi Lin (Xiamen, China)
10:00-10:20	J-27	An Improved KCSSL Method for Approximate Global Optimization with Convex-Path Estimation	*Seiichi Sakata, Fumihiro Ashida (Shimane University, Japan)

## Sponsor Session 2 and Technical Session 9

Thursday, June 24  
10:40-12:00

### 3A2 Sponsor Session 2

Room A (Aoi)

Chair: Kikuo Fujita (Osaka University, Japan)

10:40-11:00	S-05	EMA/FEA Correlation, an Application of Optimization	*Yutaka Zaiki (NST, Japan)
11:00-11:20	S-06	Trade-off Optimization Study for the Golf Club Head by Model Center	*Eiji Hatayama (NST, Japan)
11:20-11:40	S-07	Reduction of Weight and Design Cycle Using Nonparametric Structural Optimization System "TOSCA"	*Hidetoshi Takaoka (VINAS, Japan)
11:40-12:00	S-08	Target Oriented Solution - Advanced Technologies for Industrial Design	*Takeshi Kobiki(DISquare, Japan), Kazuhiro Kooriyama (Automotive Design Solution Inc., Japan)

### 3B2 Topology Optimization 4

Room B (Gion)

Chairs: Xu Guo (Dalian University of Technology, China)  
Masataka Yoshimura (Kyoto University, Japan)

10:40-11:00	J-57	Topology Optimization for Load Cells Including Location of Strain Gauges	*Masahiro Kobayashi, Akihiro Takezawa, Mitsuru Kitamura (Hiroshima University, Japan), Emilio Carlos Nelli SILVA (Escola Politécnica da Universidade de São Paulo, Brazil)
11:00-11:20	J-01	A Topology Optimization Method Incorporating Geometric Constraints Using Level Set Boundary Expressions	*Takayuki Yamada, Kazuhiro Izui, Shinji Nishiwaki (Kyoto University, Japan)
11:20-11:40	C-46	Stiffness Spreading Method for Layout Optimization of Truss Structures	*Peng Wei, Haitao Ma (South China University of Technology, China), Michael Yu Wang (Chinese University of Hong Kong, China), Taicong Chen (South China University of Technology, China)
11:40-12:00	K-52	A New Method for Dynamic Response Topology Optimization Using Equivalent Static Loads	*Hwan-Hak Jang, Hyun-Ah Lee, Gyung-Jin Park (Hanyang University, Korea)

### 3C2 Metamodeling 4

Room C (Kurama)

Chairs: Sheng Li (Dalian University of Technology, China)  
Satoshi Kitayama (Kanazawa University, Japan)

10:40-11:00	C-41	Adaptive MLS-HDMR Metamodeling Techniques for High Dimensional Problems	*Hu Wang, Guangyao Li, Guoqiang Gao, Qi Han (Hunan University, China)
11:00-11:20	J-49	Vehicle Control Algorithm for Avoiding Traffic Jam Near Merging Point of Roads	*Y. Wakita, T. Iguchi, H. Shimizu, Eisuke Kita (Nagoya University, Japan)
11:20-11:40	K-35	DOE-Based Evolutionary Algorithm Parameter Tuning	Caorun Lu, Gyu-Byung Park, *Dong-Hoon Choi (Hanyang University, Korea), Minjoong Jeong (Korea Institute of Science and Technology Information, Korea)

## Technical Session 10

Thursday, June 24

13:00-14:40

### 3A3 Structural Optimization 5

Room A (Aoi)

Chairs: Hyun-Jung Kim (KAIST, Korea)  
Satoshi Katsuki (National Defence Academy, Japan)

13:00-13:20	C-22	Damage-Reduction Based Multi-Objective Optimum Design of Buckling Restrained Braced Frame (BRBF) Using Genetic Algorithm	*Gang Li, Yi Jiang (Dalian University of Technology, China)
13:20-13:40	J-16	A Line Search Technique in Combined Genetic Algorithm for Optimum Cost Design of Steel Structures	*Hitoshi Shimizu (Takenaka Corporation, Japan), Kiichiro Sawada, Akira Matsuo (Hiroshima University, Japan)
13:40-14:00	J-12	Combinatorial Rigidity of Bar-and-Joint Frameworks with External Constraints	*Naoki Katoh, Shin-ichi Tanigawa (Kyoto University, Japan)
14:00-14:20	J-63	Development of Supporting Scheme for Structural Design of Steel Frame Structures - Optimization of Basement of	*Shinichi Kodama, Hiroshi Ohmori (Nagoya University, Japan)

### 3B3 Topology Optimization 5

Room B (Gion)

Chairs: Peng Wei (South China University of Technology, China)  
Shintaro Yamasaki (Shibaura Institute of Technology, Japan)

13:00-13:20	C-06	Structural Topology Optimization by Using Two Level Multipoint Approximation	*Shenyan Chen, Wei Wang (Beihang University, China)
13:20-13:40	C-52	Applying a Modified Particle Swarm Algorithm to Sizing and Topological Optimization of Framed Structures	*Bin Yang, Qilin Zhang (Tongji University, China)
13:40-14:00	K-39	Application of Model Reduction Methods for Efficient Topology Optimization	*G.H. Yoon (Kyungpook National University, Korea)
14:00-14:20	C-18	Topology and Size Alternating Optimization for a Satellite Structure	*Kuai Yu, Shenyan Chen, Hai Huang (Beihang University, China)
14:20-14:40	C-69	On the Improved Integrated Layout Design with Structural Support Design	*Jihong Zhu, Weihong Zhang, Liang Xia, Qiao Zhang (Northwestern Polytechnical University, China)

### 3C3 Multidisciplinary Optimization 3

Room C (Kurama)

Chairs: Jeong Sam Han (Andong National University, Korea)  
Yutaka Nomaguchi (Osaka University, Japan)

13:00-13:20	K-16	Optimization of HAWT Composite Blade Based on Integrated Structural Analysis	Wei-Fei Hu, *Dong-Hoon Choi (Hanyang University, Korea)
13:20-13:40	C-26	Weight Reduction of Wagenkasten of High Speed Train Based on MDO	*Kaijie Liu, Honglun Zhao (Tongji University, China)
13:40-14:00	K-07	Shape Design Optimization of Fluid-Structure Interactions Considering Geometrically Exact Interfaces	*Hyun-Seok Kim, Min-Geun Kim, Seonho Cho (Seoul National University, Korea)
14:00-14:20	C-24	Design Optimization for Vibro-Acoustic Responses of Underwater Stiffened Plates Based on Target Cascading and Surrogate Model	*Sheng Li (Dalian University of Technology, China)
14:20-14:40	C-03	Coupling Analysis and Optimization of Large Scale Cooling Tower Subjected to Wind Loads	*Wenbin Cao, Gang Li (Dalian University of Technology, China)

### 3D3 Aerospace Engineering 3

### Room D (Sakura)

Chairs: Bo Wang (Dalian University of Technology, China)  
Yoshiro Ogi (University of Tokyo, Japan)

13:00-13:20	K-25	Multi-Objective Path Optimization of Flapping Airfoils Based on a Surrogate Model	*Liangyu Zhao, Jung-Sun Choi, Gyung-Jin Park (Hanyang University, Korea), Sunil K. Agrawal (University of Delaware, USA), Raymond M. Kolonay (U. S. Air Force Research Laboratory, USA)
13:20-13:40	C-68	Integrated Optimization of Aero-Thermo-Structure Lifting Surfaces in High Speed Flow	*Huaguang Zhu, Li Liu, Sida Zhou, Yulin Li (Beijing Institute of Technology, China)
13:40-14:00	J-33	A CAD Parameter Based Design Optimization Process for CFD	*Iku Kosaka (Vanderplaats Research and Development Inc., USA), Takeshi Kobiki (DI-Square Co., Japan), Kazuhiro Kooriyama (Automotive Design Solution Inc., Japan)
14:00-14:20	J-32	Quality Optimization of Air Based on the Numerical Simulation of Unsteady Turbulent Flow in an Aircraft Cabin	*Hidefumi Saito (Shimadzu Corp., Japan), Takeo Kajishima (Osaka University, Japan)

### 3E3 Robust and Reliability Design 3

### Room E (Tachibana)

Chairs: Guozhong Zhao (Dalian University of Technology, China)  
Yoshihiro Kanno (University of Tokyo, Japan)

13:00-13:20	C-01	An Interval Optimization Algorithm for Problems under Large Uncertainty	*Yingchun Bai, Xu Han, Chao Jiang (Hunan University, China)
13:20-13:40	C-62	Study on Fuzzy Reliability Multi-Objective Optimization of Incomplete Probability Formation Systems Based on Genetic Algorithms	*Qiang Zhang, Ying Tian, Mao Jun (Liaoning Technical University, China)
13:40-14:00	J-65	Robust Topology Optimum Design for Coupled Thermal and Structural Problems Using Level Set Boundary Expressions	Yutaka Hirano (Osaka Prefecture University, Japan), Takayuki Yamada (Kyoto University, Japan), *Nozomu Kogiso (Osaka Prefecture University, Japan), Shinji Nishiwaki (Kyoto University, Japan), Atsuro Iga (Yanmar Co., Ltd., Japan)



## Technical Session 11

Thursday, June 24  
15:00-16:40

### 3A4 Sensitivity Analysis

Room A (Aoi)

Chairs: Zhan Kang (Dalian University of Technology, China)  
Akihiro Takezawa (Hiroshima University, Japan)

15:00-15:20	K-06	Design Sensitivity Analysis of Molecular-Continuum Systems Using Bridging Scale Approach	*Hong-Lae Jang, Min-Geun Kim, Seonho Cho (Seoul National University, Korea)
15:20-15:40	K-12	Transient Dynamic Design Sensitivity Analysis for Large-Sized Problems Using Krylov Subspace-Based Model Order	*Jeong Sam Han (Andong National University, Korea)
15:40-16:00	J-88	An Effective Buckling Load Sensitivity in Shape Optimization of Nonlinear Plane Structures	*Fumio Fujii (Gifu University, Japan), Shunsuke Shibata (Nagoya University, Japan), Toshio Honma (Kagoshima University, Japan)
16:00-16:20	C-11	Research on Structural Static and Dynamic Topology Optimization and Sensitivity Analysis Based on RKPM	Jianping Zhang, *Shuguang Gong (Xiangtan University, China), Yankun Jiang (Huazhong University of Science and Technology, China)
16:20-16:40	K-50	Three-Dimensional FE Procedure and Sensitivity Analysis for Topology Optimization of Piezoelectric Structure	Noh Jin Yee, *Gil Ho Yoon (Kyungpook National University, Korea)

### 3B4 Topology Optimization 6

Room B (Gion)

Chairs: G.H. Yoon (Kyungpook National University, Korea)  
Hiroschi Ohmori (Nagoya University, Japan)

15:00-15:20	C-02	Volume Preserving Heaviside Filter and Manufacturability	Shengli Xu, Yuanwu Cai, *Gengdong Cheng (Dalian University of Technology, China)
15:20-15:40	K-33	Topology Optimization Using Spline Finite Element Method and Trimmed Surfaces	Yu-Deok Seo, *Hyun-Jung Kim, Sung-Kie Youn (KAIST, Korea)
15:40-16:00	C-13	Quasi-Static and Dynamic Topology Optimization of High-Voltage Transmission Steel Tower Based on Discrete	Zhengliang Li, *Huiyong Guo, Zhengzhi Xiao (Chongqing University, China)
16:00-16:20	C-48	A Level Set Based Method for the Optimization of Cast Part	*Qi Xia, Tielin Shi, Shiyuan Liu (Huazhong University of Science and Technology, China), Michael Yu Wang (Chinese University of Hong Kong, China)
16:20-16:40	J-18	Level Set-Based Topology Optimization for Nonlinear Structural Problems Using a Particle Method	*Masatoshi Manabe, Takayuki Yamada, Kazuhiro Izui, Shinji Nishiwaki (Kyoto University, Japan)

### 3C4 Shape Optimization 3

Room C (Kurama)

Chairs: Weihong Zhang (Northwestern Polytechnical University, China)  
Ichirou Ario (Hiroshima University, Japan)

15:00-15:20	J-85	A Study on Optimality of Cervical Spine of Giraffe	*Jiro Sakamoto, Takeshi Yamazaki, Haruka Tai (Kanazawa University, Japan), Kentaro Arihara (Nikon Co., Japan)
15:20-15:40	J-20	Shape Optimization of Clamping Members of Frame-Supported Membrane Structures under Stress Constraints	*Jun Fujiwara (Taiyo Kogyo Corporation, Japan), Taku Nakajima (Kyoto University, Japan), Makoto Ohsaki (Hiroshima University, Japan), Fumiyoshi Takeda (Taiyo Kogyo Corporation, Japan)
15:40-16:00	J-07	Shape Optimization of Long-Span Translational Free-Form Shell Roofs in Strong Wind Using Multigrid Method and Variable Complexity Model	*Takuzo Yamashita (National Research Institute for Earth Science and Disaster Prevention, Japan), Tomohiko Kumagai, Toshiyuki Ogawa (Tokyo Institute of Technology, Japan), Tomoshi Miyamura (Nihon University, Japan), Makoto Ohsaki (Hiroshima University, Japan)
16:00-16:20	J-50	Shape Optimization Problem of Multi-Body Systems	Kimihiro Umemura, Naoya Kondo, Taiki Aoyama, *Hideyuki Azegami (Nagoya University, Japan)

### 3D4 Aerospace Engineering 4

### Room D (Sakura)

Chairs: Liangyu Zhao (Hanyang University, Korea)  
Ryusuke Matsuzaki (Tokyo Institute of Technology, Japan)

15:00-15:20	C-17	Practice of Structural Modeling, Analysis and Optimization in Spacecraft Design	*Ingrid Piña P., Hai Huang, Kuai Yu(Beihang University, China)
15:20-15:40	J-74	Optimization of Trajectory and Motion Planning for a Two-Dimensional Variable Geometry Truss	*Atsuhiko Senba, Kosuke Oka, Tadashige Ikeda, Tetsuhiko Ueda (Nagoya University, Japan)
15:40-16:00	J-37	Investigation for Vibration Reduction of Launch Vehicle Adapter on Which Different Kinds of Small Satellites are	*Ayako Torisaka, Hiroshi Yamakawa (Waseda University, Japan)
16:00-16:20	J-83	Design of Wrapping Fold Apparatus for Solar Sail Membrane	Yasutaka Satou, *Hiroshi Furuya (Tokyo Institute of Technology, Japan)
16:20-16:40	C-16	Structural Design and Optimization of a Micro Satellite with a Deployable Mast	*Hai Huang, Ruilan Wu, Shenyan Chen (Beihang University, China)

### 3E4 Industrial Application 5

### Room E (Tachibana)

Chairs: Haitao Ma (South China University of Technology, China)  
Yukio Nakajima (Kogakuin University, Japan)

15:00-15:20	J-46	Algorithm to Optimize Cutting Path for Minimizing Workpiece Displacement at Cutting Point	*Yusuke Koike, Atsushi Matsubara, Shinji Nishiwaki, Kazuhiro Izui, Iwao Yamaji (Kyoto University, Japan)
15:20-15:40	J-86	Three-Dimensional Forming Process Simulation and Optimum Design of New Dies for Aluminum Beverage Can Ends	*Koetsu Yamazaki, Takayasu Otsuka (Kanazawa University, Japan), Jing Han, Takashi Hasegawa, Sadao Nishiyama (Universal Can Corporation, Japan)
15:40-16:00	K-49	Optimization of Cooling Channels Separately Installed in the Stationary and Moving Plates in Injection Mold	*Jae Hyuk Choi, Soon Ho Choi, Byung Ohk Rhee (Ajou University, Korea), Chang-Hyun Park, Hee-Jae Ahn, Dong-Hoon Choi (Hanyang University, Korea)
16:00-16:20	J-60	A Closed-Type Algorithm for The Determination of the Variable Blank Holder Force Trajectory in Deep Drawing	*Satoshi Hamano, Satoshi Kitayama, Koetsu Yamazaki, Hiroshi Kinoshita (Kanazawa University, Japan)