

**Program of 2009 Asia-Pacific International Symposium on Aerospace Technology**

**November 4, 2009/ Wednesday Morning**

| Room B (Session B-1) : Airfoil and Rotor Aerodynamics I<br>Chairs: Etsuo Morishita, <i>Utsunomiya University</i> |  |  |
|--|--|--|
| 9:30-9:50  | An Investigation of Aerodynamic Characteristics of KC-100 Aircraft Due to Ice Accretion                                      | S. K. Jung, S. M. Shin, C. H. Lee, R. S. Myong, T. H. Cho(Gyeongsang National University)  |
| 9:50-10:10   | Aerodynamic Characteristics and Vortices Structure of Two-Dimensional Airfoil in Low Reynolds Number Flow                    | Yusuke INOUE, Takaya SATO, Ken NISHIHARA, Koichi YONEMOTO (Kyushu Institute of Technology), Keiichiro TAKATO (Nishinippon Institute of Technology)                             |
| 10:10-10:30  | Experimental Investigation of Lift Enhancement on a NACA0012 Wing Using Flow deflector                                       | Yalei Bai, Xiao Ming and Lisheng Zhou(Nanjing University of Aeronautics and Astronautics)  |
| 10:30-10:50  | Aerodynamic Analysis of Helicopter Rotor using the Time-Domain Panel Method  | Seawook Lee , Leesang Cho (Hanyang University), Seongjoo Cha (Korea University of Technology and Education) and Jinsoo Cho (Hanyang University)                                |
| Room C (Session C-1): UAV/WIG Design<br>Chairs: Midori Maki, JAXA  |  |  |
| 9:30-9:50  | Conceptual design and feasibility analysis of wing in surface effect ship with canard configuration for middle-range service | Hiromichi Akimoto and Makoto Kanehira(The University of Tokyo)   |
| 9:50-10:10   | Solar Powered Unmanned Flying Wing for Environmental Monitoring  | Alsény Diallo, Akinori Oda, and Kimiya Komurasaki(The University of Tokyo)   |
| 10:10-10:30  | Experimental and Numerical Study of Resonance Type Flapping Wings for Micro Aerial Vehicles                                  | Koji Isogai and Hiroto Nagai (Nippon Bunri University)   |
| 10:30-10:50  | Development of Autonomous Micro Aerial Vehicles  | Dong-Il You and David Hyunchul Shim (KAIST)  |
| Room D (Session D-1) : Traffic Management I<br>Chairs: Noboru Takeichi, <i>Nagoya University</i>                 |  |  |
| 9:30-9:50  | Methodologies for Identification of Organisational Factors in Aircraft Accidents   | Justin Debrincat, Graham Clark and Cees Bil (RMIT University)  |
| 9:50-10:10   | Data and Queueing Analysis of a Japanese Arrival Flow  | C. Gwiggner, A. Kimura, S. Nagaoka (Electronic Navigation Research Institute)  |
| 10:10-10:30  | Analysis of RNAV Departures and Arrivals Using Track Data  | Yutaka FUKUDA, and Masayuki SHIRAKAWA (Electronic Navigation Research Institute)   |
| Room E (Session E-1) : Finite Element Method<br>Chairs: Seung Jo Kim/Seoul National University                   |  |  |
| 9:30-9:50  | Free vibration of functionally graded metallic foam circular plate   | Jiao-Yan Li, Yue-Ming Li, Tie-Jun Wang (Xi'an Jiaotong University)   |
| 9:50-10:10   | Dynamic Response under Overload-vibro-acoustic Coupling for Spacecraft Structure   | Yue-Ming Li, Xiong-Wei Yang, Ling Li, and Gui-Rong Yan (Xi'an Jiaotong University)   |
| 10:10-10:30  | Structuring Rules in an Automated Feature Extraction System  | Christian Van der Velden, Hao-Lan Zhang, Xinghuo Yu (RMIT University), Tim Jones, Ian Fieldhouse (GKN Aerospace Engineering Services Pty. Ltd.) and Cees Bil (RMIT University) |
| 10:30-10:50  | Performance Comparison of Efficient Finite Element System, DIAMOND/IPSAP in Parallel Environment                             | Jong Keun Moon, Jong Bum Kim, Sang Min Kim, Kuk Jin Park, Chae Kyu Jang and Seung Jo Kim (Seoul National University)   |
| Room F (Session F-1) : Fluid Dynamics I<br>Chairs: Koichi Mori, <i>Nagoya University</i>                         |  |  |
| 9:30-9:50  | A Study on the Deformation and Pinch-off Characteristics of Liquid Jet Injected from Circular Nozzle                         | Jun OSAKA and Akira UMEMURA (Nagoya University)  |
| 9:50-10:10   | Large Eddy Simulation of breakup and atomization of a liquid column into cross turbulent flows                               | Seung-joon Yang, Hong-Gye Sung (Korea Aerospace University)  |
| 10:10-10:30  | Analysis of Electro-hydraulic Servovalve with an Asymmetric Nozzle Flapper   | YIN Yaobao , MENG Wei , SHEN Yuzhuo , HE Pengfei (Tongji University)   |
| 10:30-10:50  | Inverse Generation of Gas Turbine Component Performance Maps from Experimental Test Data                                     | Changduk Kong, Semyeong Lim, Seonghee Kho (Chosun University)  |
| Room G (Session G-1) : Space Propulsion<br>Chairs: Takeshi Miyasaka, Gifu University                             |  |  |
| 9:30-9:50  | Computational study on plasma flow around dipole magnetic field  | Hirofumi Sugano (University of Tokyo) and Etsuo Morishita (Utsunomiya University)  |
| 9:50-10:10   | An Efficient Method of Estimating Molecular Contamination by Backscattering on Satellite Surfaces in Space Conditions        | Inho Kim and Jin W. Lee (POSTECH)  |
| 10:10-10:30  | Application of microdischarge for micro electric propulsion  | XIA Guangqing (Dalian University of Technology), and MAO Genwang (Northwestern Polytechnical University)   |

| Room B (Session B-2) : Airfoil and Rotor Aerodynamics II<br>Chairs: BAI Wen, <i>Chinese Aeronautical Establishment</i> |  |  |
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| 11:00-11:20  | Numerical Simulation of Viscous Flow for the HART II Rotor Blade on Adaptive Unstructured Meshes         | Dong Ok Yu, Mun Seung Jung, Hee Dong Lee, and Oh Joon Kwon (KAIST)   |
| 11:20-11:40  | Numerical Study on Water Droplets Flow around circular cylinder and airfoil                              | Keisuke Shindo (University of Tokyo) and Etsuo Morishita (Utsunomiya University)   |
| 11:40-12:00  | Experimental Investigation on Tip-Vortices Generated by Two Bladed Helicopter Rotor in Earlier Wake Ages | B. H. Park and Y. O. Han (Yeungnam University)   |
| Room C (Session C-2) : UAV Identification and Control<br>Chairs: Jinsoo Cho, <i>Hanyang University</i>                 |  |  |
| 11:00-11:20  | Autonomous Landing Control Using Holonomy for Micro UAV  | Ryota Kojima, Kakuji Ogawara(Yamaguchi University)   |
| 11:20-11:40  | Designing a Multimodal Control Assistance Interface for Manual Control of UAV Helicopters                | Ken Friedl , Yusuke Zemba, Hironori Okazaki , Shinji Suzuki (The University of Tokyo)                                    |
| 11:40-12:00  | System Identification of Small UAVs Dynamics by Using Time-Frequency Information and Avionics            | Masaru Naruoka, Takuma Hino, Takeshi Tsuchiya (The University of Tokyo)  |
| Room D (Session D-2) : Traffic Management II<br>Chairs: In-Seuck Jeung, <i>Seoul National University</i>               |  |  |
| 11:00-11:20  | Improved Airborne Spacing Control for Trailing Aircraft  | Eri Itoh (ENRI), Peter van der Geest, and Henk Blom (National Aerospace Laboratory)                                      |
| 11:20-11:40  | Free Flight Air Traffic Management Optimisation using Discrete Particle Simulations                      | Paul Simon and Cees Bil (RMIT University)  |
| 11:40-12:00  | Analysis of UPR efficiency to restriction  | Sachiko FUKUSHIMA, Yutaka FUKUDA and Midori SUMIYA (Electronic Navigation Research Institute)                            |
| Room E (Session E-2) : Control and Estimation I<br>Chairs: Hiroyuki Takano, <i>National Defense Academy</i>            |  |  |
| 11:00-11:20  | Low-order Flight Controllers based on Integral-type Optimal Servomechanism                               | Hiroyuki Kondo and Yoshimasa Ochi (National Defense Academy)   |
| 11:20-11:40  | An Adaptive Autopilot Design and Stability Margin Evaluation for Anti-ship Missile                       | Kwangho HAN, Jaemin SUNG, and Byoungsoo KIM (Gyeongsang National University)   |
| 11:40-12:00  | Adaptive Flight Control System for Lateral-Directional Motion Using Two-Inputs-Single-Output Concept     | Yoshinori Hasebe, Yuzo Shimada and Akio Abe (Nihon University)   |
| Room F (Session F-2) : Fluid Dynamics II<br>Chairs: Cheol Heui Han, <i>Chungju National University</i>                 |  |  |
| 11:00-11:20  | Pulse-laser experiment on single bubble dynamics in cryogenic liquid nitrogen                            | Yuki OSHIDA, Yoshihiro YAMAMOTO, Sho NAKAJIMA, Takashi NISHIZAWA, Masanori OTA, and Kazuo MAENO(Chiba University)        |
| 11:20-11:40  | Aerodynamics Analysis of a Moving Airfoil in a Low Reynolds Number Flow                                  | Jounghyuk Choi and Joosung Maeng(Hanyang University), Cheolheui Han(Chungju National University)                         |
| 11:40-12:00  | Discussion of Several Questions with Efficiency Assessment in Axial Flow Compressor Experiment           | Hong-hui XIANG, and Ming-lin REN(China Gas Turbine Establishment)  |
| Room G (Session G-2) : Propulsion I<br>Chairs: FU Song, <i>Tsinghua University</i>                                     |  |  |
| 11:00-11:20  | Local Regression rate Measurement Technique for Hybrid rocket Fuel                                       | Hakchul Kim, Soojong Kim, Jungpyo Lee, Gihun Kim, Heejang Moon, Honggye Sung, Jinkon Kim (Korea Aerospace University)    |
| 11:20-11:40  | Effect of Paraffin-Polymer Blended Fuel for Hybrid Rocket  | Soojong Kim, Jungpyo Lee, Gihun Kim, Jungtae Cho, Heejang Moon, Honggye Sung and Jinkon Kim (Korea Aerospace University) |

| November 4, 2009/ Wednesday Afternoon  |  |  |
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| (Room A) (Plenary Lecture) Chairs : Masatoshi Harigae, JAXA  |  |  |
| <b>Plenary Lecture 1</b><br>13:00-13:30 Overview of Trends in ATM Research, Sakae Nagaoka (ENRI/Tokyo University of Marine Science and Technology) |  |  |
| <b>Plenary Lecture 2</b><br>13:30-14:30 Overview of NextGen and Recent Developments, Steve Bradford (Federal Aviation Administration)              |  |  |
| Room C (Session C-3) : Guidance for Multiple UAVs<br>Chairs: Yoshimasa Ochi, <i>National Defense Academy</i>                                       |  |  |
| 14:40-15:00  | Decentralized Task Assignment for Multiple UAVs using Genetic Algorithm with Negotiation scheme approach                 | Hyunjin Choi, Joongbo Seo, and Youdan Kim (Seoul National University)  |
| 15:00-15:20  | Study on Formation Control of UAVs with Concept of Plant Hormone   | Akiko SHINO, and Seiya UENO (Yokohama National University)   |
| 15:20-15:40  | Low Calculation Cost Formation Control Scheme for Small Unmanned Aerial Vehicles Tollerant to High Communication Failure | Takuma Hino and Takeshi Tsuchiya (The University of Tokyo)   |
| Room D (Session D-3) : Computational Aerodynamics I<br>Chairs: Yong Oun Han, <i>Yeungnam University</i>  |  |  |
| 14:40-15:00  | Verification of Computational Results of Rotor/Fuselage Interaction Analysis with <i>rFlow3D</i> Code                    | Yasutada Tanabe, Shigeru Saito (JAXA) and Ippei Otani (Tokyo Business Service Co., Ltd.)   |
| 15:00-15:20  | Unsteady Simulation of Rotor-Fuselage Interactions Using Modified Free-Wake Method                                       | Jaewon Lee, Jinwoo Seo, Sejong Oh and Kwanjung Yee (Pusan National University) Kihoon Chung (KARI)   |
| 15:20-15:40  | Development of a 2-D Unsteady Flow Simulation Technique Using Adaptive Cartesian Meshes                                  | Min Kyu Jung, Seyoun Park, Oh Joon Kwon, and Hayong Shin (KAIST)   |
| 15:40-16:00  | A Reflection of Aeronautical CFD Solvers in China  | BAI Wen (Chinese Aeronautical Establishment)   |
| Room E (Session E-3) : Control and Estimation II<br>Chairs: Min-Jea Tahk, <i>KAIST</i>   |  |  |
| 14:40-15:00  | A Note on a Velocity Control System Design Using the Dynamic Inversion Method  | Keisuke Enomoto, Takeshi Yamasaki, Hiroyuki Takano, and Yoriaki Baba (National Defense Academy)  |
| 15:00-15:20  | Robust Flight Control System Using Dynamic Inversion With Disturbance-Accommodating Control                              | Yasushi Ohtsuka, Yuzo Shimada, and Akio Abe (Nihon University)   |
| 15:20-15:40  | Active Control/Stability Augmentation System Design for Flutter/LCO Suppression Based on Reduced Order Model Method      | Chen Gang, Li Yue-ming, Yan Gui-rong (Xi'an Jiaotong University)   |
| 15:40-16:00  | Ground Test for Rotor Governing Controller in Tilt Rotor Aircraft  | Chang-sun Yoo, Bum-jin Park, Young-shin Kang, Yu-shin Kim (KARI)   |
| Room F (Session F-3) : Metal and Alloy<br>Chairs: Yoshihiro Takao, <i>Kyushu University</i>  |  |  |
| 14:40-15:00  | Property for fatigue crack propagation of friction stir welded 2024-T3 aluminum alloy                                    | Kazuya Kuwayama, Motoo Asakawa (Waseda University), Takao Okada, Toshiya Nakamura, Shigeru Machida (JAXA), Shinya Fujita (Waseda University) |
| 15:00-15:20  | Prediction of Thermal Responses of Shape Memory Alloys using Simplified One-Dimensional SMA Model                        | Myung-Koo Kang, Eun-Ho Kim, Mi-Sun Rim and In Lee (KAIST)  |
| 15:20-15:40  | Environmental effects on mechanical properties of a liquid rocket combustion chamber liner material                      | Shinichi Moriya (JAXA), Tota Kutsuzawa, and Shinichi Komazaki (Muran Institute of Technology)  |
| Room G (Session G-3) : Propulsion II<br>Chairs: Jun Osaka, <i>Nagoya University</i>  |  |  |
| 14:40-15:00  | The Study of Fuel Rich Solid Propellant Combustion Mechanism in the Phase of PTFE is used as the Binder                  | Seungvin Lim, Juhyen Sim and SangEun Shim (Inha University)  |
| 15:00-15:20  | The Effect of Nitrogen Dilution on Flame Stability of a Lifted Non-Premixed Turbulent Hydrogen Jet with Coaxial Air      | Jeongseog Oh and Youngbin Yoon (Seoul National University)   |
| 15:20-15:40  | Analysis of Fuel Nozzle Configuration Characteristic of TAPS Combustor   | LI Jie (Xi'an Aero Engine (Group) Ltd.)  |

| Room C (Session C-4) : Space System Design<br>Chairs: Koichi Yonemoto, <i>Kyushu Institute of Technology</i> |  |  |
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| 16:10-16:30  | Shock Response Prediction of Low Altitude Earth Observation Satellite during Launch Vehicle Separation Using an Empirical Model          | Lee, Dae-Oen, Han, Jae-Hung, Woo, Sung-Hyun(KAIST), Kim, Kyung-Won(KARI)   |
| 16:30-16:50  | Integrated Design of a Hybrid Sounding Rocket Using Liquid N <sub>2</sub> O  | Jun-Young Heo, Min-Gyoung Cho, Hyung-Ju Park, Soo-Jong Kim, Jin-Kon Kim, Hee-Jang Moon, Hong-Gye Sung(Korea Aerospace Univ.) |
| 16:50-17:10  | Launch Campaign of KIT Student's Experimental Rocket "Ninja-09" in France  | Naoki TSUJI, Yusuke INOUE, Shogo MIYATA, Yuki MURANAKA(Kyushu Institute of Technology), et al.                               |
| Room D (Session D-4) : Computational Aerodynamics II<br>Chairs: Yasutada Tanabe, <i>JAXA</i>                 |  |  |
| 16:10-16:30  | The development of the half-staggered adaptive Soroban Grid for CCUP method  | Seung Jun Lee and In Lee (KAIST)   |
| 16:30-16:50  | Design Improvement and Kerosene Flow Thermal Characteristics of an Aeroengine Fuel System Centrifugal Pump using 3D Numerical Simulation | Yoann GAMET and Ying PIAO (Tsinghua University of Beijing)   |
| 16:50-17:10  | Two-dimensional Fluid-Structure Interaction Simulations of Insects' Flapping Flight  | Kuen-Bae Lee, Jin-Ho Kim, and Chongam Kim (Seoul National University)  |
| 17:10-17:30  | Development of an Aerodynamic Analysis Module for Rotor Comprehensive Analysis Program   | Joonbae Lee, Kwanjung Yee and Sejong Oh(Pusan National University), Deog-Kwan Kim (Korea Aerospace Research Institute)       |
| Room E (Session E-4) : Control and Estimation III<br>Chairs: Yuzo Shimada, <i>Nihon University</i>           |  |  |
| 16:10-16:30  | The Research on the Applicability of the Aircraft Four Control Variables Point Mass Model  | Fumiaki Imado (Shinshu University), Yuki Heike (All Nippon Airways), Takuya Kinoshita (Japan Defense Ministry)               |
| 16:30-16:50  | The Applications of State Observer Theory in Acoustic Array Signal Processing  | Xun Huang (Peking University)  |
| 16:50-17:10  | Optimal Maneuvers of a Rigid Body Aircraft using the Optimal Control Theory with Indirect Method   | Shinji Fukui, Hiroyuki Takano, and Takeshi Yamasaki (National Defense Academy)   |
| 17:10-17:30  | Phugoid motion damping techniques using 'Throttles Only Control(TOC)' method   | Hanna Paulose (Mar Athanasius College of Engineering)  |
| Room F (Session F-4) : Guidance and Control I<br>Chairs: Hwa-Suk Oh, <i>Korea Aerospace University</i>       |  |  |
| 16:10-16:30  | Preliminary Consideration toward Autonomous Collision Avoidance Technology for Mini UAV  | Midori Maki and Kazutoshi Ishikawa (JAXA)  |
| 16:30-16:50  | Estimation of Dynamic Properties for Satellite on Orbit  | Dong-Hoon Kim, Sungwook Yang, Dong-Ik Cheon, Sangchul Lee, and Hwa-Suk Oh(Korea Aerospace University)                        |
| 16:50-17:10  | QSAT-DMC: A Constellation of In-situ Debris Measurement Satellites   | Kenta NAGAMINE, Kazuaki MANIWA, Shunsuke ONISHI, Akira SAKURAI, Toshiya HANADA (Kyushu University)                           |
| 17:10-17:30  | A research of autonomous emergency landing system of a fixed-wing UAV  | Satoshi Takagi, Nobuyuki Matsuno and Shinji Suzuki (The University of Tokyo)   |
| Room G (Session G-4) : Propulsion III<br>Chairs: Hong-Gye Sung, <i>Korea Aerospace University</i>            |  |  |
| 16:10-16:30  | A study on Merge Effect in the Multi-port Fuel Grain of Hybrid Rocket  | Gihun Kim, Soojong Kim, Jungpyo Lee, Jungtae Cho, Heejang Moon, Honggye Sung and Jinkon Kim (Korea Aerospace University)     |
| 16:30-16:50  | Numerical Study of Starting Process of a Direct-Connect Scramjet Combustor   | Jinhyeon Noh, J.Y. Choi (Pusan National University)  |
| 16:50-17:10  | The summarization for principle and technology of RQL combustor and TALON combustor  | Li Jie (Xi'an Aero Engine (Group) Ltd.)  |

**November 5, 2009/ Thursday Morning**

| Room C (Session C-5) : VTOL UAV I<br>Chairs: Hiroshi Tokutake, <i>Osaka Prefecture University</i>      |   |  |
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| 9:10-9:30  | Aerodynamic Design and Experiment of the Ducted Fan VTOL MAV  | H. M. Choi, M. H. Ryu, J. S. Cho (Hanyang University)  |
| 9:30-9:50  | Research and Development of an Electric Ducted Fan Aerial Robot for Prompt Rescue Operations  | Takashi Shibui, Naoki Nagasaka, Takeshi Tsuchiya, Shinji Suzuki (The University of Tokyo), Daisuke Kubo (JAXA)   |
| 9:50-10:10   | Numerical and Experimental Study on the Aerodynamic Design of the Ducted Fan for the Small VTOL UAV Propulsion  | Leesang Cho, Seawook Lee (Hanyang University), Seongjoo Cha (Korea University of Technology and Education), and Jinsoo Cho (Hanyang University)                |
| Room D (Session D-5) : High Speed Flow I<br>Chairs: Takeharu Sakai, <i>Nagoya University</i>           |   |  |
| 9:10-9:30  | Quantitative measurement of M=2.0 supersonic flow field around an asymmetric model using colored-grid background oriented schlieren (CGBOS) technique | Kenta HAMADA, Hiroko KATO, Ryusuke NODA, Masanori OTA and Kazuo MAENO (Chiba University)   |
| 9:30-9:50  | Detailed flow visualization of the supersonic inlet at Mach 2.5   | Hyoung Jin Lee and In-Seuck Jeung (Seoul National University)  |
| 9:50-10:10   | Unsteady PSP Application to an Internal Flow with Oscillating Shock Wave  | Junichi Osawa (Tokyo University of Agriculture and Technology), Kazuyuki Nakakita (JAXA), and Masaharu Kameda (Tokyo University of Agriculture and Technology) |
| Room E (Session E-5) : Flow Control I<br>Chairs: REN Yuxin, <i>Tsinghua University</i>                 |   |  |
| 9:10-9:30  | A Sensitivity Equation Method for the Computation of Aerodynamic Stability Derivatives  | Guo-dong Lei and Yu-xin Ren (Tsinghua University)  |
| 9:30-9:50  | Plasma Actuator Influence on Laminar Boundary Layer Flow  | Brad A. Gibson, Maziar Arjomandi, and Richard M. Kelso (The University of Adelaide)  |
| 9:50-10:10   | Aerodynamic effect of leading-edge serrations on wings  | Koju Hiraki, Toshiyuki Koga, Masanobu Inoue (Kyushu Institute of Technology)   |
| 10:10-10:30  | Aerodynamic Analysis of Cycloidal Vertical Axis Wind Turbine with Flap Control System   | Choong-Hee Lee, Dong-Jun Shin, Seoung-Eun Chun and Seung-Jo Kim (Seoul National University)  |
| Room F (Session F-5) : Guidance and Control II<br>Chairs: Youdan Kim, <i>Seoul National University</i> |   |  |
| 9:10-9:30  | Multidisciplinary Optimization of Equipment Performance and Interplanetary Trajectory for Spacecraft with Electric Propulsion                         | Tomokazu KONNO, and Takeshi TSUCHIYA (The University of Tokyo)   |
| 9:30-9:50  | Satellite Attitude Control with Modified Iterative Learning Law for the Effectiveness Decrease of the Actuator  | HoJin Lee, Youdan Kim (Seoul national University) and Hee Seob Kim (KARI)  |
| 9:50-10:10   | Real-Time Trajectory Generation Algorithm for Optimal Avoidance of Turbulence   | Nobuhiro Yokoyama (National Defense Academy) and Hamaki Inokuchi (JAXA)  |
| 10:10-10:30  | Determination of Optimal Mounting Direction of Two Star Trackers for LEO Satellites   | Woosung Park, Joongsup Yun, Chang-Kyung Ryoo, and Keeyoung Choi (University of Inha)   |
| Room G (Session G-5) : Structure I<br>Chairs: M. Scott, <i>CRC-ACS</i>                                 |   |  |
| 9:10-9:30  | Development of High Pressure Hydrogen Tank Made of Clay-film Compound CFRP  | Koichi YONEMOTO, Kohichiro ABE, Yuta YAMAMOTO (Kyushu Institute of Technology), Takeo EBINA(AIST), and Keiichi OKUYAMA (Aichi University of Technology)        |
| 9:30-9:50  | Characterisation of carbon NCF for vacuum bag resin infusion  | A. Franceschetti, R. Roberts, X. Liu (CRC-ACS), B.G. Falzon (Monash University), Y. Nagao (JAXA) and N. Takeda (The University of Tokyo)                       |
| 9:50-10:10   | Asymmetric Stacking Sequences for Fully Orthotropic Laminates   | Jong-Won Lee, Jin-Won Kim, and Hyun-Gi Kim (KARI)  |

| Room C (Session C-6) : VTOL UAV II<br>Chairs: Heejang Moon, <i>Korea Aerospace University</i>                 |  |   |
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| 10:40-11:00   | Experimental Study on the Three-Dimensional Unsteady Flow Characteristics of the Ducted Fans for a Small UAV   | Minhyoung Ryu, Hyunmin Choi and Jinsoo Cho (Hanyang University)   |
| 11:00-11:20   | High Angle of Attack Aerodynamic Characteristics of a Wing-in-Propeller-Slipstream Aircraft  | Daisuke Kubo, Koji Muraoka, Noriaki Okada (JAXA), and Shinji Suzuki (The University of Tokyo)   |
| 11:20-11:40   | Experimental Study on the Tip Clearance Effects for Aerodynamic Characteristics of Ducted Fan  | Ilyas Raza, Minhyoung Ryu, Hyunmin Choi, Jinsoo Cho (Hanyang University)  |
| 11:40-12:00   | Design and Performance of a Canard-Augmented Ducted Fan UAV  | Miles Colman, and Shinji Suzuki (The University of Tokyo)   |
| Room D (Session D-6) : High Speed Flow II<br>Chairs: Jeong Yeol Choi, <i>Pusan National University</i>        |  |   |
| 10:40-11:00   | Comparative Experimental Study of Telescopic Aerospike with Plain Spike over 120 degree Blunt Cone Flying at Hypersonic Mach Number                                  | Srinath S. and Reddy K. P. J. (Indian Institute of Science)   |
| 11:00-11:20   | Numerical Investigation of Inlet Starting for High-Contraction Scramjets   | Hideaki Ogawa and Russell Boyce (University of Queensland)  |
| 11:20-11:40   | Aerodynamic heating measurements over the protuberances in hypersonic flows : comparison of experimental techniques  | Hyoung Jin Lee, Bok Jik Lee and In-Seuck Jeung (Soul National University)   |
| 11:40-12:00   | Multidisciplinary Design and Optimization of Hypersonic Experimental Aircraft Using CAO Tool   | Seigo Koga, Takeshi Tsuchiya, Hideyuki Taguchi (University of Tokyo)  |
| Room E (Session E-6) : Flow Control II<br>Chairs: C. Bil, <i>RMIT University</i>                              |  |   |
| 10:40-11:00   | Thrust Level Control for a Solid Rocket Motor  | Sung Nam Lee, and Seung Wook Baek (KAIST)   |
| 11:00-11:20   | Study of the flow on a supercritical wing with control devices(VG)   | J.B. Huang, Z.X. Xiao, Y.F. Zhang and S. Fu (Tsinghua University)   |
| 11:20-11:40   | Aerodynamic Characteristics of an Airship with the Cruciform, X, and Inverted-Y Fins - a Wind Tunnel Experiment and Estimation                                       | Shinji KAKEGAWA, Takanori FUKAO(Kobe University), and Masahiro OKUYAMA (JAXA)   |
| 11:40-12:00   | Investigation of Practical Flow Control Methodologies with RANS/LES Hybrid Methods   | S. Fu, Z.X. Xiao, J.B. Huang and Y.F. Zhang (Tsinghua University)   |
| Room F (Session F-6) : Guidance and Control III<br>Chairs: Nobuhiro Yokoyama, <i>National Defence Academy</i> |  |   |
| 10:40-11:00   | Optimum Guidance and Control Law of Future Space Transportation System in an Emergency Case  | Seiya Ueno, Ryuichi Watanabe, Masahiro Mitsui (Yokohama National University) and Shinji Ishimoto (JAXA)   |
| 11:00-11:20   | Vision-aided Position Estimation of Lunar Lander during Landing Phase  | Bo-Young Jeong, Yoon-Hyuk Choi, Hyun-Sam Myung and Hyochoong Bang (KAIST)   |
| 11:20-11:40   | Real-time Trajectory Optimization for Area Avoidance   | Fumiya Sawashima, and Takeshi Tsuchiya (University of Tokyo)  |
| 11:40-12:00   | Optimal Guidance of Tetrahedral Satellite Formation  | Sung-Moon Yoo (Korea Astronomy and Space Science Institute), Sang-Young Park (Yonsei University), Jungho Cho, and Jong-Uk Park(Korea Astronomy and Space Science Institute) |
| Room G (Session G-6) : Structure II<br>Chairs: Yoshiyasu Hirano, <i>JAXA</i>                                  |  |   |
| 10:40-11:00   | DESIGNING ADAPTIVE WING STRUCTURE USING UNIT CELL DESIGN APPROACH VIA TOPOLOGY OPTIMIZATION  | John Lin, Liyong Tong, and KC Wong, Jademond Kiang(The University of Sydney)  |
| 11:00-11:20   | Precision Measurement of the Dimensional Change of the Composite Materials in Space Applications   | Dong-Hun Lee, Hong-Il Kim, Jae-San Yoon, Jae-Hung Han(KAIST)  |
| 11:20-11:40   | Durability/Damage Tolerance and stability Test Technologic Research on Full-Scale Aircraft Structure   | Sun Xiasheng, Dong Dengke (Aircraft Strength Research Institute of China)   |
| 11:40-12:00   | Stress distribution of a pin joint of carbon fiber reinforced metal laminates (CFML) with friction between the pin and hole surface and plasticity in aluminum alloy | Kyosuke KOSO and Yoshihiro TAKAO (Kyushu University)  |

| November 5, 2009/ Thursday Afternoon   |  |   |
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| (Room A) : <b>Invited Lectures-1, -2</b><br>Chairs: In-Seuck Jeung, KSAS and Yuzhong Yang, CSAA                                |  |   |
| 13:00-13:30  | Status and Vision of Space Program in Korea  | Changjin Lee (National Research Foundation of Korea)  |
| 13:30-14:00  | Manned Spaceflight Project   | Yu He (China Academy of Space Technology)   |
| (Room A) : <b>Invited Lectures-3, -4</b><br>Chairs: Tetsuhiko Ueda, Nagoya University and Naoharu Yoshitani, Teikyo University |  |   |
| 14:00-14:30  | Australian Research in Unmanned Air Vehicles   | Cees Bil (Royal Melbourne Institute of Technology University)   |
| 14:30-15:00  | The Australian Aerospace Industry and Advanced Composites Research   | Murray Scott (Cooperative Research Centre for Advanced Composite Structures)  |
| Room C (Session C-7) : Fluid Dynamics III<br>Chairs: Kazutaka Kitagawa, Aichi Institute of Technology                          |  |   |
| 15:10-15:30  | Experimental Verification of A New Method for the Frequency Estimation of Acoustic Oscillations in Supersonic Cavity Flows               | Taro Handa, Hiroaki Miyachi(Kyushu University), Daisuke Ono(AIST), and Mitsuharu Masuda(Kyushu University)                        |
| 15:30-15:50  | Numerical Analysis of Oscillating Square Cylinder with Corner Radius   | J. F. Tong, D. H. Sohn, and C. H. Sohn(Kyungpook National University)   |
| 15:50-16:10  | Wake Turbulence Simulation of the Arbitrary Cylinders of High Aspect Ratio   | Jinhan Park, Hyunyp Kim, and Jinsoo Cho(Hanyang University)   |
| Room D (Session D-7) : Guidance and Navigation<br>Chairs: Changsun Yoo / Korea Aerospace Research Institute                    |  |   |
| 15:10-15:30  | Apparent Rotation of Runway Sidelines as a Cue to Flare Timing   | Jorg Onno Entzinger and Shinji Suzuki(University of Tokyo)  |
| 15:30-15:50  | Geoservices for Aeronautical Navigation  | Willington Siabato, Javier Moya, Diana Benavides, Miguel Ángel Manso, Miguel Ángel Bernabé(Technical University of Madrid)        |
| 15:50-16:10  | A Study on The Guidance Weapon Launch Acceptable Area Optimization for Avionics Software   | HanSang Jo((Korea Aerospace Industry,))   |
| Room E (Session E-7) : Aerodynamic Shape Optimization<br>Chairs: Shigeru Kuchi-Ishi, JAXA                                      |  |   |
| 15:10-15:30  | Construction of Low Boom Design Technique for Supersonic Transport by Using an Inverse Problem   | Ryota Noguchi (Tohoku University), Kisa Matsushima (Toyama University), Daisuke Sasaki and Kazuhiro Nakahashi (Tohoku University) |
| 15:30-15:50  | Fowler Flap Design Optimization and Wind Tunnel Tests  | Yung-Gyo Lee, Cheolwan Kim, Tae-Hwan Cho, Chan-Hong Yeom, Dae-Sung Lee(KARI)  |
| 15:50-16:10  | Aerodynamic Optimization of an Aircraft Configuration with Over-the-Wing Nacelle   | Ryota Yoneta, Daisuke Sasaki and Kazuhiro Nakahashi(Tohoku University)  |
| 16:10-16:30  | A Shape Optimization Study on the Maximum Range of a Guided Missile  | Young Rok Yang, So Yeong Je, Rho Shin Myong, Chan Woo Park, Tae Hwan Cho(Gyeonsang National University)                           |
| Room G (Session G-7) : Structure III<br>Chairs: SUN Xiasheng, Aircraft Strength Research Institute of China                    |  |   |
| 15:10-15:30  | Buckling, Vibration and Dynamic Instability Characteristics of Composite Curved Panels with Internal damage Subjected to Follower Forces | C.D Kong(Chosun University.), P.K.Datta and S.Bisas(I-I-T Kharagpur)  |
| 15:30-15:50  | Liquid Oxygen Compatibility Testing of Resins for CFRP   | Koichi YONEMOTO, Kiyoto MURAKAMI and Yuta OTSUKA(Kyusyu Institute of Technology)  |
| 15:50-16:10  | Damage detection of surface cracks in composite laminate using tapping test  | Sung Joon Kim, Seok Min Ahn, Chan Hong Yeom (KARI), Chang Ho Hong (Chungnam National University)                                  |
| 16:10-16:30  | Reliability Analysis for Fatigue Crack Growth Life of an APU Turbine Wheel   | Jungsun Park, Byungwook Jang, Myung-Jun Kim (Korea Aerospace University), and Hyunjae Kim (Samsung-Techwin)                       |