15th AIAA Aviation Technology, Integration, and Operations Conference 2015

Held at the AIAA Aviation Forum 2015

Dallas, Texas, USA
22-26 June 2015

Volume 1 of 3

ISBN: 978-1-5108-0818-8

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571

Some format issues inherent in the e-media version may also appear in this print version.

TABLE OF CONTENTS

VOLUME 1

TERMINAL & SURFACE OPERATIONS I

A Robust and Practical Decision Support Tool for Integrated Arrival-Departure-Surface Traffic Management (AIAA 2015-2270) 1
Aditya Saraf, Valentino Felipe, Bruce Sawhill

Identification of Local and Propagated Queuing Effects at Major Airports (AIAA 2015-2271) 16
Husni R. Idris

Taxi Time Prediction at Charlotte Airport Using Fast-Time Simulation and Machine Learning Techniques (AIAA 2015-2272) 32
Hanbong Lee, Waqar Malik, Bo Zhang, Balaji Nagarajan, Yoon C. Jung

A Stochastic Scheduler for Integrated Arrival, Departure, and Surface Operations in Los Angeles (AIAA 2015-2273) 43
Min Xue, Shannon Zelinski

Optimization of Airport Surface Operations Under Uncertainty (AIAA 2015-2274) 56
Christabelle S. Bosson, Dengfeng Sun

SEPARATION ASSURANCE

Conflict Detection Performance Analysis for Function Allocation Using Time-Shifted Recorded Traffic Data (AIAA 2015-2275) 70
Nelson M. Guerreiro, Jeffrey M. Maddalon, Timothy A. Lewis, George Hagen, Ricky W. Butler

Strategic Time-based Metering That Assures Separation for Integrated Operations in a Terminal Airspace (AIAA 2015-2276) 89
Alexander V. Sadovsky, Michael M. Jastrzebski

Conflict Alerts for Aircraft Conducting Visual Approaches (AIAA 2015-2277) 103
Huabin Tang

TRAJECTORY OPTIMIZATION

The String Stability of a Trajectory-Based Interval Management Algorithm in the Midterm Airspace (AIAA 2015-2278) 117
Kurt A. Swieringa

Computational Approaches to Simulation and Optimization of Global Aircraft Trajectories (AIAA 2015-2279) 131
Hok Kwan Ng, Banavar Sridhar

Branch & Bound-Based Algorithm for Aircraft VNAV Profile Reference Trajectory Optimization (AIAA 2015-2280) 140
Alejandro Murrieta Mendoza, Bruce Beuze, Laurane Ternisien, Ruxandra M. Botez

Aircraft Trajectories Optimization By Genetic Algorithms To Reduce Flight Cost Using A Dynamic Weather Model (AIAA 2015-2281) 151
Roberto S. Félix Patrón, Marine Schindler, Ruxandra M. Botez

Trajectory Optimization Algorithm for a Constant Altitude Cruise Flight with a Required Time of Arrival Constraint (AIAA 2015-2282) 162
Alexandre Liv, Radu Dancila, Ruxandra M. Botez

AIRCRAFT DESIGN FOR ENVIRONMENTAL IMPACT REDUCTION

Effect of Wing Loading and Fuel Type on Optimal Cruise Altitude for Civil Aircraft (AIAA 2015-2385) 176
Alexander Wortmann, Maurice Hoogreef, Roelof Vos

Assessing Taxiing Trade Spaces from Aircraft, Airport, and Airline Perspectives (AIAA 2015-2386) 192
Imon Chakraborty, Matthew J. Levine, Mohammed Hassan, Dimitri N. Mavris

Utilising Secondary Airports for RPT Operations: A Business Case (AIAA 2015-2387) 210
Cees Bil, Asmamaw N. Gebreegziabher

Greenhouse Gas Impacts of On-Demand Electric Aircraft (AIAA 2015-2388) 220
Terence Thompson, Virginia Stouffer

Aircraft Noise Reduction Technology and Airport Noise Analysis for General Aviation Revitalization (AIAA 2015-2389) 233
Sanggyu Min, Dongwook Lim, Dimitri N. Mavris

The Clean Sky Programme: Environmental Benefits at Aircraft Level (AIAA 2015-2390) 249
Muriel Brunet, Sébastien Aubry, Rémi Lafage, A. Junior, J.-Y. Catros

TERMINAL & SURFACE OPERATIONS II

Scheduling and Delivering Aircraft to Departure Fixes in the NY Metroplex with Controller-Managed Spacing Tools (AIAA 2015-2428) 255
Eric Chevalley, Bonny Parke, Josh Kraut, Nancy Bienert, Faisal Omar, Everett Palmer

Stochastic Near-Optimal Control for Aircraft Arrival Sequencing and Conflict Resolution (AIAA 2015-2429) 281
Yoshinori Matsuno, Takeshi Tsuchiya

Designing and Evaluating Advanced Approach Procedures for the Concept of Segmented Independent Parallel Approaches (AIAA 2015-2431) 297
Christian Hanses, Franz Knabe, Bernd Korn

Optimal Airspace Design for Continuous Climb Operation (AIAA 2015-2432) 309
Eunyoung Kim, Sungkweon Hong, Keumjin Lee

Assessment of Delayed Deceleration Approach Opportunities at US Airports (AIAA 2015-2433) 319
Tom Reynolds, Michael McPartland, Yari Rodriguez, Melanie Sandberg, Jean-Marie Dumont, R. John Hansman

FLEET AND ROUTE PLANNING

Effects of Fuel Price on Total Fuel Burn and System Capacity- An Analysis of Advanced Engine and Airframe Technology and Airline Responses to Changes in Fuel Price (AIAA 2015-2434) 334
Charles M. Murphy, Bruno Miller, Lance Sherry

Estimating the Fuel Saving Potential of Commercial Aircraft in Future Fleet-Development Scenarios (AIAA 2015-2435) 347
Niclas P. Randt, Christoph Jessberger, Kay O. Ploetner

Enabling Technology Portfolio Selection through Quantitative Uncertainty Analysis (AIAA 2015-2436) 356
Katherine N. Gatian, Dimitri N. Mavris

A Rapid Integrated Interdependent Fleet-Level Environmental Model (AIAA 2015-2437) 384
Jose Enrique Bernardo, Turab Zaidi, Matthew J. Levine, Hernando Jimenez, Dimitri N. Mavris

Modeling Airline Decisions on Route Planning Using Discrete Choice Models (AIAA 2015-2438) 404
Zhenghui Sha, Kushal A. Moolchandani, Apoorv Maheshwari, Joseph Thekinen, Jitesh Panchal, Daniel A. Delaurentis

Landscape Analysis Framework for Low Carbon Energy (AIAA 2015-2439) 417
Parker D. Vascik, Robert Pearce, Donna Rhodes

SYSTEMS ENGINEERING AND ANALYSIS

Knowledge Engineering - Formalizing the Engineering Science Discipline (AIAA 2015-2440) 432
Xiao Peng, Bernd Chudoba

Paving the Way from the Past to the Future: AVD^{KBS}, a Software Development in Knowledge Engineering (AIAA 2015-2441) 453
Xiao Peng, Bernd Chudoba

Parametric Assessment of Aviation Environmental Goals: Implications on R&D Decision Making (AIAA 2015-2442) 474
Mohammed Hassan, Alexia Payan, Sinead O'Sullivan, Holger Pfaender, Dimitri N. Mavris

Selected Array of Technology and Systems Options for Ecologically Responsible Aviation (AIAA 2015-2443) 482
Askin T. Isikveren, Doris Empl, Ulrich Kling, Kay O. Ploetner, Clement Pornet

AIRCRAFT DESIGN METHODS AND TOOLS

Student Air Vehicle Design and Analysis - A Systems Engineering Model Based Approach (AIAA 2015-2543) 495
Armand J. Chaput

Update on HCDstruct - A Tool for Hybrid Wing Body Conceptual Design and Structural Optimization (AIAA 2015-2544) 509
Frank H. Gern

Concurrent Aircraft Design and Trip Assignment Under Both Design Parameter and Demand Uncertainty (AIAA 2015-2545) 523
Parithi Govindaraju, William A. Crossley

Virtual Flight Testing in an Aircraft Sizing and Optimization Process (AIAA 2015-2546) 536
Peter Schmollgruber, Nathalie Bartoli, Yves Gourinat

User Defined Components in the OpenVSP Parametric Geometry Tool (AIAA 2015-2547) 547
Robert A. McDonald, James R. Gloudemans

Development of an Interactive Wave Drag Capability for the OpenVSP Parametric Geometry Tool (AIAA 2015-2548) 554
Michael Waddington, Robert A. McDonald

TERMINAL & SURFACE OPERATIONS III

Identifying Key Issues and Potential Solutions for Integrated Arrival, Departure, Surface Operations by Surveying Stakeholder Preferences (AIAA 2015-2590) 565
Bimal L. Aponso, Richard A. Coppenbarger, Yoon C. Jung, Cornelius J. O'Connor, Gary W. Lohr, Leighton K. Quon, Shawn Engelland
Integration of Uncertain Ramp Area Aircraft Trajectories and Generation of Optimal Taxiway Schedules at Charlotte Douglas (CLT) Airport (AIAA 2015-2591) 578
Jeremy Coupe, Dejan Milutinovic, Waqar Malik, Yoon C. Jung
The Effects of Electric Taxi Systems on Airport Surface Congestion (AIAA 2015-2592) 590
Paul C. Roling, Pjotr Sillekens, Richard Curran
Punctuality as KPI for Performance Based Airport Management (AIAA 2015-2593) 600
Steffen Loth, Stefanie M. Helm
Determining Airport Airside Capacity Utilization: A Demand-Driven Approach (AIAA 2015-2594) 612
Christoph Schinwald, Mirko Hornung, Michael Schmidt
Integration of a Routing Tool in an Advanced Airport Controller Working Position (AIAA 2015-2595) 627
Mohamed Ellejmi, Benjamin Weiss, Felix Schmitt, Stephen Straub

ATM I – TRAJECTORY ENHANCEMENTS

Impact of Airspace Charges on Transatlantic Aircraft Trajectories (AIAA 2015-2596) 640
Banavar Sridhar, Hok Kwan Ng, Florian Linke, Neil Y. Chen
Presentation of Three Methods Results Comparison for Vertical Navigation VNAV Trajectory Optimization for the Flight Management System FMS (AIAA 2015-2597) 655
Benoit Beulze, Bogdan Dancila, Ruxandra M. Botez, Samy Bottollier-Lemallaz, Soufiane Herda
Simple Tool for Aircraft Noise-Reduction Route Design (AIAA 2015-2598) 664
Jinhua Li, Neil Y. Chen, Banavar Sridhar, Hok Ng
Trajectory Accuracy Sensitivity to Modeling Factors (AIAA 2015-2599) 673
Sergio Torres
Trajectory Inefficiency Metric for Measuring Operational Performance of Flights in the National Airspace System (AIAA 2015-2600) 692
Simon Tsao, Ralf H. Mayer, Anuja Mahashabde

AIRCRAFT PERFORMANCE STUDIES

The Impact of ATTCS on Reduced-Thrust Takeoff Field Performance (AIAA 2015-2698) 701
Timothy T. Takahashi

VOLUME 2

Uncertainty Modeling and Assessment in Aircraft Evacuation Simulation (AIAA 2015-2699) 714
Rodrigo P. Silva, Denise Ferrari, Luis Carlos De Castro Santos
Simulated Tiltrotor Aircraft Operation in Close Proximity to a Building in Wind and Ground-Effect Conditions (AIAA 2015-2700) 725
Larry A. Young
Optimal Climb Trajectories Through Explicit Simulation (AIAA 2015-2701) 756
Timothy T. Takahashi

ATM II – AIR TRAFFIC ANALYSIS

A Wavelet Analysis Approach for Categorizing Air Traffic Behavior (AIAA 2015-2731) 769
Michael C. Drew, Kapil Sheth
Application of Data Mining in Air Traffic Forecasting (AIAA 2015-2732) 783
Judit G. Busquets, Antony Evans, Eduardo Alonso
Identification of Aircraft Conflict ResolutionTypes from Recorded Flight Data (AIAA 2015-2733) 800
Sanghyun Shin, Kwangyeon Kim, Inseok Hwang

TRANSFORMATIONAL FLIGHT – ADVANCED CONCEPTS

Predicting the Aero Loads Behind a Propeller in the Presence of a Wing Using Flightstream (AIAA 2015-2734) 817
Vivek Ahuja, Roy Hartfield
Centrifugally Stiffened Rotor: A Complete Derivation of the Plant Model with Nonlinear Dynamics (AIAA 2015-2735) 831
Justin M. Selfridge, Gang Tao

PRODUCT DESIGN AND SUPPORT

Value Driven Conceptual Design of Unmanned Air System for Defense Applications (AIAA 2015-2736) 852
Evangelos Papageorgio, Murat Hakki Eres, James Scanlan

Monte Carlo Based Robust MDO Applied to Aircraft Conceptual Design: a Technical-financial Coupling Optimization Strategy (AIAA 2015-2737) 865
Davi Bianchi, Tarik H. Orra, Pedro Paglione

Development and Application of a Parametric Design Tool for Design Iterations of Large Turboprop Aircraft (AIAA 2015-2738) 896
Martin E. Kügler, Niclas P. Randt

3D Printed Parts for Quick Turnaround Aircraft Projects and Legacy Issues (AIAA 2015-2739) 906
Ubair H. Rehmanjan

UGV and UAV Cooperation for Constructing Probabilistic Threat Exposure Map (PTEM) (AIAA 2015-2740) 912
Onur Daskiran, Hakki Erhan Sevil, Atilla Dogan, Brian L. Huff

Toward Efficient Model-Based Development of Aerospace Applications (AIAA 2015-2741) 935
Isaac Amundson, Lyle A. Shipton, Anshuo Liu, Michael Nowak

Reliability Analysis of the Integrated Modular Avionics System Using AADL and GSPN (AIAA 2015-2742) 941
Peng Wang, Fang Yan, Rui Liu, Changxiao Zhao, Zan Ma

GENERAL AVIATION

Identifying High-Risk Occurrence Chains in Helicopter Operations from Accident Data (AIAA 2015-2848) 954
Arjun H. Rao, Karen Marais

Pilot Perception and Use of ADS-B In Traffic and Weather Services (TIS-B and FIS-B) (AIAA 2015-2849) 968
Sathya S. Silva, Luke Jensen, R John Hansman

Implementataion and Validation of an Internal Combustion Engine and Propeller Model for General Aviation Aircraft Performance Studies (AIAA 2015-2850) 978
Evan Harrison, Sanggyu Min, Hernando Jimenez, Dimitri N. Mavris

Identifying Phases of Flight in General Aviation Operations (AIAA 2015-2851) 997
Valentine Goblet, Nicoletta Fala, Karen Marais

Pilot-Friendliness Considerations for Personal Air Vehicle Flight Control Systems (AIAA 2015-2852) 1017
Imon Chakraborty, Brian Lozano, Dimitri N. Mavris

Development of Aerodynamic Modeling and Calibration Methods for General Aviation Aircraft Performance Analysis - a Survey and Comparison of Models (AIAA 2015-2853) 1034
Sanggyu Min, Evan Harrison, Hernando Jimenez, Dimitri N. Mavris

ATM III – MODELING IN ATM

A System Dynamics Approach towards ANSP Modeling (AIAA 2015-2892) 1052
Michael Kreuz, Michael Schultz

Modeling Approach for Resilience Engineering of the Future ATM System (AIAA 2015-2893) 1062
Roberto Palumbo, Angela Errico, Domenico Pascarella, Francesco Gargiulo, Edoardo Filippone

Risk-based Causal Modeling of Airborne Loss of Separation (AIAA 2015-2894) 1074
Steven Geuther, Ann Shih

A Data-Driven Quantitative Framework for Safety Assessment of Air Traffic Control System (AIAA 2015-2895) 1086
Ahmet Oztekin

Assessing Air Traffic Control System Safety with System Controllability (AIAA 2015-2896) 1102
Jingjing Guo, Karen Marais, Steven J. Landry

TRANSFORMATIONAL FLIGHT – AUTONOMY I

Who's got the bridge? Towards Safe, Robust Autonomous Operations - "Data, you've got the bridge." - First Officer Thomas "Will" Riker Star Trek: The Next Generation:: Coming of Age (1988) (AIAA 2015-2897) 1116
Bonnie D. Allen, Charles D. Cross, Henry Fan, William L. Fehlman, Lucas Hempley, Mark A. Motter, James H. Neilan, Garry Qualls, Paul M. Rothhaar, Anna Trujillo

Towards an Open, Distributed Software Architecture for UxS Operations - "It's difficult to work in groups when you're omnipotent," - Q Star Trek: The Next Generation:: Deja Q (1990) (AIAA 2015-2898) 1124
Charles D. Cross, Henry Fan, William L. Fehlman, Lucas Hempley, Mark A. Motter, James H. Neilan, Garry Qualls, Paul M. Rothhaar, Anna Trujillo, Bonnie D. Allen

Reinforcement Learning with Autonomous Small Unmanned Aerial Vehicles in Cluttered Environments - "After all these years among humans, you still haven't learned to smile." (AIAA 2015-2899) 1134
Loc D. Tran, Charles D. Cross, Mark A. Motter, James H. Neilan, Garry Qualls, Paul M. Rothhaar, Anna Trujillo, Bonnie D. Allen

HUMAN FACTORS IN AVIATION OPERATIONS

A Model for Situational Awareness in Aircraft Upset Prevention and Recovery (AIAA 2015-2900) 1142
Karl A. Schlimm

Analysis of Eye-Tracking Data with Regards to the Complexity of Flight Deck Information Automation and Management - Inattentional Blindness, System State Awareness, and EFB Usage (AIAA 2015-2901) 1153
Evan T. Dill, Steven D. Young
Threat and Error Management Applied to Loss of Control In-flight (AIAA 2015-2902) 1169
David Carroll
Evaluating Intensity as a NextGen Controller Function for Increased Traffic Scenarios (AIAA 2015-2903) 1175
Caitlin A. Surakitbanharn, Steven J. Landry
A Comparison of an Intensity Control Measure Versus Dynamic Density to Capture Complexity Within a Sector (AIAA 2015-2904) 1182
Chittayong Surakitbanharn, Caitlin A. Surakitbanharn, Steven J. Landry
Tactile Feedback and Situation Awareness - Improving Adherence to an Envelope in Sidestick-Controlled Fly-by-Wire Aircrafts (AIAA 2015-2905) 1189
Florian J. Schmidt-Skipiol
Modeling the Air Traffic Controller's Direct-to Operation Using Logistic Regression (AIAA 2015-2906) 1199
Sungkweon Hong, Soyeon Jung, Keumjin Lee

DESIGN OF UNCONVENTIONAL AIRCRAFT CONFIGURATIONS

An Investigation into the Design of an Efficient In Ground Effect Flying Vehicle Planform (AIAA 2015-3000) 1208
Vladimir A. Mirochnitchenko, Timothy T. Takahashi
Advanced General Aviation Concept Study for a Roadable Aircraft (AIAA 2015-3001) 1223
Dongwook Lim, Cedric Justin, Dimitri N. Mavris
Morphing Strategy Design for Variable-Wing Aircraft (AIAA 2015-3002) 1239
Rongqi Shi, Jie Peng
A Methodology for Multi-Disciplinary Analysis of the Box Wing Concept (AIAA 2015-3003) 1251
Ishan Roy Salam, Cees Bil
The Hoops on the Way to a Supersonic Business Jet (Performance Drivers for a Commercially Viable Product) (AIAA 2015-3004) 1262
Luis Gonzalez

ATM IV – ECONOMIC/BENEFITS ANALYSIS

Identifying Benefit Mechanisms for Nextgen Technologies and Concepts (AIAA 2015-3024) 1284
Steven J. Landry, Dijia Peng
Assessing Departure Efficiency at U.S. Airports: a Comparison of Methods (AIAA 2015-3025) 1298
Simon Tsao, James S. Dearmon, Seli Agbolosu-Amison, Anuja Mahashabde
Airfare Determinants on the Kangaroo Route (Australia-UK Market): A Case Study of the Influences of Airlines, Alliances and Airports (AIAA 2015-3026) 1310
Huijuan Yang
Concept and Benefits of PBN-Enabled Parallel Approach Operations (AIAA 2015-3027) 1320
Ralf H. Mayer, Brian M. Crow, Dennis J. Zondervan, James K. Allerdice

TERMINAL & SURFACE OPERATIONS IV

Optimization of Push Back Time Windows That Ensure Conflict Free Ramp Area Aircraft Trajectories (AIAA 2015-3028) 1330
Jeremy Coupe, Dejan Milutinovic, Waqar Malik, Yoon C. Jung
Development of Generic Ground Tracks of Performance Based Navigation Operations for Fleet-Level Airport Noise Analysis (AIAA 2015-3029) 1342
Amelia J. Wilson, Matthew J. Levine, Jose Enrique Bernardo, Michelle Kirby, Dimitri N. Mavris
Implementing a Combined Arrival, Departure, and Surface Scheduler for a Metroplex (AIAA 2015-3030) 1357
Frederick Wieland, William Krueger, Wilbur Peng, Yingchuan Zhang, Ankit Tyagi, Chris Ye, Michel Santos
A Framework for the Classification and Prioritization of Arrival and Departure Routes in Multi-airport Systems Terminal Manoeuvring Areas (AIAA 2015-3031) 1368
Stavros Sidiropoulos, Arnab Majumdar, Ke Han, Wolfgang Schuster, Washington Ochieng

TRANSFORMATIONAL FLIGHT – AUTONOMY II

Using Multimodal Input for Autonomous Decision Making for Unmanned Systems - "What it needs in order to evolve, is a human quality. Our capacity to leap beyond logic." - Capt. Kirk, Star Trek: The Motion Picture (AIAA 2015-3032) 1394
James H. Neilan, Charles D. Cross, Henry Fan, William L. Fehlman, Lucas Hempley, Mark A. Motter, Garry Qualls, Paul M. Rothhaar, Anna Trujillo, Bonnie D. Allen
Collaborating with Autonomous Agents (AIAA 2015-3033) 1409
Anna Trujillo, Henry Fan, Lucas Hempley, Charles D. Cross, William L. Fehlman, Mark A. Motter, James H. Neilan, Garry Qualls, Paul M. Rothhaar, Bonnie D. Allen

A Flexible Flight Control System for Rapid GNC and Distributed Control Deployment (AIAA 2015-3034) 1418
Paul M. Rothhaar, Charles D. Cross, Henry Fan, William L. Fehlman, Lucas Hempley, Mark A. Motter, James H. Neilan, Garry Qualls, Anna Trujillo, Bonnie D. Allen

VOLUME 3

Operating in "Strange New Worlds" and Measuring Success - Test and Evaluation in Complex Environments (AIAA 2015-3035) 1426
Garry Qualls, Charles D. Cross, Henry Fan, William L. Fehlman, Lucas Hempley, Mark A. Motter, James H. Neilan, Paul M. Rothhaar, Anna Trujillo, Bonnie D. Allen
State of the Art of Autonomous Platforms and Human-Machine Systems: Only a Fool Would Stand In the Way of Progress (AIAA 2015-3036) 1434
Virginia L. Stouffer, Kenneth H. Goodrich

EN ROUTE OPERATIONS

Controller Workload-based Calculation of Monitor Alert Parameters for En Route Sectors (AIAA 2015-3178) 1449
Brian Marr, Kenneth Lindsay
Optimization of the Cruise Regime of Flight Airplane Trajectory using Deterministic Algorithms (AIAA 2015-3179) 1460
Marine Mirabelle Gautier, Ruxandra M. Botez
Can Ground-based Separation Accommodate Very High En Route Traffic Demand As Well As Advanced Self-separation? (AIAA 2015-3180) 1468
Henk A. Blom, Bert G. Bakker

ATM V – PERFORMANCE ASSESSMENT

Verifying Required Communication Performance in Air Traffic Management (AIAA 2015-3181) 1483
Dongsong Zeng, John C. Gonda
Methodology to Define Delivery Accuracy Under Current Day ATC Operations (AIAA 2015-3182) 1499
Shivanjli Sharma, John E. Robinson III
Investigation of Connectivity: Definition, Application, and Formulation (AIAA 2015-3183) 1509
Lauren Bowers, Linas Mockus, Shashank Tamaskar, Daniel A. Delaurentis
Regional Sky Transit (AIAA 2015-3184) 1531
Brien A. Seeley
An Airport Assessment Approach in the Conceptual Design Stage (AIAA 2015-3185) 1563
Marco Weiss, Niclas M. Dzikus
Modeling a Ramp Area Support System (AIAA 2015-3186) 1578
Adam K. Wing, Wilson N. Felder, Robert J. Cloutier
Framework Development for Performance Evaluation of the Future National Airspace System (AIAA 2015-3187) 1585
Mohammed Hassan, Alexia Payan, Holger Pfaender, Dimitri N. Mavris, Elena Garcia, Jeff Schutte

TRANSFORMATIONAL FLIGHT – ELECTRIC PROPULSION

Comparison of CFD and Experimental Results of the LEAPTech Distributed Electric Propulsion Blown Wing (AIAA 2015-3188) 1593
Alex M. Stoll
A Conceptual Approach to Flight-Training Mission and Cost Analysis of an All-Electric Aircraft Equipped with Regenerative Energy Devices (AIAA 2015-3189) 1602
Matthew D. Olson
Optimal Propeller Pitch Scheduling and Propeller--Airframe Matching for Conceptual Design (AIAA 2015-3190) 1633
Robert A. McDonald
Modeling and Test of the Efficiency of Electronic Speed Controllers for Brushless DC Motors (AIAA 2015-3191) 1649
Clayton R. Green, Robert A. McDonald

AIRCRAFT SUBSYSTEMS, INTEGRATION, AND ARCHITECTURES

An Innovative All-Active Hybrid Actuation System (AIAA 2015-3284) 1659
Tobias Röben, Eike Stumpf
Dynamic Reconfiguration Mechanism for Distributed Integrated Modular Avionics System (AIAA 2015-3285) 1672
Qingfan Gu, Guoqing Wang, Yizheng He
Development of an Integrated UAS for Agricultural Imaging Applications (AIAA 2015-3286) 1683
Nishanth R. Goli, Brian Landrum
Effect of Major Subsystem Power Off-takes on Aircraft Performance in More Electric Aircraft Architectures (AIAA 2015-3287) 1693
Imon Chakraborty, Metin F. Ozcan, Dimitri N. Mavris

Design and Build of Swarm Quadrotor UAVs at UGS (AIAA 2015-3288) 1707
Sutthiphong Srigrarom, Hui Xiang Lin, Zi Yang Saw, Jiawei Zhang, Chun How Lim

UAS INTEGRATION & OPERATIONS I

An Evaluation of Detect and Avoid (DAA) Displays for Unmanned Aircraft Systems: The Effect of Information Level and Display Location on Pilot Performance (AIAA 2015-3327) 1725
Lisa Fern, R. Conrad Rorie, Jessica Pack, Jay Shively, Mark Draper
System Development for the NASA UAS Airspace Operations Challenge (AIAA 2015-3328) 1743
Shea Fehrenbach, Zach P. Barbeau, Jamey D. Jacob, Girish Chowdhary, Mehran Andalibi
Platform-Independent Geofencing for Low Altitude UAS Operations (AIAA 2015-3329) 1758
Mia N. Stevens, Brandon Coloe, Ella M. Atkins

ATM VI – MANAGEMENT OF NAS RESOURCES

Strategic Air Traffic Planning with Frechet Distance Aggregation and Rerouting (AIAA 2015-3330) 1775
Alessandro Bombelli, Lluis Soler, Kenneth D. Mease
Proactive and Reactive Management of Non-Weather Capacity Disruption Events in the National Airspace System: A Flow Modeling and Design Approach (AIAA 2015-3332) 1795
Sandip Roy, Yan Wan, Junfei Xie
Probabilistic Time-Series Models for Ground Delay Program Decision Support (AIAA 2015-3333) 1807
Erik Vargo, Christine P. Taylor, Craig R. Wanke
Analytical Identification and Ranking of Choke Points in the National Airspace System (AIAA 2015-3334) 1823
Dou Long, Shahab Hasan, Virginia L. Stouffer, Kris Ramamoorthy, Husni R. Idris, B. David Ballard, Gregory Carr
Stakeholder Feedback-Based Identification, Ranking, and Causes of Choke Points in the National Airspace System (AIAA 2015-3335) 1839
Monica S. Alcabin, Richard Golaszewski, William Cotton, Virginia L. Stouffer, Shahab Hasan, Alexander Morris, Jeffery Musiak

TRANSFORMATIONAL FLIGHT – UNCONVENTIONAL VTOL CONFIGURATIONS

Design and Testing of the Joby Lotus Multifunctional Rotor VTOL UAV (AIAA 2015-3336) 1847
Pranay Sinha, Alex M. Stoll, Edward V. Stilson, Joeben Bevirt
Integration of Electric Propulsion in Efficient Heavy-Lift VTOL Concept (AIAA 2015-3337) 1853
Etienne Demers Bouchard, David Rancourt, Dimitri N. Mavris

AERONAUTIC DISCIPLINE CONSIDERATIONS IN AIRCRAFT DESIGN

Prediction of Wing Structural Mass for Transport Category Aicraft Conceptual Design (AIAA 2015-3374) 1863
Timothy T. Takahashi, Tyler Lemonds
Effective L/D: A Theoretical Approach to the Measurement of Aero-Structural Efficiency in Aircraft Design (AIAA 2015-3375) 1884
Mark D. Guynn
Revisiting Busemann: The Design Implications of Inconsistencies Found Within Simple Sweep Theory (AIAA 2015-3376) 1898
Timothy T. Takahashi, Sagar Kamat
A Total Flight Envelope Approach to Conceptual Design Stability & Control (AIAA 2015-3377) 1920
Matthew D. Swann, Timothy T. Takahashi
Feasibility Studies on a High-Altitude Captive Lighter-Than-Air Platform System (AIAA 2015-3378) 1949
Kazuhisa Chiba, Shin Satori, Ryuichi Mitsuhashi, Masahiko Onda, Masaaki Sano, Jun'Ya Sasaki, Ryojiro Akiba

ATM VII – WEATHER IMPACT

Dynamic Arrival Routes: A Trajectory-Based Weather Avoidance System for Merging Arrivals and Metering (AIAA 2015-3394) 1959
Chester Gong, Dave McNally, Chu Han Lee
Initial Analysis of and Predictive Model Development for Weather Reroute Advisory Use (AIAA 2015-3395) 1973
Heather Arneson
Benefits Analysis of Ground-Sourced Convective Weather Alerting in the Cockpit (AIAA 2015-3396) 1988
Scot E. Campbell, Michael McPartland, Mariya Ishutkina
Dynamic Wake Vortex Separation Combining with AMAN/DMAN Concept (AIAA 2015-3397) 1997
Naoki Matayoshi, Eiichi Yoshikawa
Wind Information Uplink to Aircraft Performing Interval Management Operations (AIAA 2015-3398) 2006
Nashat N. Ahmad, Bryan Barmore, Kurt A. Swieringa
Wind Measurements with Ground-based Fiber-based Wind Doppler LIDAR Systems for Aviation Weather Applications (AIAA 2015-3399) 2019
Ludovic P. Thobois, Jean Pierre Cariou

FUTURE CONCEPTS

Achieving TASAR Operational Readiness (AIAA 2015-3400) 2036
David J. Wing

A Preliminary Evaluation of Supersonic Transport Category Vehicle Operations in the National Airspace System (AIAA 2015-3401) 2048
Matthew C. Underwood, Michael D. Guminsky

Improving Situation Awareness with a Traffic Management Portal (AIAA 2015-3402) 2061
Amanda M. Staley, Catherine Bolczak

Building a Smooth and Dynamic Opening Scheme from Graph Partitioning - Exploring Dynamic Airspace Configurations (AIAA 2015-3403) 2074
Thomas Dubot, Sébastien Aubry, Judicaël Bedouet

The Impact of Mitigation Measures for System Capacity Constraints on the Future Air Transportation System (AIAA 2015-3404) 2087
Niclas M. Dzikus, Sebastian Bartosch, Martin Schaefer

UAS INTEGRATION & OPERATIONS II

UAS Demand Generation Using Subject Matter Expert Interviews and Socio-economic Analysis (AIAA 2015-3405) 2100
Sricharan K. Ayyalasomayajula, Rohit Sharma, Frederick Wieland, Antonio Trani, Nicolas Hinze, Thomas Spencer

Investigation of Simulated UAS Safety Incidents Using UAS Safety Analysis Model (USAM) (AIAA 2015-3406) 2118
Ankit Tyagi, Frederick Wieland, Stefan Toussaint, James T. Luxhoj

RPAS - ATM Integration Demonstration - Real-Time Simulation Results (AIAA 2015-3407) 2129
Edoardo Filippone, Vittorio Di Vito, Giulia Torrano, Damiano Taurino, Ana Ferreira, David Zammitt-Mangion, Jason Gauci, Gianluca Gargiulo

Author Index