Session A – Tuesday Morning, May 5 – 8:00 a.m. – 12 noon

Aerodynamics I

Paper # 1 – 8:00 – 8:30 a.m.
Navier-Stokes Assessment of Test Facility Effects on Hover Performance (*48)
Neal Chaderjian and Jasim Ahmad, NASA Ames Research Center

Paper # 2– 8:30 – 9:00 a.m.
Comparing Numerical and Experimental Results for Drag Reduction by Active Flow Control Applied to a Generic Rotorcraft Fuselage (*59)
Caroline Lienard and Arnaud Le Pape, ONERA; Norman W. Schaeffler, NASA and Brian G. Allan, NASA Langley Research Center

Paper # 3 – 9:00-9:30 a.m.
Improving the Performance and Flexibility of Grid-Based Vorticity-Velocity Solvers for General Rotorcraft Flow Analysis (*9)
Glen Whitehouse, Alexander Boschitsch, and Benjamin Silbaugh, Continuum Dynamics, Inc

Refreshment Break – 9:30 – 10:00

Paper # 4 – 10:00 – 10:30 a.m.
Efficient Three-Dimensional Solution for Unstructured Grids Using Hamiltonian Paths and Strand Grids (*290)
Bharath Govindarajan, Yong Su Jung and James Baeder, University of Maryland, College Park; Jay Sitaraman, University of Wyoming

Paper # 5 – 10:30 – 11:00 a.m.
Comprehensive Aerodynamic Characteristics of Airfoil using Hybrid RANS-LES Methods (*296)
Nishan Jain and James Baeder, University of Maryland

Paper # 6 – 11:00 – 11:30 a.m.
Numerical Investigation of the Unsteady Loading of a Model Rotor in Hover (*326)
Justin Hoffman and Valana Wells, Arizona State University

Paper # 7 – 11:30 - 12:00 noon
A Variational Approach to Multipoint Aerodynamic Optimization of Conventional and Coaxial Helicopter Rotors (*297)
Eli Giovanetti and Kenneth Hall, Duke University

Paper # 8 – 12:00 – 12:30 p.m.
High-Order Overset Methods for Rotorcraft CFD (*349)
Norman Foster, Penn State Applied Research Laboratory

Aircraft Design I

Paper # 1 – 8:00 – 8:30 a.m.
Systematic Analysis of Rotor Blade Effective Twist Due to Planform Variation (*76)
Fu-Shang (John) Wei, Central Connecticut State U. and David A. Peters, Washington University, St Louis

Paper # 2– 8:30 – 9:00 a.m.
Development of Rotor Structural Design Optimization Framework for Compound Rotorcraft with a Lift Offset (*53)
SangJoon Shin and YooJin Kang, Seoul National University; YoungJung Kee, Korea Aerospace Research Institute; JaeHoon Lim, Samsung Heavy Industry

Paper # 3 – 9:00-9:30 a.m.
On the Design of Rotors Using Convex Optimization (*260)
Cody Karcher and Warren Hoburg, Massachusetts Institute of Technology

Refreshment Break – 9:30 – 10:00

Paper # 4 – 10:00 – 10:30 a.m.
Optimization of a Lift-Offset Compound Helicopter in a Multidisciplinary Analysis Environment (*288)
Jeff Sinsay, U.S. Army and Juan Alonso, Stanford University

Paper # 5 – 10:30 – 11:00 a.m.
Highly-efficient Aerodynamic Design of Rotor with High Performance (*155)
Wu Qi, Zhao Qi-jun, Wang Bo and Yin Zhi-zhao, Nanjing University of Aeronautics and Astronautics

Paper # 6 – 11:00 – 11:30 a.m.
Time-dependent Aero-elastic Adjoint-based Aerodynamic Shape Optimization of Helicopter Rotors in Forward Flight (*239)
Asitav Mishra, Dimitri Mavriplis and Jay Sitaraman, University of Wyoming

Paper # 7 – 11:30 - 12:00 noon
Evolution of the Helicopter and VTOL Aircraft's Aerial Emergency Evacuation System (*137)
Jacques Virasak, Sikorsky Aircracrft Corporation

Crash Safety I

Paper # 1 – 8:00 – 8:30 a.m.
Evaluation of the Second Transport Rotorcraft Airframe Crash Testbed (TRACT 2) Full Scale Crash Test (*73)
Martin Annett, NASA Langley Research Center

Paper # 2– 8:30 – 9:00 a.m.
Rotocraft Troop Seat with Selectable Energy Absorber System – Design & Test (*145)
Stanley Desjardins and Leda Belden, Safe Inc.; Lance Labun, Labun, LLC; Jin Woodhouse, US Army Aviation Development Directorate

Paper # 3 – 9:00-9:30 a.m.
Laboratory and Field Evaluations of Up-Scaled Textile Energy Absorbers for Crashworthy Cargo Restraints (*301)
Charles Bakis, Simon Miller and Edward Smith, Pennsylvania State University; Eric Little and Michael Yukish, Applied Research Laboratory; Lindley Bark, US Navy Naval Air Warfare Center - Aircraft Division

Refreshment Break – 9:30 – 10:00

Paper # 4 – 10:00 – 10:30 a.m.
The Development of Two Composite Energy Absorbers for Use in a Transport Rotorcraft Aircraft Crash Testbed (TRACT 2) Full-Scale Crash Test (*11)
Justin D. Littell, Karen E. Jackson, Martin S. Annett, Michael D. Seal, and Edwin L. Fasanella, NASA Langley Rsch Ctr; Edwin Fasanella, National Institute of Aerospace; Michael Seal, Analytical Mechanics Associates

Paper # 5 – 10:30 – 11:00 a.m.
Testing Mobile Aircrew Restraint Systems in a Full-Scale CH-46 Airframe Crash Test – Exploring the Limits (*350)
Lindley Bark, NAWCAD PAX RIVER

Paper # 6 – 11:00 – 11:30 a.m.
Performance Evaluation of Crash-Recording Technologies in a Full-Scale CH-46 Airframe Crash Test (*351)
Lindley Bark, NAWCAD PAX RIVER

Paper # 7 – 11:30 - 12:00 noon
Crash Dynamic Model For Rotorcraft Adaptive Seat Energy Absorber Evaluation (*105)
Muthuvel Murugan, U.S. Army Research Laboratory; Ala Tabiei, University of Cincinnati; Gregory Hiemenz, Innovital Systems

Paper # 8 – 12:00 – 12:30 p.m.
Testing and Analysis of the Dynamic Test Repeatability of Hybrid III ATDs (*354)
Lindley Bark, NAWCAD PAX RIVER

Dynamics I

Paper # 1 – 8:00 – 8:30 a.m.
Investigation of Whirl Flutter Stabilization using Active Trailing Edge Flaps (*62)
Tobias Richter, Tobias Rath and Walter Fichter, University of Stuttgart; Oliver Oberinger, Technical University of Munich

Paper # 2– 8:30 – 9:00 a.m.
Effects of 2/rev Trailing Edge Flap Input on Helicopter Vibrations for Modular Multi-Objective Active Rotor Control (*56)
Alexander Steinwandel and Walter Fichter, Institute of Flightmechanics and Control

Paper # 3 – 9:00-9:30 a.m.
Investigation of Rotor Vibratory Loads of a UH-60A Individual Blade Control System (*213)
Hyeonsoo Yeo and Rohit Jain, US Army Aeroflightdynamics Directorate; Buvana Jayaraman, Science and Technology Corp.

Refreshment Break – 9:30-10:00 a.m.

Paper # 4 – 10:00 – 10:30 a.m.
Assessment of Rotor Structural Load Predictions Using Physics Based Hydraulic Damper Model (*192)
Hao Kang, US Army Research Lab

Paper # 5 – 10:30 – 11:00 a.m.
Investigation of Tip-Vortex Modifications on Rotor Loads and Performance (*39)
Abhishek A. and Rahul R., Indian Institute of Technology Kanpur

Paper # 6 – 11:00 – 11:30 a.m.
Blade Loads and Hub Vibrations of a Slowed-Rotor Compound Helicopter in High-Speed Flight (*332)
Jean-Paul Reddinger and Farhan Gandhi, Rensselaer Polytechnic Institute

Paper # 7 – 11:30 - 12:00 noon
Overview of RCAS Capabilities, Validations, and Rotorcraft Applications (*328)
Hossein Saberi and Matthew Hasbun, Advanced Rotorcraft Technology, Inc.; Hyeonsoo Yeo and Robert Ormiston, US Army Aviation Development Directorate - AFDD

Session A – Tuesday Morning, May 5 – 8:00 a.m. – 12 noon

Handling Qualities I

Paper # 1 – 8:00 – 8:30 a.m.
Towards Establishing Flying Qualities Requirements For Maritime Unmanned Aircraft Systems (*265)*
Thomas Fell, Michael Jump and Mark D White, University of Liverpool; Ieuan Owen, University of Lincoln

Paper # 2– 8:30 – 9:00 a.m.
Preliminary Investigation into Rotorcraft Pilot Strategy and Visual Cueing Effects in the Shipboard Environment (*99)*
John Tritschler and Daniel Eksuzian, Naval Air Systems Command; John O'Connor, U.S. Naval Test Pilot School

Paper # 3 – 9:00-9:30 a.m.
Evaluation of Control Allocation Techniques for a Medium Lift Tilt-Rotor (*79)*
Christina Ivler, US Army; Ondrej Juhasz, San Jose State Research Foundation

Refreshment Break – 9:30-10:00 a.m.

Paper # 4 – 10:00 – 10:30 a.m.
ADS-33 Evaluation of the International CH-47 Chinook (*50)*
Christopher Colosi, Pieter Einthoven and Erik Kocher, The Boeing Company; Matthew Parsons and Bryan Carrothers, Canadian Department of National Defence

Paper # 5 – 10:30 – 11:00 a.m.
Development and Testing of Transport Category Vertical Takeoff Procedures for the AW609 Tiltrotor (*197)*
Joseph Schaeffer, Agusta Westland, Kip Campbell, and David Belt, Alessandro Colombo, Agusta Westland and Mattia Mattaboni, Agusta Westland; Matt Louis, Bell Helicopter

Paper # 6 – 11:00 – 11:30 a.m.
Design and Flight Test of a Hybrid External Load Stabilization System for an H-6 Helicopter Testbed (*70)*
Russell Enns, Byron Patterson, George Lukes, Carl King, Jaheen Ahmad and Stephen Mohammed, The Boeing Company

Paper # 7 – 11:30 - 12:00 noon
Flight Evaluation of Variation in Rotor RPM on Low Speed Handling Characteristics of Helicopter (*21)*
Abdul Tajar, M. Vijaya Kumar, D.S.D. Prasad Rao and R. Sannathi Muthu, Hindustan Aeronautics Limited

Structures & Materials I

This Session is dedicated to the memory of Jeff Schaff.

Paper # 1 – 8:00 – 8:30 a.m.
Fatigue Load Spectra for a Conventional Military Rotorcraft (*8)*
Robert Benton, US Army Aviation Engineering Directorate

Paper # 2– 8:30 – 9:00 a.m.
Evolution of Fenestron Development in terms of Safety, Design and Substantiation Characteristics (*134)*
Elif Ahci, Airbus Helicopters, Ulrich Denecke, Stefan Emmerling, Gerald Kuntze-Fechner and Patrice Rauch, Airbus Helicopters

Paper # 3 – 9:00-9:30 a.m.
Dual-Use Structures: Apache Empennage Integral Driveshaft Cover Antenna (*208)*
Ronald Lavin, Glenn Pyle and Dennis McCarthy, The Boeing Company; Mark Robeson, U.S. Army AMRDEC ADD

Refreshment Break – 9:30-10:00 a.m.

Paper # 4 – 10:00 – 10:30 a.m.
A Probabilistic Approach for Reliability Quantification of Propulsion Materials (*37)*
Michael Shiao and Anindya Ghoshal, Department of Army

Paper # 5 – 10:30 – 11:00 a.m.
Structural Dynamic Modeling for Rotating Blades Using Three-Dimensional Finite Elements (*256)*
Youngjung Kee, Korea Aerospace Research Institute; Sangjoon Shin, Seoul National University

Paper # 6 – 11:00 – 11:30 a.m.
Advanced Modeling of Structural Defects for Strength and Fatigue Prognosis in Composite Structures (*360)*
Yuri Nikishkov, Guillaume Seon and Andrew Makeev, University of Texas at Arlington

Paper # 7 – 11:30 - 12:00 noon
Determination of Flight Loads for the HH-60G Pave Hawk Helicopter (*277)*
Robert McGinty, Gregory Wood and Jeff Brenna, MERC; Steven Lamb, USAF

Unmanned VTOL

Paper # 1 – 8:00 – 8:30 a.m.
Estimating the effects off environmental sensor choice on vehicle sizing and mission performance for obstacle field navigation of unmanned helicopters (*340)*
Joerg Dittrich and Florian-Michael Adolf, DLR

Paper # 2– 8:30 – 9:00 a.m.
Development of a Route Planning System for an Autonomous Rotorcraft (*272)*
Oktay Arslan and Panagiotis Tsiotras, Georgia Institute of Technology; Navid Dadkhah and Michael Moser, Aurora Flight Sciences

Paper # 3 – 9:00-9:30 a.m.
INSTRUMENTED DECK LANDING CUEING IN UNMANNED AIRCRAFT SYSTEMS (*150)*
Bernard Ferrier, Hoffman Engineering Corp; Robert Ernst, Naval Air Systems Command (NAVAIR); Ajay Sehgal, Wyle Laboratories, Inc.

Refreshment Break – 9:30-10:00 a.m.

Paper # 4 – 10:00 – 10:30 a.m.
Sense and Avoid for Unmanned Aerial Vehicles (*345)*
Yucong Lin and Srikanth Saripalli, Arizona State University

Paper # 5 – 10:30 – 11:00 a.m.
On the Scaling of the Slalom ADS-33-MTE for Small Unmanned Rotorcraft (*92)*
Sven Lorenz and Johann Dauer, German Aerospace Center (DLR)

Paper # 6 – 11:00 – 11:30 a.m.
A control architecture for fast and precise autonomous landing of a VTOL UAV onto an oscillating platform (*325)*
Botao Hu, Rensselaer Polytechnic Institute, Lu Lu and Sandipan Mishra, Rensselaer Polytechnic Institute

Paper # 7 – 11:30 - 12:00 noon
Motion Planning for Slung-Loads Using Rapidly-Exploring Random Trees (*313)*
John Mooney and Eric Johnson, Georgia Institute of Technology

Paper # 8 – 12:00 – 12:30 p.m.
An Unmanned Cargo-Delivery System for Rotorcraft Landing to Unprepared Sites (*241)*
James Paduano, John Wissler, Graham Drozeski, Michael Piedmonte, et al, Aurora Flight Sciences

Wind Energy

Paper # 1 – 8:00 – 8:30 a.m.
Single-Shot Pressure-Sensitive Paint Measurements of Static and Dynamic Stall on a Wind Turbine Airfoil (*38)*
Kevin Disotell and James Gregory, The Ohio State University; Pourya Nikoueeyan and Jonathan Naughton, University of Wyoming

Paper # 2– 8:30 – 9:00 a.m.
Dynamic Wake Meandering Model Comparison with Varying Fidelity Models for Wind Turbine Wake Prediction (*127)*
Brandon L. Ennis, Christopher L. Kelley, David C. Maniaci and Brian R. Resor, Sandia National Laboratories

Paper # 3 – 9:00-9:30 a.m.
Improving the Performance of a Small-Scale Vertical Axis Wind Turbine with Dynamic Blade Pitching (*78)*
Moble Benedict, Texas A&M University; Vinod Lakshminarayan, Stanford University; Jeremy Garber and Inderjit Chopra, University of Maryland

Refreshment Break – 9:30-10:00 a.m.

Paper # 4 – 10:00 – 10:30 a.m.
Simulated Aerodynamic Braking of a 225 kW Wind Turbine (*148)*
Christopher Kelley, Sandia National Laboratories

Paper # 5 – 10:30 – 11:00 a.m.
A Framework for Modeling Wind-Farm Wake Turbulence from a Database for Simulation and Analysis (*184)*
Gopal Gaonkar and Kyle Schau, Florida Atlantic University

Paper # 6 – 11:00 – 11:30 a.m.
Coupled NS/SPH Analysis of Off-Shore Wind Turbine (*304)*
George Barakos and Vladimir Leble, University of Liverpool

Paper # 7 – 11:30 - 12:00 noon
Simulations of Horizontal Axis Wind Turbines in complex operational conditions (*365)*
Yasutada Tanabe and Takashi Aoyama, JAXA; Harutaka Oe and Yuta Uemura, Tokyo University of Science; Hideaki Sugawara, Ryoyu Systems Inc.

Session B – Wednesday Morning, May 6 – 8:00 a.m. – 12:15 p.m.

Advanced Vertical Flight I Transformative Concepts

Paper # 1 – 8:00 – 8:30 a.m.
The LIFT! Project – Modular, Electric Vertical Lift System (*26)*
Michael Duffy and Tony Samaritano, The Boeing Company

Paper # 2 – 8:30 – 9:00 a.m.
Design, Development and Flight Testing of a Sub-100 Gram Robotic Hummingbird (*80)*
David Coleman and Moble Benedict, Texas A&M University; Vikram Hrishikeshavan and Inderjit Chopra, University of Maryland

Paper # 3 – 9:00 – 9:30 a.m.
Design Space Exploration of a Reconfigurable Rotor Helicopter Concept (117*)*
Etienne Demers Bouchard, David Rancourt and Dimitri Mavris, Georgia Institute of Technology

Refreshment Break – 9:30 – 10:15

Paper # 4 – 10:11 – 10:45 a.m.
Experimental Investigation of Fan Aerodynamic Performance for Fan-In-Wing Applications (*196)*
Naipei Bi, Anish Sydney, Kevin Kimmel and David Haas, Naval Surface Warfare Center Carderock Division

Paper # 5 -- 10:45 - 11:15 a.m.
Analysis of Embedded Lifting Rotor/Fan V/STOL Configurations (*202)*
Todd Quackenbush, Glen Whitehouse and Pavel Danilov, Continuum Dynamics, Inc

Paper # 6 – 11:15 – 11:45 a.m.
CarterCopter Technology Goes Offshore: Commercial Variant with Full Hover Capability (*159)*
Jay Carter and Jeffrey Lewis, Carter Aviation Technologies

Aerodynamics II – Dynamic Stall

Paper # 1 – 8:00 – 8:30 a.m.
Transition Determination for Periodic and Static Flows Using Phase-Averaged Pressure Data (*168)*
A.D. Gardner and K. Richter, DLR

Paper # 2 – 8:30 – 9:00 a.m.
Study of an SSC-A09 Airfoil in Compressible Dynamic Stall with Freestream Mach Oscillations (*311)*
James Gregory, Kyle Hird and Jeffrey Bons, The Ohio State University

Paper # 3 – 9:00 – 9:30 a.m.
Dynamic Stall with Circulation Pulse and Hysteresis for NACA 0012 and VR-12 Airfoils (*40)*
Ramin Modarres, David Peters and Jacob Gaskill, Washington University in St. Louis

Refreshment Break – 9:30 – 10:15

Paper # 4 – 10:15 – 10:45 a.m.
Blowing Flow Control of Dynamic Stall under Coupled Pitch and Freestream Oscillations (*125)*
Shawn Naigle, James Gregory and Jeffrey Bons, The Ohio State University

Paper # 5 -- 10:45 - 11:15 a.m.
Computations of Dynamic Stall Control with Combustion-Powered Actuation (*33)*
Solkeun Jee, Claude Matalanis, Byung-Young Min, Patrick Bowles and Brian Wake, United Technologies Research Center; Thomas Crittenden and Ari Glezer, Georgia Institute of Technology

Paper # 6 – 11:15 – 11:45 a.m.
Consideration of Dynamic Stall on Rotorcraft Airfoil Design (*348)*
Bernardo Vieira and Mark Maughmer, The Pennsylvania State University

Paper # 7 – 11:45 a.m. – 12:15 p.m.
Dynamic Stall Control on Rotor Airfoil via Combination of Synthetic Jet and Droop Leading-Edge (*231)*
Guo-qing Zhao and Qi-jun Zhao, Nanjing University of Aeronautics and Astronautics

Paper # 8 – 12:15 – 12:45 a.m.
Numerical Investigation of Three-Dimensional Effects on Deep Dynamic Stall Experiments (*42)*
Alex Zanotti, Reza Nilifard, Giuseppe Gibertini and Alberto Guardone, Politecnico di Milano

Aircraft Design II

Paper # 1 – 8:00 – 8:30 a.m.
Conceptual Design of Environmentally Friendly Rotorcraft – A Comparison of NASA and ONERA Approaches (*6)*
Carl Russell, NASA Ames Research Center; Pierre-Marie Basset, ONERA

Paper # 2 – 8:30 – 9:00 a.m.
A Toolbox for Rotorcraft Preliminary Design (*186)*
Max Lier, Alex Krenik, Philipp Kunze, Dieter Kohlgrüber, Marius Lützenburger and Dominik Schwinn, German Aerospace Center (DLR)

Paper # 3 – 9:00 – 9:30 a.m.
Comprehensive Rotorcraft Analysis for Preliminary Design and Optimization (*32)*
Michael Avera, ORISE; Hao Kang and Rajneesh Singh, US Army Research Lab

Refreshment Break – 9:30 – 10:15

Paper # 4 – 10:15 – 10:45 a.m.
Twin Engine Pack System: a twin piston engine propulsion unit for very light rotorcraft (*223)*
Giuseppe Quaranta, Roberto Alicino and Luca Cirrottola, Politecnico di Milano; Andrea Albertoni, Marta Massera and Roberto Papetti, Robby Moto Engineering

Paper # 5 -- 10:45 - 11:15 a.m.
Shear Load Transfer for Corrosion Coated Clamped Joints (*179)*
Monte McGlaun, Eric Sinusas, Bell Helicopter Textron Inc. and Ryan Ehinger, Bell Helicopter Textron Inc.

Paper # 6 – 11:15 – 11:45 a.m.
Trim Optimization of Coaxial Helicopters in High-Speed Flight (*44)*
George Jacobellis, Rensselaer Polytechnic Institute and Farhan Gandhi, Rensselaer Polytechnic Institute

Paper # 7 – 11:45 a.m. – 12:15 p.m.
Capturing Uncertainty in Concept Selection (*347)*
Frank Patterson and Daniel Schrage, Georgia Institute of Technology

Handling Qualities II

Paper # 1 – 8:00 – 8:30 a.m.
Augmented Systems for a Personal Aerial Vehicle Using a Civil Light Helicopter Model (*269)*
Stefano Geluardi, Frank M. Nieuwenhuizen, and Heinrich H. Bülthoff, Max Planck Institute for Biological Cybernetics; Lorenzo Pollini, University of Pisa

Paper # 2 – 8:30 – 9:00 a.m.
Towards Handling Qualities Evaluations of a Personal Aerial Vehicle in Ground-Based and In-Flight Simulation (*115)*
Bianca I. Schuchardt, German Aerospace Center (DLR)

Paper # 3 – 9:00 – 9:30 a.m.
Investigation of the Disturbance Rejection Properties of a Dynamic Inversion Control Law for Ship-Based Rotorcraft (*129)*
Albert Zheng and Joseph Horn, The Pennsylvania State University

Refreshment Break – 9:30 – 10:15

Paper # 4 – 10:15 – 10:45 a.m.
Non-Iterative and Adaptive Vertical Speed Limit and Control Margin Prediction for Fly-By-Wire Helicopter (*300)*
Gonenc Gursoy and Ilkay Yavrucuk, Middle East Technical University

Paper # 5 -- 10:45 - 11:15 a.m.
Multi-Input Multi-Output Model-Following Control Design Methods for Rotorcraft (*327)*
J. Michael Spires and Joseph F. Horn, The Pennsylvania State University

Paper # 6 – 11:15 – 11:45 a.m.
Optimization of Flight Control System and Handling Quality Evaluation of a Light Helicopter in Preliminary Design Phase (*243)*
Ugur Zengin, Ismail Hakki Sahin, Umut Ture and Selahattin Burak Sarsilmaz, Turkish Aeropace Industries, Inc

Session B – Wednesday Morning, May 6 – 8:00 a.m. – 12:15 p.m.

HUMS-CBM 1

Paper # 1 – 8:00 – 8:30 a.m.
Achieving Usage Based Maintenance with HUMS Regime Recognition (*280)*
Raymond Beale, Mark Davis and Andrew Brookhart, Sikorsky Aircraft Corporation; Paul Swindell, Federal Aviation Administration

Paper # 2 – 8:30 – 9:00 a.m.
Gross Weight and Center-of-Gravity Estimation System for the V-22 (*305)*
Fred Caplan, Technical Data Analysis, Inc. and Chris Thaiss, Technical Data Analysis, Inc.

Paper # 3 – 9:00 – 9:30 a.m.
Study on the Impact of Daily Reporting of HUMS Events on Squadron Maintenance and Logistics (*190)*
Erica Hocking, Brian Fuller and Gino Molinaro, Naval Air Warfare Center

Refreshment Break – 9:30 – 10:15

Paper # 4 – 10:15 – 10:45 a.m.
Blade Root Integrated Fibre Bragg Grating Sensors - A Highly Redundant Data Source For Future HUMS (*270)*
Manfred Hajek, Technische Universitaet Muenchen (TUM)

Paper # 5 -- 10:45 - 11:15 a.m.
A Smart Position Sensor for Articulated Rotors (*209)*
Troy Schank and Kynn Schulte, Bell Helicopter Textron Inc

Paper # 6 – 11:15 – 11:45 a.m.
Rotor Load and Health Monitoring Sensor Technology (*128)*
Mark Davis and Brian Bouquillon, Sikorsky Aircraft Corporation; Matt Smith and Charles Allred, LORD Corporation; Roberto Sarjeant, Hutchinson Aerospace; Jacob Loverich, KCF Technologies Inc.; Nate Bordick, ADD-AATD

Paper # 7 – 11:45 a.m. – 12:15 p.m.
Development of a Robust Piezoelectric-Fiber-Based Frequency Steered Acoustic Transducer (*279)*
Matteo Carrara and Massimo Ruzzene, Georgia Institute of Technology; Kalyan Nadella and Carlos Cesnik, University of Michigan

Modeling & Simulation I

Paper # 1 – 8:00 – 8:30 a.m.
Efficient and High Fidelity Simulation for the Mutual Aerodynamic Interactions in Compound Rotorcraft (*203)*
Jinggen Zhao and Chengjian He, Advanced Rotorcraft Technology, Inc.

Paper # 2 – 8:30 – 9:00 a.m.
A Numerical Investigation of Ground Effect on a Coaxial Rotor System (*68)*
Mark Dreier and Ashley Paredes, AVX Aircraft Company

Paper # 3 – 9:00 – 9:30 a.m.
Linear Inflow Model Extraction from High-Fidelity Aerodynamic Models for Flight Dynamics Applications (*41)*
Omri Rand and Vladimir Khromov, Technion - Israel Institute of Technology; Sean Hersey and Roberto Celi, University of Maryland; Ondrej Juhasz and Mark Tischler, U. S. Army Aeroflightdynamics Directorate (AMRDEC)

Refreshment Break – 9:30 – 10:15

Paper # 4 – 10:15 – 10:45 a.m.
GPU-Based Fast Free Wake Computations of Helicopter Rotors (*295)*
Onur Tarimci, Mert Turkal and Serdar Usenmez, Aerotim Engineering LLC; Nilay Sezer-Uzol, TOBB University of Economics & Technology; Ilkay Yavrucuk and Oguz Uzol, Middle East Technical University

Paper # 5 -- 10:45 - 11:15 a.m.
Real Time Free Wake and Ship Airwake Model for Rotorcraft Flight Training Application (*275)*
Jeffrey Keller and Daniel Wachspress, Continuum Dynamics, Inc.; Jacques Hoffler, NAVAIR

Paper # 6 – 11:15 – 11:45 a.m.
Physics-Based Aerodynamic Simulation Models Suitable for Dynamic Behavior of Complex Bluff Body Configurations (*163)*
Daniel Prosser, Georgia Institute of Technology and Marilyn Smith, Georgia Institute of Technology

Paper # 7 – 11:45 a.m. – 12:15 p.m.
Effects of Uncertainty on Slung Load Divergence Speed Determination (*254)*
Brandon Liberi, Sorin Pirau and Narayanan Komerath, Georgia Institute of Technology; Chau Ton, University of Florida

Propulsion 1

Paper # 1 – 8:00 – 8:30 a.m.
Turbomachinery Blade Thermomechanical Interface Science and Sandphobic Coatings Research (*225)*
Anindya Ghoshal, Muthuvel Murugan, Blake Barnett, David Booth and Marc Pepi, US Army Research Laboratory; Kevin Kerner, Applied Aviation Technology Development Directorate; Ala Tabiei, University of Cincinnati

Paper # 2 – 8:30 – 9:00 a.m.
Adaptable Gas Turbine Blade Feasibility Study (*200)*
David Booth, Anindya Ghoshal, Douglas Thurman, Muthuvel Murugan and Kevin Kerner, U. S. Army

Paper # 3 – 9:00 – 9:30 a.m.
All-Electric Fuel and Oil Control System Demonstration on the T55 Engine (*379)*
Robert Niebanck, Theodore Busky and Richard Brauer, Triumph Engine Control Systems

Refreshment Break – 9:30 – 10:15

Paper # 4 – 10:15 – 10:45 a.m.
Overview of the Engine Inlet Barrier Filter Flight Test Efforts on the V-22 (*372)*
Erasmo Pinero and Daniel Simpson, Bell Helicopter

Paper # 5 -- 10:45 - 11:15 a.m.
Multi-objective Optimization of Conceptual Rotorcraft Powerplants: Trade-off between Rotorcraft Fuel Efficiency and Environmental Impact (*74)*
Fakhre Ali, Konstantinos Tzanidakis, Ioannis Goulos and Pachidis Vassilios, Cranfield University

Paper # 6 – 11:15 – 11:45 a.m.
Influence of Scavenge Geometry on Separation Efficiency for an Inertial Particle Separator (*355)*
Brian Connolly and Eric Loth, University of Virginia; Philip Snyder, Rolls-Royce North American Technologies

Test & Evaluation I

Paper # 1 – 8:00 – 8:30 a.m.
A Dynamic Calibration Method for Experimental and Analytical Hub Load Comparison (*46)*
Robert Thornburgh, Andrew Kreshock and Matthew Wilbur, U.S. Army Research Laboratory

Paper # 2 – 8:30 – 9:00 a.m.
Full-scale Experimental Validation of Centrifugally Powered, Pneumatic Actuators Enabling Swashplateless Primary Rotor Control (*232)*
Joseph Szefi, Invercon LLC; Jose Palacios, Pennsylvania State University; Douglas Daley, Kaman Aerospace Corporation

Paper # 3 – 9:00 – 9:30 a.m.
Modern Testing Approaches Used to Characterize Dynamic Stall Regimes on Helicopter Airfoils (*262)*
Phillip Davidson, Jonathan Naughton and Jay Sitaraman, University of Wyoming

Refreshment Break – 9:30 – 10:15

Paper # 4 – 10:15 – 10:45 a.m.
Finite Element Analysis and Full Scale Testing of a Centrifugally Pumped Pneumatic Deicing System for Helicopter Rotor Blades (*222)*
Matthew Drury and Jose Palacios, The Pennsylvania State University; Joseph Szefi, Invercon LLC

Paper # 5 -- 10:45 - 11:15 a.m.
Study of Internal Flow Through a Rotating Duct (*146)*
Anand Karpatne and Jayant Sirohi, University of Texas, Austin

Paper # 6 – 11:15 – 11:45 a.m.
Blade Sections in Streamwise Oscillations into Reverse Flow (*183)*
Anya Jones, University of Maryland; Kenneth Granlund, Universal Technologies Corporation

Paper # 7 – 11:45 a.m. – 12:15 p.m.
Durable and Damage Tolerant Composite Aft Fuselage Technology (*211)*
Lisa Chiu, Clark Andrews and Dennis McCarthy, The Boeing Company; Mark Robeson, US Army AMRDEC ADD-AATD

Paper # 8 – 11:45 a.m. – 12:15 p.m.
Twist Effects on Rotor Performance, Loads & Vibrations
Edward Brouwers and Thomas Zientek, The Boeing Co.; Louis Centolanza, US Army Aviation Development Directorate

Session C – Wednesday Afternoon, May 6 – 1:45 p.m. – 6:00 p.m.

Aerodynamics III

Paper # 1 – 1:45. – 2:15 p.m.
Fundamental Characterization of Spanwise Loading and Trailed Wake Vortices (*82)*
Mahendra Bhagwat and Francis Caradonna, US Army Aviation Development Directorate – AFDD; Manikandan Ramasamy, UARC/AFDD

Paper # 2 – 2:15 – 2:45 p.m.
Mechanisms of Active Aerodynamic Load Reduction on a Rotorcraft Fuselage with Rotor Effects (*35)*
Norman Schaeffler, Brian Allan, Luther Jenkins, Chung-Sheng Yao and Scott Bartram, NASA Langley Research Center; W. Derry Mace, Sierra-Lobo; Oliver Wong and Philip Tanner, U.S. Army Aviation Development Directorate

Paper # 3 – 2:45 – 3:15 p.m.
Measurements to Understand the Flow Mechanisms Contributing to CH-47D Outwash (*321)*
Manikandan Ramasamy, Mark Potsdam, US Army; Gloria Yamauchi, NASA

Refreshment Break -- 3:15 – 4:00

Paper # 4 – 4:00 – 4:30 p.m.
Effects of Reynolds Number and Advance Ratio on the Drag of a Model Helicopter Rotor Hub (*63)*
David Reich, Steven Willits and Sven Schmitz, The Pennsylvania State University

Paper # 5 – 4:30 – 5:00 p.m.
Effects of advance ratio and radial location on the vortex structure on a rotating blade in reverse flow (*299)*
Vrishank Raghav, Nandeesh Hiremath, Dhwanil Shukla, Sorin Pirau and Narayanan Komerath, Georgia Institute of Technology

Paper # 6 – 5:00 p.m. – 5:30 p.m.
Experimental Investigation of Perpendicular Vortex Interaction by Stereo Particle Image Velocimetry (*189)*
Giuseppe Gibertini, Alex Zanotti, Martino Ermacora and Gabriele Campanardi, Politecnico di Milano

Paper # 7 – 5:30 – 6:00 p.m.
Aerodynamics of micro-rotors in confined environments (*158)*
Sebastien Prothin and Thierry Jardin, ISAE Supaéro

Paper # 8 – 6:00 – 6:30 p.m.
Collaborative Investigation of the Aerodynamic Behavior of Airfoils in Reverse Flow (*267)*
Joachim Hodara, Georgia Institute of Technology; Andrew Lind and Anya Jones, University of Maryland; Marilyn Smith, Georgia Institute of Technology

Crash Safety II

Paper # 1 – 1:45. – 2:15 p.m.
Step towards certification of fuel drop test requirement for different helicopters by simulation (*95)*
Clément Breton, Alice Vagnot, Jean-Charles Sicard and Johannes Markmiller, Airbus Helicopters

Paper # 2 – 2:15 – 2:45 p.m.
Bird Impact Simulation of Polycarbonate Windshield Subject to Brittle Failures (*201)*
Zi Lu, Michael Seifert, Cheng-Ho Tho, Bell Helicopter

Paper # 3 – 2:45 – 3:15 p.m.
Model-based structural integrity assessment of helicopter fuselage during harsh landing (*230)*
Claudio Sbarufatti, Andrea Manes, Marco Giglio and Giorgio Vallone, Politecnico di Milano; Slawomir Klimaszewski, Marcin Kurdelski, Andrzej Leski, Michal Stefaniuk and Wojciech Zielinski, Air Force Institute of Technology

Refreshment Break -- 3:15 – 4:00

Paper # 4 – 4:00 – 4:30 p.m.
Water Impact of Helicopter Structures: Experimental Tests and Numerical Modelling with the SPH Method (*228)*
Thomas Billac, Mark Battley and Raj Das, The University of Auckland; Lex Mulcahy and Bruce Cartwright, Pacific ESI; Rodney Thomson, Cooperative Research Centre for Advanced Composite Structures

Awards Not Yet Announced

Dynamics II

Paper # 1 – 1:45. – 2:15 p.m.
Experimental Validation of Tailboom Vibration Control Using Fluidic Flexible Matrix Composite Tubes (*337)*
Kentaro Miura, Matthew Krott, Edward Smith and Christopher Rahn, Pennsylvania State University; Peter Romano, Bell Helicopter Textron, Inc.

Paper # 2 – 2:15 – 2:45 p.m.
Analysis of Interaction Between On-Blade Control and Handling Qualities Using High-Fidelity Linearized Time-Invariant Helicopter Models (*47)*
Peretz Friedmann and Ashwani Padthe, University of Michigan

Paper # 3 – 2:45 – 3:15 p.m.
Reduction of structural vibration on Light Combat Helicopter (*258)*
Hamid Ali, Hindustan Aeronautics Limited

Refreshment Break -- 3:15 – 4:00

Paper # 4 – 4:00 – 4:30 p.m.
Novel 3-D Rotor Structural Analysis Applied to Proprotor Aeromechanics (*287)*
William Staruk and Inder Chopra, University of Maryland; Anubhav Datta, US Army AFDD

Paper # 5 – 4:30 – 5:00 p.m.
Do We Really Need To Study Rotorcraft as Linear Periodic Systems? (*152)*
Pierangelo Masarati and Aykut Tamer, Politecnico di Milano

Paper # 6 – 5:00 p.m. – 5:30 p.m.
Aeromechanics for a High Advance Ratio Coaxial Helicopter (*247)*
Joseph Schmaus and Inderjit Chopra, University of Maryland

Paper # 7 – 5:30 – 6:00 p.m.
Dynamic Characterization of a Novel Gimbal Two-Blade Helicopter Rotor (*88)*
Lorenzo Trainelli, Alessandro Croce and Radek Possamai, Politecnico di Milano

HUMS/CBM II

Paper # 1 – 1:45. – 2:15 p.m.
Capability-Based Operations and Sustainment – Aviation (COST-A) Technology Development (*122)*
Preston Bates, Sikorsky Aircraft Corp; Paul Pantelis, Aviation Development Directorate-Aviation Applied Technology Directorate

Paper # 2 – 2:15 – 2:45 p.m.
Health Management Technology Integration and Verification (*126)*
Isaac Bandy, James Cotter, James Cycon and Mark Davis, Sikorsky Aircraft Corporation; Bruce Thompson, ADD-AATD

Paper # 3 – 2:45 – 3:15 p.m.
Generalized Prognostics Algorithm Using Kalman Smoother (*23)*
Eric Bechhoefer, GPMS

Refreshment Break -- 3:15 – 4:00

Paper # 4 – 4:00 – 4:30 p.m.
Machine Learning Algorithms for HUMS Improvement on Rotorcraft Components (*170)*
Daniel Wade and Thongsay Vongpaseuth, United States Army; Ramon Lugos, Jeffery Ayscue and Andrew Wilson, Avion Solutions, Inc; Lance Antolick, Nathan Brower, Steven Krick and Matthew Szelistowski, RMCI, Inc; Kevin Albarado, Dynetics, Inc

Paper # 5 – 4:30 – 5:00 p.m.
Low-Velocity Impact Monitoring System for a Helicopter Frame By Means of an Artificial Neural Network (*268)*
Claudio Sbarufatti, Andrea Gilioli, Andrea Manes and Marco Giglio, Politecnico di Milano

Paper # 6 – 5:00 p.m. – 5:30 p.m.
Performance Qualification of An On-Board Model-Based Diagnostic System for Fatigue Crack Monitoring (*229)*
Claudio Sbarufatti, Andrea Manes and Marco Giglio, Politecnico di Milano

Paper # 7 – 5:30 – 6:00 p.m.
Data-Informed Structural Diagnostic Framework (*20)*
Mulugeta Haile and Jaret Riddick, US Army Research Lab

Session C – Wednesday Afternoon, May 6 – 1:45 p.m. – 6:00 p.m.

Modeling & Simulation II

Paper # 1 – 1:45. – 2:15 p.m.
Store Separation Modeling for Rotorcraft Applications (*177)*
Robert McKillip and Todd Quackenbush, Continuum Dynamics, Inc.

Paper # 2 – 2:15 – 2:45 p.m.
Flow Sensing, Estimation and Feedback Control for Rotorcraft Landing in Ground Effect (*91)*
Chin Gian Hooi, Frank D. Lagor and Derek A. Paley, University of Maryland

Paper # 3 – 2:45 – 3:15 p.m.
Simulating HHC/AFCS Interaction and Optimized Controllers using Piloted Maneuvers (*319)*
Mark Lopez and J.V.R. Prasad, Georgia Institute of Technology; Marc D. Takahashi and Mark B. Tischler, U.S. Army RDECOM; Kenny K. Cheung, University Affiliated Research Center

Refreshment Break -- 3:15 – 4:00

Paper # 4 – 4:00 – 4:30 p.m.
Local Polynomial Method Frequency-Response Calculation for Rotorcraft Applications (*93)*
Benjamin Fragniere and Johannes Wartmann, DLR

Paper # 5 – 4:30 – 5:00 p.m.
HeliUM 2 Flight Dynamic Simulation Model: Development, Technical Concepts, and Applications (*368)*
Roberto Celi, University of Maryland

Paper # 6 – 5:00 p.m. – 5:30 p.m.
A Comprehensive Pilot Model for Voluntary/Involuntary Action in Rotorcraft-Pilot Coupling (*151)*
Pierangelo Masarati, Vincenzo Muscarello, Giuseppe Quaranta, Paolo Marguerettaz and Giorgio Guglieri; Michael Jump and Linghai Lu, The University of Liverpool

Paper # 7 – 5:30 – 6:00 p.m.
Evaluation of Motion Tuning Methods on the Vertical Motion Simulator (*207)*
Scott Reardon and Steven Beard, NASA

Operations I

Paper # 1 – 1:45. – 2:15 p.m.
Measured and Predicted Response of a Submerged Towed Sonar Array to Maneuvering Input (*362)*
Jaye Falls, Jean Loomis and Sarah Mouring, United States Naval Academy

Paper # 2 – 2:15 – 2:45 p.m.
Constructive Combat Simulation Models for Vertical Lift Analysis (*138)*
Christa Luna, Scott Swinsick and Joseph Maguire, The Boeing Company

Paper # 3 – 2:45 – 3:15 p.m.
Joint Future Vertical Lift Initiative (*132)*
Larry Sisson, Department of Defense

Refreshment Break -- 3:15 – 4:00

Paper # 4 – 4:00 – 4:30 p.m.
Unmanned VTOL UAS Operations for Fire Support (*34)*
Terry Parisher, Northrop Grumman and Ray Chaney, CAL FIRE

Paper # 5 – 4:30 – 5:00 p.m.
CHOPPA-M: Development, Capabilities & Applications to Helicopter Operations Research (*187)*
David Anderson and Douglas Thomson, University of Glasgow; Gokhan Ibal and Arvind Chandran, Defence Science & Technology Organisation

Paper # 6 – 5:00 p.m. – 5:30 p.m.
Improvements in the Rotorcraft Fuel Economy and Environmental Impact through Multiple- Landing Mission Strategy (*71)*
Fakhre Ali, Ioannis Goulos and Vassilios Pachidis, Cranfield University

Paper # 7 – 5:30 – 6:00 p.m.
Mishap Analysis for Brownout Rotorcraft Enhancement System (BORES) Analysis of Alternatives (AoA) (*316)*
Joshua Schwartz and William Greer, Institute for Defense Analyses

Product Support

Paper # 1 – 1:45. – 2:15 p.m.
Increased Industry Safety Through Education Technology (*162)*
Zekiel Fialho, Mike Gralish, Clyde Vasey and Larry Wormington, Bell Helicopter

Paper # 2 – 2:15 – 2:45 p.m.
Digital Product Definition - An Enterprise Process Transformation (*380)*
Steven Loveland, Bell Helicopter

Paper # 3 – 2:45 – 3:15 p.m.
Utilizing data mining techniques for estimating projected cost avoidance due to CBM deployment (*291)*
Tanzina Zaman and Dr. Abdel E. Bayoumi, University of South Carolina

Refreshment Break -- 3:15 – 4:00

Paper # 4 – 4:00 – 4:30 p.m.
Development and Testing of a Ground Based Health and Maintenance Reasoner (*140)*
James Cotter, Nick Mackos, Sikorsky and Mark Davis, Sikorsky; Paul Pantelis, Army ADD-AATD

Paper # 5 – 4:30 – 5:00 p.m.
V-22 Osprey Maintenance Cost Savings using SAFE for Fatigue Life Calculations (*374)*
Stacey Kelly and John Lloyd, Bell Helicopter, Textron

Paper # 6 – 5:00 p.m. – 5:30 p.m.
Data Driven Depot Maintenance (D3M) (*224)*
Kevin Rees, Prasant Chhotu, U.S. Army; Nathan Holland, Lesco

Paper # 7 – 5:30 – 6:00 p.m.
Modeling CT7/T700 Maintenance Costs (*344)*
John Martin and Greg Duane, GE Aviation; Bennett Hlavac and Gordon Alexander, US Army

Paper # 8 – 6:00 – 6:30 p.m.
Isogeometric Analysis for Vertical Flight Applications (*341)*
Chenglong Wang, Iowa State University and Ming-Chen Hsu, Iowa State University; Yuri Bazilevs, University of California, San Diego

Structures & Materials II

Paper # 1 – 1:45. – 2:15 p.m.
OH-58D Pylon Side Beam Life Using Usage Loads Monitoring vs Traditional Lifing Methodology (*19)*
Chris Hodges, Christopher Lyman, Katherine Troncalli and Theresa Kinney, U.S. Army

Paper # 2 – 2:15 – 2:45 p.m.
Damage Tolerance Studies at the Blade Root Attachment of Aero Engines (*331)*
Appaji Gowda B M and O Germiya, Hindustan Aeronautics Limited; H R Yeshovanth, RNSIT

Paper # 3 – 2:45 – 3:15 p.m.
On Repair Limit Extension for Rotorcraft Composite Structures: General Approach and Demonstration (*7)*
Mark Gurvich and Xuemei Wang, United Technologies Research Center; JinKyu Choi and Michael Urban, Sikorsky Aircraft Corporation

Refreshment Break -- 3:15 – 4:00

Paper # 4 – 4:00 – 4:30 p.m.
Damage Tolerance Substantiation and Certification of Multiple Fastener Joints (*323)*
W. Paul Green, Bell Helicopter and Bogdan Roman Krasnowski, Bell Helicopter; Manjunatha M. Reddy, Textron India Private Ltd.

Paper # 5 – 4:30 – 5:00 p.m.
A Discrete Crack Network Based Damage Assessment for Bolted Composite Structures (*166)*
Jim Lua, Neethi Simon and Eugene Fang, Global Engineering and Materials, Inc.; Anisur Rahman, and Nam Phan, Naval Air Warefare Center (PAX)

Paper # 6 – 5:00 p.m. – 5:30 p.m.
Erosion Protection Coatings: Evidence of Structural Impact (*10)*
Kit Fry and Robert Benton, AMRDEC

Paper # 7 – 5:30 – 6:00 p.m.
RotorShield Advanced Rotor Blade Erosion Protection, Application to V-22 (*376)*
Jeffrey Nissen, Bell Helicopter; Peter Holemans and Jonathan Venezia, Boeing

Paper # 8 – 6:00 – 6:30 p.m.
Hydrodynamic Ram Compliant Structure (*294)*
Christopher Gatley, Rolland LaHaie and Dennis McCarthy, The Boeing Company; Dr. Mark Robeson, US Army AMRDEC

Session D – Thursday Morning, May 7 – 8:00 a.m. – 12:15 p.m.

Acoustics

Paper # 1 – 8:00 – 8:30 a.m.
A Maneuvering Flight Noise Model for Helicopter Mission Planning (*24)
Eric Greenwood and Robert Rau, NASA Langley Research Center; Benjamin May and Christopher Hobbs, Wyle Laboratories

Paper # 2. – 8:30 – 9:00 a.m.
Investigating BVI Variability During Steady Descent Conditions (*28)
James Stephenson, US Army; Eric Greenwood, NASA Langley

Paper # 3 – 9:00 – 9:30 a.m.
Aeroacoustic Simulation of an Ec145t2 Rotor in Descent Flight (*113)
Ulrich Kowarsch, Daniel Lippert, Manuel Keßler and Ewald Krämer, University of Stuttgart; Sascha Schneider, Airbus Helicopters Deutschland GmbH

Refreshment Break -- 9:30 – 10:15

Paper # 4 – 10:15 – 10:45 a.m.
A Dual Compact Model for Rotor Noise Prediction (*234)
Tianxiao Yang, Kenneth Brentner, Greg Walsh and Yaowei Li, The Pennsylvania State University

Paper # 5 -- 10:45 – 11:15 a.m.
Comprehensive Modeling Approach for High-Frequency Structural Properties and Noise Transmission of Composite Panels (*210)
Chadwyck Musser, Abderrazak Mejdi and Bryce Gardner, ESI Group

Paper # 6 – 11:15 – 11:45 a.m.
Automated Design of Quiet Trajectories Using Land Use Models (*45)
Robert Morris, NASA Ames Research Center; Matthew Johnson, Institute for Human and Machine Cognition; Kristen Venable, Tulane University

Paper # 7 – 11:45 a.m. – 12:15 p.m.
Numerical Optimization for Rotor Blade-tip Planform with Low HSI Noise Characteristics in Forward Flight (*87)
Zheng Zhu, Nanjing University of Aeronautics and Astronautics Nanjing and QiJun Zhao, Nanjing University of Aeronautics and Astronautics Nanjing,

Paper # 8 12:15 – 12:45 p.m.
Development of Closed Loop Control System Applicable to Active Technique for Helicopter BVI Noise Reduction (*188)
Noboru KOBIKI, JAXA

Aerodynamics IV

Paper # 1 – 8:00 – 8:30 a.m.
Lifting Surface Blade Model for Comprehensive Rotorcraft Analysis (*75)
Daniel Wachspress and Michael Yu, Continuum Dynamics Inc.

Paper # 2. – 8:30 – 9:00 a.m.
Validation of RCAS/VPM Coupling for Rotorcraft Comprehensive Analysis (*322)
Jinggen Zhao, Chengjian He and Hossein Saberi, Advanced Rotorcraft Technology, Inc.

Paper # 3 – 9:00 – 9:30 a.m.
Validation of Rotorcraft Comprehensive Analysis Performance Predictions for Dual Rotor Configurations (*212)
Jimmy Ho, Science and Technology Corporation; Hyeonsoo Yeo and Mahendra Bhagwat, U. S. Army Aeroflightdynamics Directorate

Refreshment Break -- 9:30 – 10:15

Paper # 4 – 10:15 – 10:45 a.m.
Rotor Wake Dynamics in Hover Using a Full-Span, Higher-Order, Free-Wake Method (*324)
Tenzin Choephel, Sven Schmitz and Mark Maughmer, Pennsylvania State University

Paper # 5 -- 10:45 – 11:15 a.m.
Active Aerodynamic Load Reduction on a Rotorcraft Fuselage with Rotor Effects - A CFD Validation Effort (*219)
Brian Allan, Norman Schaeffler, Luther Jenkins and Chung-Sheng Yao, NASA Langley Research Center; Oliver Wong and Philip Tanner, US Army

Paper # 6 – 11:15 – 11:45 a.m.
Far-Field Analysis of Hovering Helicopter Rotor (*61)
Arnaud Le Pape, Simon Verley and Daniel Destarac, ONERA

Paper # 7 – 11:45 a.m. – 12:15 p.m.
Investigation of Centrifugal Pumping Rotor Blades as a Means of Vortex Diffusion (*216)
Daniel Kuerbitz, US Naval Academy and Joseph Milluzzo, US Naval Academy

Paper # 8 12:15 – 12:45 p.m.
Minimum Loss Load and Twist Distributions for Coaxial Helicopter Rotors in Hover (*282)
Eli Giovanetti and Kenneth Hall, Duke University

Crew Stations & Human Factors

Paper # 1 – 8:00 – 8:30 a.m.
Evaluation of New Head-Mounted Display for Rotary-wing Air Racer (*31)
Christopher Reinert and Karen Feigh, Georgia Institute of Technology

Paper # 2. – 8:30 – 9:00 a.m.
Novel Features for Aircraft-Crew Interaction Provided by the Airbus Helicopters Helionix® Avionics Suite (*116)
Carl Ockier, Valérie Juppet and Juergen Steiner, Airbus Helicopters

Paper # 3 – 9:00 – 9:30 a.m.
DAFIF Implementation Approach Based on Correlation to FAA Products (*252)
Andrew Smith, Boeing

Refreshment Break -- 9:30 – 10:15

Paper # 4 – 10:15 – 10:45 a.m.
Development of a Magneto-Rheological Fluid-Based Trim Actuator with Active Tactile Cueing Capabilities (*274)
Guifré Julió and Jean-Sébastien Plante, Exonetics Design Inc.

Paper # 5 -- 10:45 – 11:15 a.m.
Mission Utility of a Tactile Display in Rotary Wing Operations (*121)
Jeffrey Cox, Aviation Development Directorate – AATD; Braden McGrath, University of Canberra; Joe McKay, U.S. Army Aviation Missile Cmd; Angus Rupert, U.S. Army Aeromedical Research Laboratory

Paper # 6 – 11:15 – 11:45 a.m.
Audiotactile Displays for Improving Situation Awareness and Mitigating Spatial Disorientation (*149)
Christopher Brill and Isabella Gagliano, Old Dominion University; Ben Lawson, U.S. Army Aeromedical Research Laboratory *and* Angus Rupert, U.S. Army Aeromedical Research Laboratory

History

Paper # 1 – 8:00 – 8:30 a.m.
The Man Who Beat Amelia Earhart: The Fabulous Aviation Life of John McDonald Miller (1905 - 2008) (*2)
Bruce Charnov, Hofstra University

Paper # 2. – 8:30 – 9:00 a.m.
Sikorsky's YR-4 and R-6 Helicopter Rescue Missions at the China-Burma-India (CBI) Theater of World War II (*102)
Jacques Virasak, Sikorsky Aircraft Corporation

Paper # 3 – 9:00 – 9:30 a.m.
Major General Chia-Jen Chu, China's Helicopter and Fighter Designer (*104)
Jacques Virasak, Sikorsky Aircracrft Corporation

Refreshment Break -- 9:30 – 10:15

Paper # 4 – 10:15 – 10:45 a.m.
The U.S. ARMY's CH-54 Skycrane Helicopter: History and Contributions (*106)
Paul Fardink, U.S. ARMY (Retired)

Paper # 5 -- 10:45 – 11:15 a.m.
The Full Story of the Hover Barge Photo (*249)
Robert Roedts, Columbia Helicopters

Paper # 6 – 11:15 – 11:45 a.m.
Augustine's Law and Unit Cost Growth in the Rotorcraft Industry (*130)
Eric Streich, The Boeing Company

11:45 a.m. – 12:15 p.m.
Open Discussion:

"Remembering Ray Prouty"

Session D – Thursday Morning, May 7 – 8:00 a.m. – 12:15 p.m.

Modeling & Simulation III

Paper # 1 – 8:00 – 8:30 a.m.
Coupled Flight Dynamics and CFD Simulations of the Helicopter / Ship Dynamic Interface (*283)*
Ilker Oruc and Joseph F. Horn, The Pennsylvania State University; Susan Polsky, NAVAIR; Jeremy Shipman and James Erwin, CRAFT Tech

Paper # 2. – 8:30 – 9:00 a.m.
Unsteady CFD Modelling of Ship Engine Exhaust Gases and Over-Deck Air Temperatures and the Implications for Helicopter Operations (*310)*
Paul Scott and Mark White, University of Liverpool; Iuean Owen, University of Lincoln

Paper # 3 – 9:00 – 9:30 a.m.
Sensitivity Study Of A Small Maritime Rotary Uas Response In A Turbulent Airwake (*286)*
Thomas Fell, Mark D White and Michael Jump, University of Liverpool; Ieuan Owen, University of Lincoln; Sylvain Manso, Defence Science and Technology Organisation

Refreshment Break -- 9:30 – 10:15

Paper # 4 – 10:15 – 10:45 a.m.
Simulation of Helicopter Shipboard Operations with Spatial Velocity Gradients in the Ship's Airwake (*97)*
Ngo Tri and Sultan Cornel, Virginia Tech

Systems Engineering

Paper # 5 -- 10:45 – 11:15 a.m.
A DAVBA Approach for Complex VTOL Aircraft Development (*359)*
Daniel Schrage, Georgia Tech and Alexx VanderVelden, Dassault Systemes

Paper # 6 – 11:15 – 11:45 a.m.
Next-Generation Model-Based Systems Engineering Processes and Tools supporting the Airworthiness efforts of Cyber Physical Systems (CPS) (*342)*
Stephen Simi and Sean Mulholland, Tucson Embedded Systems (TES); David Arterburn, University of Alabama

Paper # 7 – 11:45 a.m. – 12:15 p.m.
An Approach to Military Airworthiness Certification of a Previously Developed Helicopter from a Flying Qualities Perspective (*303)*
Benjamin Kangas, Kevin Schurek and Shawn Disarufino, The Boeing Company

Paper # 8 12:15 – 12:45 p.m.
Rotorcraft Tradespace Exploration incorporating Reliability Engineering (*13)*
Lance Fiondella, Saikath Bhattacharya and Vidhyashree Nagaraju, University of Massachusetts; Eric Spero and Anindya Ghoshal, Army Research Laboratory

Operations II

Paper # 1 – 8:00 – 8:30 a.m.
Numerical Simulations and Measurements of the Wake from a Helicopter Operating in Ground Effect (*237)*
Masahiko Sugiura, Hirokazu Ishii, Naoki Matayoshi and Yasutada Tanabe, Japan Aerospace Exploration Agency; Hideaki Sugawara, Ryoyu Systems Co., Ltd.

Paper # 2. – 8:30 – 9:00 a.m.
Passive Stabilization of Helicopter Sling Load Payloads (*66)*
Daniel Nyren, Marc Tardiff and Kenneth Desabrais, U.S. Army Natick Soldier, Research, Development and Engineering Center

Paper # 3 – 9:00 – 9:30 a.m.
Fatigue failure of the EC225 Main Gearbox bevel wheel (*89)*
Arnaud Delabie, Jean-Marc Besson and Julien Poux, Airbus Helicopters

Refreshment Break -- 9:30 – 10:15

Paper # 4 – 10:15 – 10:45 a.m.
An evaluation of the residual structural integrity of a helicopter tail rotor shaft subjected to a ballistic impact (*156)*
Andrea MANES, Andrea Gilioli and Marco Giglio, Politecnico di Milano

Paper # 5 -- 10:45 – 11:15 a.m.
A Historical Survey of Operational Effectiveness in Relation to Preliminary Design (*52)*
Robert Scott, US Army

Paper # 6 – 11:15 – 11:45 a.m.
Airborne Flight Reporting System (*302)*
Kaydon Stanzione, Praxis Technologies, Inc.

Propulsion II

Paper # 1 – 8:00 – 8:30 a.m.
Rethinking Recuperators (*370)
James Loebig and Craig Heathco, Rolls-Royce Corporation; Mike Izenson, Creare LLC

Paper # 2. – 8:30 – 9:00 a.m.
Design and Optimization of a Reheat Cycle Turboshaft Targeting Improved Rotorcraft Operational performance (*72)
Fakhre Ali, Ioannis Goulos, Pachidis Vassilios and Konstantinos Tzanidakis, Cranfield University

Refreshment Break -- 9:30 – 10:15

Paper # 3 – 9:00 – 9:30 a.m.
Automated Power Assurance Refinement for the GE T700 Engine (*131)
Alvaro Soares, GE Aviation

Refreshment Break -- 9:30 – 10:15

Paper # 4 – 10:15 – 10:45 a.m.
Concepts for Multi-Speed Rotorcraft Drive System (*339)
Mark Stevens, David Lewickiand Robert Handschuh, NASA

Paper # 5 -- 10:45 – 11:15 a.m.
Design and Testing of the Bell FARDS Tail Rotor Driveshaft (*194)
Steven Spears and Andrea Chavez, Bell Helicopter; Jason Fetty and Treven Baker, AATD

Paper # 6 – 11:15 – 11:45 a.m.
FARDS Gearbox Assembly Topological Optimization (*317)
Bruce Hansen, Sikorsky Aircraft

Test & Evaluation II

Paper # 1 – 8:00 – 8:30 a.m.
Development and Testing of the AW609 All-Engines-Inoperative Emergency Re-Conversion (*172)
Dan Wells and Paul Edwards, AgustaWestland Tilt-Rotor Company

Paper # 2. – 8:30 – 9:00 a.m.
A Rotor Tip Vortex Tracing Algorithm for Image Post-Processing (*5)
Austin Overmeyer, U.S. Army ADD/AFDD

Paper # 3 – 9:00 – 9:30 a.m.
525 Aircraft Zero, The Relentless Advances Systems Integration Lab (*176)
Stephanie Hoelscher, Bell Helicopter

Refreshment Break -- 9:30 – 10:15

Paper # 4 – 10:15 – 10:45 a.m.
Helicopter Performance Determination using Analysis of Variance (*101)
Alex Duarte Gomes, Instituto de Pesquisas e Ensaios em Voo; Donizeti de Andrade and Cleverson Bringhenti, Instituto Tecnologico de Aeronautica

Paper # 5 -- 10:45 – 11:15 a.m.
Experimental Investigation of Rotorcraft Outwash in Ground Effect (*25)
Philip Tanner and Austin Overmeyer, US Army Aeroflightdynamics Directorate

Paper # 6 – 11:15 – 11:45 a.m.
Flight Test Measurement of Ship Airwake Disturbances using Small-Scale Rotorcraft (*298)
Sylvie Schafer and Joseph Horn, The Pennsylvania State University

Paper # 7 – 11:45 a.m. – 12:15 p.m.
Scaling Brownout for the Martian Environment (*98)
Jason Rabinovitch, Jet Propulsion Laboratory, California Institute of Technology

Paper # 8 12:15 – 12:45 p.m.
Thermo-mechanical Characterization and Analysis of the H-60 Lag Damper (*357)
Norman Wereley, Wei Hu and Grum Ngatu, University of Maryand; Curt Kothera, Innovital Systems Inc and Ashish Purekar, Innovital Systems Inc; Nam Phan and Roberto Semidey, Naval Air Warfare Center

Session E – Thursday Afternoon, May 7 – 1:30 p.m. – 6:00 p.m.

Advanced Vertical Flight II

Paper # 1 – 1:30 – 2:00 p.m.
Conceptual Design of a High-Speed Variable Configuration Compound Helicopter (*276)*
Fabio Riccardi and Radek Possamai, Politecnico di Milano

Paper # 2 – 2:00 – 2:30 p.m.
Laser Doppler Anemometer Measurements in the Ground Interaction Region of Two Impinging Model Scale Jets (*358)*
Scott Hromisin, Nicholas Rudenko, Leighton Myers and Dennis McLaughlin, Pennsylvania State University

Paper # 3 – 2:30 – 3:00 p.m.
Flight Dynamics Modeling and System Identification of a Cyclocopter in Forward Flight (*334)*
Elena Shrestha, Vikram Hrishikeshavan, Derrick Yeo, Moble Benedict and Inderjit Chopra, University of Maryland

Paper # 4 – 3:00 – 3:30 p.m.
Development of a Quad-Rotor Biplane MAV with High Roll Control Authority in Fixed Wing Mode (*330)*
Christopher Bogdanowicz, Vikram Hrishikeshavan and Inderjit Chopra, University of Maryland

Refreshment Break – 3:30 – 4:00

Paper # 5 – 4:00 – 4:30 p.m.
Calculations on the Unsteady Aerodynamic Characteristics of Tilt-rotor/wing in Conversion Mode by New Trimming Strategy (*236)*
Li Peng, National Key Laboratory of Science and Technology on Rotorcraft Aeromechanics, Nanjing University of Aeronautics and Astronautics Nanjing, Zhao Qi-Jun and Zhu Qiu-Xian, National Key Laboratory of Science and Technology on Rotorcraft Aeromechanics, Nanjing University of Aeronautics and Astronautics Nanjing

Paper # 6 -- 4:30 – 5:00 p.m.
Project Caurus "Nibbio" – A Novel Tilt Rotor Concept For Very High Speed Applications (*221)*
Luca Sala, Politecnico di Milano, Lorenzo Trainelli, Andrea Scaringello, Davide Berbenni, Clovis Paterson Waffo Gatchuessi, Andrea Fugazza, Juan Sebastian Rojas Sandoval, Gianluca Alitta, Stefano Sangalli and Carlo Capocchiano, Politecnico di Milano

CFD/CSD/Icing

Paper # 1 – 1:30 – 2:00 p.m.
Ice Accretion Effects on the Aerodynamics and Dynamics of Fully-Articulated Rotors in Forward Flight (*65)*
Daniel Kelly, Habibollah Fouladi, Wagdi Habashi and Marco Fossati, McGill University; Giuseppe Quaranta, Politecnico di Milano and Pierangelo Masarati, Politecnico di Milano

Paper # 2 – 2:00 – 2:30 p.m.
Rotor Performance of a Full-Scale Heated Tail Rotor (*306)*
Jason Wright and Roger Aubert, Bell Helicopter; Robert Narducci, The Boeing Company

Paper # 3 – 2:30 – 3:00 p.m.
Investigation of the Rotor Stall Boundary Using CFD/CSD Analysis for Passive Rotor Systems (*175)*
Brian Wake, C., Aaron Reimann and Byung-Young Min, UTRC; Stephen Makinen and Edward Reed, Sikorsky Aircraft Corp

Paper # 4 – 3:00 – 3:30 p.m.
Performance Validation of CFD/CSD for Active and Passive Rotor Systems (*226)*
Byung-Young Min, Brian E. Wake and Claude G. Matalanis, United Technologies Research Center; T. Alan Egolf and Stephen M. Makinen, Sikorsky Aircraft

Refreshment Break – 3:30 – 4:00

Paper # 5 – 4:00 – 4:30 p.m.
Cheeseman Award
Consolidation of Structural Constraints in Passive Rotor Blade Design for Improved Performance
Joon W. Lim, US Army Aviation Development Directorate-AFDD Aviation & Missile Research

Paper # 6 -- 4:30 – 5:00 p.m.
Assessment of CFD/CSD Analytical Tools for Improved Rotor Loads (*343)*
Loren Ahaus, Bell Helicopter Textron Inc.; Stephen Makinen, Sikorsky Aircraft Corporation; Lakshmi Sankar, Georgia Institute of Technology; James Baeder, University of Maryland

Paper # 7 – 5:00 – 5:30 p.m.
Trailing-Edge Flap Control for Minimum Vibrations Using CFD/CSD Analysis (*215)*
Stephen Makinen and Jinsong Bao, Sikorsky Aircraft Corporation; Brian Wake, C. Aaron Reimann and Milos Ilak, United Technologies Research Center

Paper # 8 – 5:30 – 6:00 p.m.
Coupled CFD/CSD Analysis of an Active-Twist Rotor in a Wind Tunnel with Experimental Validation (*90)*
Steven Massey and Martin Sekula, NASA Langley Research Center; Andrew Kreshock, U.S. Army Research Laboratory

Avionics & Systems

Paper # 1 – 1:30 – 2:00 p.m.
Joint Common Architecture (JCA) Demonstration Architecture Centric Virtual Integration Process (ACVIP) Shadow Effort (*309)*
Alex Boydston and Bruce Lewis, US Army Aviation & Missile Research, Development, and Enigneering Center; Steve Vestal, Adventium Labs; Peter Feiler, Carnegie Mellon Software Engineering Institute

Paper # 2 – 2:00 – 2:30 p.m.
Innovative Integration Approaches (*377)*
Jason York, AMRDEC SED / Intrepid; David Boyett and Scott Dennis, AMRDEC SED; Anthony Edwards, AMRDEC SED / GTRI

Paper # 3 – 2:30 – 3:00 p.m.
Joint Common Architecture Demonstration Lessons Learned– Honeywell Perspective (*220)*
Alex Boydston, US Army; John Cunningham and Matt Warpinski, Honeywell Aerospace

Paper # 4 – 3:00 – 3:30 p.m.
Flight and Mission System Segregation in Military Avionics Systems (*171)*
Glenn Dunham, Rockwell Collins

Refreshment Break – 3:30 – 4:00

Paper # 5 – 4:00 – 4:30 p.m.
Joint Common Architecture Demonstration Lessons Learned - Sikorsky/Boeing Perspective (*205)*
Scott Wigginton, Aviation Applied Technology Directorate; Thomas DuBois and Andrew Bereson, The Boeing Company; Bill Kinahan, Sikorsky Aircraft

Paper # 6 -- 4:30 – 5:00 p.m.
Future Avionic System Hybrid Processor Pooled Architectures (*60)*
Thomas Gaska, Lockheed Martin; Yu Chen and Aaron Carpenter, Binghamton University

Manufacturing Technology & Processing

Paper # 1 – 1:30 – 2:00 p.m.
Gilbert Morales (*253)*
Gilberto Morales, Douglas Mueller, Bell Helicopter and Eric Olson, Bell Helicopter; Jason Fetty and Treven Baker, Aviation Development Directorate

Paper # 2 – 2:00 – 2:30 p.m.
Thermoplastic Composite Driveshafts for Vertical Flight: Progression to TRL 6 (*246)*
John Michasiow, Zachary August and David Hauber, Automated Dynamics

Paper # 3 – 2:30 – 3:00 p.m.
Additive Manufacturing for FVL - The V-280 Roadmap (*214)*
Tom Chiang and Scott Allen, Bell Helicopter, Textron

Paper # 4 – 3:00 – 3:30 p.m.
Utilizing Additive Manufacturing / 3-D Printing To Optimize Design And Support Solutions For One-Off Spares And Support Product Requirements (*204)*
Dominic Przano and Thomas Reilly, Bell Helicopter Textron Inc

Refreshment Break – 3:30 – 4:00

Paper # 5 – 4:00 – 4:30 p.m.
Interactive Work Instructions for Bell 525 Relentless (*164)*
Isabelle Grenier, Bell Helicopter Textron Inc.

Paper # 6 -- 4:30 – 5:00 p.m.
New Developments in the Manufacture of Invar™ Tooling for Composite Components (*154)*
Christian Duquenne, Ferry Capitain and Simon Durham, Monmet

Session E – Thursday Afternoon, May 7 – 1:30 p.m. – 6:00 p.m.

Propulsion III

Paper # 1 – 1:30 – 2:00 p.m.
Experimental and Theoretical Investigation of Gearbox under Loss of Lubrication (*308)*
Huan Zhang, Joe Liou, United Technolgies Research Center, Zaffir Chaudhry and Fanping Sun, United Technolgies Research Center

Paper # 2 – 2:00 – 2:30 p.m.
Thermal Behavior of Aerospace Spur Gears in Normal and Loss-of-Lubrication Conditions (*67)*
Robert Handschuh, NASA

Paper # 3 – 2:30 – 3:00 p.m.
Aluminum Metal Matrix Composite Liner Testing (*314)*
Bruce Hansen, Sikorsky Aircraft

Paper # 4 – 3:00 – 3:30 p.m.
Mathematical Modeling and Internal Clearance Optimization of Helicopter High Speed Bearing Systems Considering Temperature Variations (*120)*
Aydin Gündüz, Zihni Burçay Saribay, Sinan Yilmaz and Emre Kaynar, Turkish Aerospace Industries (TAI)

Refreshment Break – 3:30 – 4:00

Unmanned VTOL Aircraft & Rotorcraft II

Paper # 5 – 4:00 – 4:30 p.m.
System Identification and Controller Optimization of a Quadrotor UAV (*49)*
Wei Wei and Nicholas Schwartz and Kelly Cohen, University of Cincinnati; Mark Tischler, AMRDEC, US ARMY

Paper # 6 -- 4:30 – 5:00 p.m.
Design and analysis of a thrust-vectoring coaxial-rotor micro air vehicle (*110)*
Sebastien Prothin, François Defay, ISAE Supaéro and Jean-Marc Moschetta, ISAE Supaéro

Paper # 7 – 5:00 – 5:30 p.m.
Development of a 500 gram Vision-based Autonomous Quadrotor Vehicle Capable of Indoor Navigation (248*)*
Stephen Haviland, Dmitry Bershadsky, Daniel Magree and Eric Johnson, Georgia Institute of Technology

Paper # 8 – 5:30 – 6:00 p.m.
Towards Autonomous Emergency Landing for an Optionally Piloted Autogyro (*285)*
Danilo Galisteu, Florian Adolf, Jörg Dittrich, Falk Sachs and Holger Duda, German Aerospace Center (DLR)

Structures & Materials III

Paper # 1 – 1:30 – 2:00 p.m.
A Multiscale Bondline Damage Characterization and Hybrid Analysis Approach for Adhesively Bonded Composite Structures (*167)*
Jim Lua, Global Engineering and Materials, Inc. and Eugene Fang, Global Engineering and Materials, Inc.; Jessica Zhang, Carnegie Mellon University; Anisur Rahman and Nam Phan, Naval Air Warefare Center (PAX)

Paper # 2 – 2:00 – 2:30 p.m.
Nondestructive Inspection of Large Composite Structures based on Limited Angle X-ray Computed Tomography (*361)*
Yuri Nikishkov, Andrew Makeev and Ekaterina Bostaph, University of Texas at Arlington

Paper # 3 – 2:30 – 3:00 p.m.
A numerical optimization of lightweight multilayer armour (*263)*
Andrea Manes and Marco Giglio, Politecnico di Milano

Paper # 4 – 3:00 – 3:30 p.m.
Integration of 3D Scan Data into the Finite Element Analysis Workflow for Simulation of Rotorcraft Components (*373)*
Jonathan Knoll and Jeffrey Nissen, Bell Helicopter

Refreshment Break – 3:30 – 4:00

Paper # 5 – 4:00 – 4:30 p.m.
Influence of VHCF loading on fatigue damage evolution and remaining useful life (*315)*
Nicole Apetre and Attilio Arcari, Nagaraja Iyyer , Technical Data Analysis, Inc.; Stefanie Tschegg and Martin Meischel, University of Natural Resources and Life Sciences; , Technical Data Analysis, Inc.; Peter Kang and Nam Phan, US Naval Air System Command

Paper # 6 -- 4:30 – 5:00 p.m.
Multi-Body Peridynamics for Failure Prediction in Rotating Thick Composites (*198)*
Erdogan Madenci and Atila Barut, University of Arizona; Nam Phan, Naval Air Systems Command (NAVAIR)

Paper # 7 – 5:00 – 5:30 p.m.
Design of Experiments and Kriging Method Applied to Non Linear Multivariable Structural Analysis Evaluation Problem (*182)*
Guillaume Biron, Maxime Lapalme and Marc Ouellet, Bell Helicopter

Test & Evaluation III

Paper # 1 – 1:30 – 2:00 p.m.
Analysis of Chinook AFCS Induced Divergent Pitch Oscillations with Reference to an Australian Army Accident (*112)*
Rhys Lehmann, Defence Science and Technology Organisation

Paper # 2 – 2:00 – 2:30 p.m.
ONERA S1MA Wind Tunnel Testing Capabilities of a Modern Tilt Rotor (*109)*
Frederic Lebrun,Dominique Munier, Julien Decours and Philippe Beaumier, ONERA

Paper # 3 – 2:30 – 3:00 p.m.
Design, Test, and Evaluation of Small-Scale Tiltrotor Whirl Flutter Models (*320)*
Guillermo Costa, Sandilya Kambampati, Samuel Johnson and Edward Smith, Penn State VLRCOE

Paper # 4 – 3:00 – 3:30 p.m.
Autorotation: Building a Live Man's Curve (*96)*
José Ricardo Scarpari and João Otávio Arantes Filho, Flight Tests and Research Institute; Donizeti de Andrade, Technological Institute of Aeronautics

Refreshment Break – 3:30 – 4:00

Paper # 5 – 4:00 – 4:30 p.m.
Pilot Head and Body Vibration in Response to Main Rotor Track-and-Balance Tuning (*143)*
G. Lorne Craig, Heather Wright-Beatty, Jocelyn Keillor and Marc Alexander, National Research Council of Canada

Paper # 6 -- 4:30 – 5:00 p.m.
Improving the US Army Rotor Smoothing Algorithm and Coefficient Development Process (*77)*
James Hunt and Douglas Ott, US Army (Avion Solutions)

Paper # 7 – 5:00 – 5:30 p.m.
Development and Analysis of a Generic Test for Transient Recovery Handling From Isotonic Active Inceptor Failures (*338)*
Mario Muellhaeuser, DLR and Miles Barnett, ETPS

Safety Special Session