



Vertical Flight Society 81st Annual Forum & Technology Display



**May 20–22, 2025
Virginia Beach Convention Center**

Technical Sessions

Special Session Schedule Listed on Back Cover

Technical Session A: Tues. May 20, 2025, 08:00 a.m. to 12:00 p.m.

Note: the main author is listed first. "" denotes the presenting author.*

	Advanced Vertical Flight I Room 5-AB Session Chair: Steven Schafer Bell	Aerodynamics I Room 2-AB Session Chair: Jinggen Zhao Lockheed Martin	Aircraft Design I Room 4-CDE Session Chair: Lauren Wolfe Aurora Flight Sciences	Crash Safety Room 5-C Session Chair: Cheng-Ho Tho Bell	Handling Qualities I Room 4-AB Session Chairs: Carl Ott, US Army Derek Geiger, Sikorsky LMCO
8:00 AM - 8:30 AM Paper 1	Systems and Methods for Evaluating Coupled Aeromechanics-Electromagnetics in Maglev Rotors (191) Phillip Gomez,* B. Concia, J. Elvander, S. Gedestad, P. O'Regan, I. Randall, MagLev Aero; M. Hasbun, H.A. Saberi, ART	NASA Dragonfly Mission – Coaxial Rotor Test & CFD Prediction (281) Sven Schmitz,* G. Allred, J. Palacios, G. Perrotta, Penn State; R. Heisler, B. Juliano, F. Ruiz, Johns Hopkins Applied Physics Lab; J. Cornelius, NASA Ames	Effects of Solidity, Number of Blades, and Chord Distribution on Rotor Performance in a Martian Environment (354) Gianmarco Sahragard-Monfared,* W. Johnson, NASA Ames; J. Bowman, W. Koning, Science & Technology Corp.	Dynamic Drop Testing of eVTOL Energy Storage Systems Part 1: Drop Test Data Summary (42) Justin Littell,* N. Gardner, NASA Langley; S. Ellafrits, NASA Glenn	Flight Test Assessment of Scalable Low-Level Mission Task Elements (140) Tim Jusko,* C. Walko, DLR; T. Berger, US Army
8:30 AM - 9:00 AM Paper 2	Critical Aerodynamic and Performance Upgrades to Enable Larger Mars Rotorcraft Such as the Chopper Platform (388) Shannah Withrow-Maser,* et al., NASA Ames; Tove Ågren, et al. Analytics Mechanics Associates; Laura Jones-Wilson, et al., JPL; J. Bowman, Science & Tech. Corp.	High-Fidelity Computational Modeling of Dragonfly Lander during Preparation for Powered Flight (114) Patricia Ventura Diaz,* S. Yoon, NASA Ames; K. Edquist, NASA Langley	Airfoil Parameterization using an Improved Class-Shape Transformation and Chebyshev Polynomials (92) Andrew Heletkanycz,* J. Coder, Penn State; C. Thurman, NASA Langley	Dynamic Drop Testing of eVTOL Energy Storage Systems Part 2: Deformation and Post-Test Forensics Results (43) Justin Littell, Nathaniel Gardner,* NASA Langley Research Center; S. Ellafrits, NASA Glenn	Development of Rotor Control Equivalent Gust Input (RCEGI) Models (292) Tanaya Sinha,* M. Hayajnh, J. V. R. Prasad, Georgia Tech
9:00 AM - 9:30 AM Paper 3	Flight Dynamics Prediction for Scaled Mars Rotorcraft (283) Allen Ruan,* T. Ågren, Analytical Mechanics Associates	The Evolution of Dragonfly's Design Using CFD at Titan (401) Kate Gruber,* P. Bowles, J. Kim, V. Klimchenko, M. Regan, K. Trubelja, Sikorsky, LMCO; M. Misiorowski, G. Perrotta, Johns Hopkins Applied Physics Lab	Long-Range Mars Rotorcraft Design Optimization using Machine Learning (364) Jason Cornelius,* J. Aires, N. Peters, NASA Ames; T. Ågren, Analytical Mechanics Associates; A. Comer, Z. Miles, D. N. Lugo, Science & Tech. Corp.	Towards Crash-Tolerant Rotorcraft Design via Topology Optimization (232) Ghanendra Das,* K. James, G. Kennedy, D. Oluwalana, L. Webb, Georgia Tech	Abstraction of a Flight Test Maneuver to Evaluate Handling Qualities for Helicopter Air-to-Air Refueling (319) Sven Schmidt,* T. Jusko, DLR
Refreshment Break 9:30 to 10:00 a.m.: Meeting Room Corridor					
10:00 AM - 10:30 AM Paper 4	WITDRAWN: Deep Reinforcement Learning for Tiltrotor Aeroelastic Stability Augmentation (166) Syed Husain, P. Anusonti-Inthra, M. Flores, H. Kang, Army Research Lab; Ivanco Thomas*, NASA Langley	Aerodynamic Analysis of Stopped and Stopping Rotors in Lift+Cruise eVTOL Configurations (62) Koushik Marepally,* J. Baeder, University Maryland; R. Plumley, AFRL Aerospace Systems Directorate; J. Goericke, Z. Habana, Advanced Rotorcraft Technology	Multi-objective Optimization of Rotorcraft Blade Structure with Multi-disciplinary Constraints (338) Jiwoo Song,* D. Huang, E.C. Smith, J. Zhang, Penn State; R. Haehnel, US Army	Prediction and Validation of Sloshing and Fluid-Structure Interactions Using FPM for VTOL Applications (400) Ramesh Dwarampudi,* I. Vaz, Keysight Technologies	Identification of Control-Equivalent Turbulence Input (CETI) Models from Rotorcraft Simulations (81) Umberto Saetti, UMD; L. Lu, Cranfield Univ.; G. Guglieri, Marco Rinaldi,* Politecnico di Torino; T. Berger, US Army
10:30 AM - 11:00 AM Paper 5	Neural Network Assisted Flight Dynamics Modeling of a Tailsitter UAS with Experimental Validation (37) Reuben-Wayne Stewart,* M. Benedict, J. Dooher, Texas A&M University	Experimental Investigation of Vortex Ring State Conditions for Archer Maker eVTOL Tiltter Propeller (40)Alberto Savino,* A. Gianotti, D. Grassi, L. Riccobene, A. Zanotti, Politecnico di Milano; G. Droandi, M. Kerho, Archer Aviation	Design Exploration of Airfoils for Rotorcraft Applications under Dynamic Conditions (115) Carlos Anthony Natividad,* C. Badrya, University California, Davis	Effect of High-Rate Loading on Anthropomorphic Test Device Pelvises (179) Ian Hellstrom,* W. Carroll, D. Moorcroft, FAA	Vertical Motion Simulator Handling Qualities Testing of a Piloted eVTOL Vehicle Having a Degraded Powertrain (168) Kyle Barnes,* C. Hanson, P. Suh, NASA Armstrong
11:00 AM - 11:30 AM Paper 6	A Bio-Inspired Hybrid Mode for Enhancing Rotary MAV Performance (120) Xun Huang,* L. Lu, J. Whidborne, Cranfield University	Cheeseman Award Paper: Analyzing Low-speed Rotor Fuselage Interactions a Comparative Study of Simulations and Flight Test Data ON H175 (424) Damien Desvigne,* Martin Embacher, Airbus Helicopters		Impact of Harness Integrated Crash Restraints (270) Eric Anderson,* S. Minnich, Naval Air Warfare Center	Model-Reference Adaptive Pilot Model of Rotorcraft Tracking Tasks with Time-Varying Vehicle Dynamics (152) Zhouzhou Chen,* J. Horn, Penn State
11:30 AM - 12:00 PM Paper 7		Lattice-Boltzmann Ship Airwake Simulation with Atmospheric Boundary Layer Inflow Using Synthetic Eddy Method (370) Erk Kurban,* J. Rauleder, Georgia Tech			Handling Qualities Evaluation of an Helicopter Model Equipped with a Robust Variable Stability Augmentation System (141) Luis G. Moro,* Flight Test Research Institute; R. V. Cruz, F. C. L. Ribeiro, Aeronautics Institute
12:00 PM - 12:30 PM Paper 8					Full-Body Haptic Cueing for Augmented Pilot Perception in Position/Velocity Tracking Tasks (136) Michael Morcos,* M. Fischer, E. Gary, D. Jun, G. Luzzani, U. Saetti, UMD; A. Breed, C. Crane, Lockheed Martin; D. Geiger, S. Kubik, Sikorsky, LMCO

	Technical Session A: Tues. May 20, 2025, 08:00 a.m. to 12:00 p.m. <i>Note: the main author is listed first. "*" denotes the presenting author.</i>				
	History Room 5-D Session Chair: Erasmo Pinero ATAC	Manufacturing Technology Room 1-B Session Chairs: Michael Nevinsky, Boeing Co. Davide Priovesan, Gannon U.	Propulsion I Room 1-A Session Chair: Noah Becker Sikorsky, LMCO	Systems Engineering Room 1-C Session Chairs: Kurt Kuhn, Boeing Co. Dawn Verlander, Boeing Co.	Test & Evaluation I Room 1-D Session Chair: Marc Alexander National Research Council
8:00 AM - 8:30 AM Paper 1	Henrich Focke's Helicopter Design Lecture at the Technical University of Stuttgart, Winter Semester 1955-56 (15) Berend van der Wall,* DLR	Light Weight Aluminum Composite Bearing Liners for Vertical Lift (240) William Harrigan,* M. Peabody,* Y. Zhang, Gamma Alloys	Ultra Heavy Vertical Lift: From Concept to Component (371) Rhea Matthews, A. Bayoumi, C. Lorusso, N. Parker, H. Westerman, University South Carolina; Kenneth Ryan,* KRyanCreative	Methodology to Establish Enterprise Modularity (357) Thomas DuBois,* JHNA; Keith Zook,* Intuitive Research & Tech.; Jeff Davies,* Office of the Project Manager for Uncrewed Aircraft Systems, US Army	Inertial Dynamics of a Propeller Driven Rotor: Vacuum Chamber Experiment and Validations with Predictions (256) Robert Brown,* US Naval Surface Warfare Center; I. Chopra, University Maryland
8:30 AM - 9:00 AM Paper 2	A Humble Public Servant: Hal Andrews (1924–2007) (54) Michael J. Hirschberg,* Vertical Flight Society	Adaptive Resilient Engineered Structures: A Review of the Trade Study Results and the Proposed Phase II Structural Test Demonstrator (198) Michael Nevinsky,* D. Misciagna, S. Sircar, Boeing Co.; D. Lorthridge, US Army	Powertrain System Analysis for an Urban Air Mobility Tiltwing Concept Vehicle (73) Jeshurun Horton,* J. Chapman, T. Talerico, NASA Glenn	Transforming Modeling and Simulation Verification, Validation & Accreditation with a Model-Based and Standards-Based Framework. (104) James Hill,* Dustin Hays, Carson McDonald, Lockheed Martin	BOS and HWA Measurements on Rotor Tip Vortices in a High Pressure Wind Tunnel (253) Hauke T. Bartzsch,* M. Braune, E. Galli, M. Löhr, M. Raffel, C. Wolf, DLR
9:00 AM - 9:30 AM Paper 3	History of Cost and Operational Effectiveness Analyses of the V-22 Osprey (90) Kaydon Stanzione,* LogistiWerx, Inc.	Advancing Helicopter Repair: Gamma's Innovative Materials for the U.S. Army (347) Micah Peabody,* W. Harrigan, Gamma Alloys	Hybrid-Electric Powertrain Design for Enhanced Vehicle Performance (369) Aaron VanLandingham,* R. Bill, D. Hall, E.C. Smith, Penn State	Creating Operational Capability Through Integration (188) Marcell Padilla,* CRL Technologies	Full Scale Stop-fold Transition Demonstration on a High-Speed Test Track (75) Troy Schank,* A. Brand, H. Xin, Bell
Refreshment Break 9:30 to 10:00 a.m.: Meeting Room Corridor					
10:00 AM - 10:30 AM Paper 4	Establishment and History of the Georgia Tech Graduate Program in Aerospace Systems Design (98) Daniel Schrage,* Georgia Tech	Multi-Physics Informed Planning for Hybrid Metal Additive and Subtractive Manufacturing (355) Jim Lua, Rui Li,* M. Rajanna, Global Engineering & Materials; R. S. Haridas, R. Mishra, University of North Texas	NATO Next Generation Rotorcraft Capability Powerplant Concept Study (187) Richard Thorpe,* K. Luxford, NATO NSPA; J. Geiger, Aimee Williams,* N. Woodside, GE Aerospace	Imp Leveraging SysMLv2 Model-Based Tools to Enable Medium-Risk SAIL III + Unmanned Operations (268) Jacquelyn Banas,* M. Vyshnevsky, B. Kaiser, N. Heuermann, J. Heinemann, Guilherme Goretkin*, ANSYS Germany	Inflight Measurements of the Empennage of an Ultralight Coaxial Helicopter (246) Lukas Rottmann,* D. Müller, R. Paintner, DLR; J. Hunold, edm aerotec GmbH
10:30 AM - 11:00 AM Paper 5	Panel Discussion: Co-Developing Military and Civilian VTOL Air Vehicles (94) Kaydon Stanzione, Moderator* LogistiWerx, Inc. Panelists	Additive Manufacturing Design of a Vibration Isolator for Rotorcraft Simulator Seats (379) Irati Arzalluz, Xiaoxu Ji,* D. Piovesan, Gannon University; C. Marr, Widener University	SB>1 DEFIANT JMR Technology Demonstrator Aircraft Main Rotor Gearbox Technology Insertions & Teardown Results (229) Scott Bouwer,* K. Ignatuk, Boeing Co.	How the Development Assurance Value-Based Acquisition (DAVBA) Approach Could Have Saved the Army's Future Attack Reconnaissance Aircraft (FARA) Program (201) Daniel Schrage,* Georgia Tech	Big Data: It's Not Just About the Raw Data (163) Nicolas Brisset,* Airbus Helicopters
11:00 AM - 11:30 AM Paper 6	- Frank Colucci, FEC Communications - Nick Lappos, Sikorsky, a Lockheed Martin Co. - Bill Lewis, Tennessee Technical Test Team - Dan Newman, Anduril - John Piasecki, Piasecki Aircraft - Erasmus Piñero, ATAC	Multi-Physics Modeling and Planning Tool for Tailoring of Quenching Process of Representative Airframe Structural Components (389) Jim Lua, A. Karuppiah, Rui Li,* K. Shrestha, Global Engineering & Materials; S. Lund, Spirit Aero-Systems; M. Timko, Weber Metals	Evaluation and Implementation of Low Core Hardness Gears in the SB>1 DEFIANT JMR Technology Demonstrator Aircraft (228) Scott Bouwer,* T. Dehennis, K. Ignatuk, Boeing Co.		
11:30 AM - 12:00 PM Paper 7					
12:00 PM - 12:30 PM Paper 8					

Technical Session B: Wed. May 21, 2025, 08:00 a.m. to 12:15 p.m.

Note: the main author is listed first. "" denotes the presenting author.*

	Acoustics I Room 1-C Session Chair: Eric Greenwood Penn State	Aerodynamics II Room 2-AB Session Chair: Glenn Whitehouse Continuum Dynamics, Inc.	Aircraft Design II Room 4-CDE Session Chair: Sangjoon Shin Seoul National University	Autonomy & UAS I Room 1-B Session Chair: Elena Shrestha University Michigan	Dynamics I Room 1-A Session Chair: Li Liu Boeing Co.
8:00 AM - 8:30 AM Paper 1	Broadband Noise Behavior in Coaxial Co-Rotating Rotors (301) Raja Akif Raja Zahirudin,* E. Greenwood, J. Palacios, Penn State	SB>1 Defiant® Wind Tunnel Test CFD Validation (129) Jeewoong Kim,* D. Coleman, V. Klimchenko, B.Y. Min, B. Wake, Sikorsky, LMCO	Roll Take-Off Model for Tiltrotor Preliminary Design (245) Anna Sofia Passarelli D'Onofrio,* M. Pecoraro, Leonardo Helicopters	Multirotor UAS Wind Disturbances Rejection Using Dedicated Lateral Thrusters with Frequency-Split Control (143) Marc-Antoine Leclerc,* A.L. Desbiens, D. Rancourt, Université de Sherbrooke	Dragonfly Hub Loads Correlation with Wind Tunnel Data (145) Therese-Ann Vermillion,* J. Kim, R. Modarres, B. Welsh, J. Zhao, Sikorsky, LMCO; T. Lynch, D. Peterson, F. Ruiz, D. Young, Johns Hopkins
8:30 AM - 9:00 AM Paper 2	Overview of a Comprehensive MD530F Acoustic Flight Test (24) James Stephenson,* M. Preston, US Army; M. Houston, K. Pascioni, C. Stutz, NASA Langley	Physics of the Interactional Proprotor-Wing Aerodynamics During the Tiltrotor Conversion Maneuver (271) Pranav Sridhar,* S. Srivathsan, J. Rauleder, M. J. Smith, Georgia Tech	A Hover Driven Approach to eVTOL Aircraft Design (288) Gregorio Frassoldati,* Luca Caccetta,* F. Landi, Leonardo Helicopters	Automating Tilt-Wing Aircraft: A Comprehensive Framework (105) Mirela Minkova-Walker,* J. Cook, Dufour Aerospace	Low-Vibration Design of the Dragonfly Lander (231) Ramin Modarres,* J. Kim, B. Welsh, J. Zhao, Sikorsky, LMCO; T. Lynch, D. Peterson, F. Ruiz, D. Young, Johns Hopkins
9:00 AM - 9:30 AM Paper 3	Design of Experiments Development for Rotorcraft Acoustic Flight Testing (25) James Stephenson,* US Army; K. Pascioni, NASA Langley	Computational Analyses of Coaxial Rotor Hub Flows and Correlation with Experiment (249) Yong Su Jung,* Pusan National Univ.; P. Premaratne, Analytical Mechanics Assoc.; J. Coder, N. Deore, S. Gosin, S. Schmitz, Penn State; R. Jain, US Army; J. Baeder, University Maryland	A High-Performance Tailsitter Design for Future Air-Launch Capability (45) Jack Dooher,* M. Benedict, D. Coleman, Texas A&M University	Game-theoretic Resolution of Stochastic Multi-aircraft Near Midair Collisions (159) Jianchao Wang, ETH Zurich; Sarah Li,* Georgia Tech	Whirl Testing of a Full-Scale Rotor with Flap-Bending/Twist Composite Coupled Blades (193) Tyler Sinotte,* D. Schuster, T. A. Vermillion, Sikorsky, LMCO
Refreshment Break 9:30 to 10:15 AM: Exhibit Hall					
10:15 AM - 10:45 AM Paper 4	Snapshot Array Design Considerations for Rotorcraft Noise Characterization (61) Mary Houston,* K. Pascioni, C. Stutz, NASA Langley; J. Stephenson, US Army	Experimental Aerodynamic and Aeroelastic Characterisation of a Propeller In Stalled Conditions (250) Alexander Croke,* G. Barakos, R. Green, D. Zagaglia, University of Glasgow	Flight Dynamics and Control Analysis for Motor Sizing and Failure Accommodation for a Lift+Cruise eVTOL Near Hover (151) David Hartman,* G. Altamirano, NASA Langley; P. Suh, NASA Armstrong	Detect and Avoid function for UAVs using ACAS Xu for Non-Cooperative Targets (274) Riccardo Brivio,* M. Baiguera, M. Bertolo, A. Crippa, S. Portanti, Leonardo Helicopters	Active Vibration Reduction of Coaxial Rotor System using Multicyclic Controller with Fluid-Structure Coupling Approach (222) Seong Hyun Hong,* M. Cho Y. Kim, S. Jung, Konkuk University
10:45 AM - 11:15 AM Paper 5	Phased Array Measurements of a Full-Scale Helicopter (102) Kyle Pascioni,* M. Houston, C. Stutz, NASA Langley; J. Stephenson, US Army	Experimental Investigation of the Effect of Azimuthal Spacing on the Performance of a Stacked Rotor in Hover and Forward Flight (304) Paskal Magier,* H. Fellouah, Université de Sherbrooke	2024 Student Competition Undergraduate Winner: Georgia Tech Aerolay Design Multi-Mission Modular UAS for Disaster Relief (426) Tanner Zagrodnik,* Aleksandr Lutsenko,* Georgia Tech	UAVs Swarm Distributed Control based on Artificial Potential Field (380) Davide Cadeddu,* Leonardo Helicopters	Open Loop Higher Harmonic Control Flight Testing on X2® Aircraft (286) Michael R. Monaco,* M. J. Brigley, T. A. Millott, E. J. Renzulli, D. M. Ryan, Sikorsky, LMCO
11:15 AM - 11:45 AM Paper 6	Acoustic Assessment of an MD530F Helicopter in Maneuvering Flight (66) Colin Stutz,* M. Houston, K. Pascioni, NASA Langley; J. Stephenson, US Army	Aerodynamic Interaction in Longitudinally Canted Multi-Rotor Systems (174) Tobias Hullette,* D. Carter, North Carolina State University	2024 Student Design Competition Graduate Winner: University of Maryland HUMA Design Multi-Mission Modular UAS for Disaster Relief (425) Vivek Upoor,* Batin Bugday,* University Maryland	High-Fidelity Digital Twin of a Tube-Launched Micro Air Vehicle (91) Miracle Nyancho,* M. Benedict, D. Coleman, R.W. Stewart, Texas A&M University	Flap-Lag Stability Analysis of RACER in High-Speed Flight conditions (226) Yan Skaldanek,* R. Coisnon, D. Ferullo, Airbus Helicopters
11:45 AM - 12:15 PM Paper 7	CAE Process to Design and Optimize the Noise Control Treatments in EVTOLs (327) Rabah Hadjit,* Alexis Castel, ESI Group				Experimental and Computational Evaluation of Particle Impact Dampers in Multi-Mode Passive Vibration Control of eVTOL Support Arms (309) Siddhant Sandeep Bapat,* E.C Smith, N. Vljajic, Penn State

Technical Session B: Wed. May 21, 2025, 08:00 a.m. to 12:15 p.m.***Note:** the main author is listed first. "*" denotes the presenting author.*

	eVTOL I Room 5-AB Session Chair: Monica Syal Zone 5 Technologies	Modeling & Simulation I Room 1-D Session Chair: Guiseppa Quaranta Politecnico di Milano	Propulsion II Room 5-C Session Chair: Jason Boyer Boeing Co.	Structures & Materials I Room 4-AB Session Chair: Sarvi Ghaffari University of Texas	Test & Evaluation II Room 5-D Session Chair: Marc Alexander National Research Council Canada
8:00 AM - 8:30 AM Paper 1	On the Design and Testing of a Full-Scale Quiet and Efficient eVTOL Propeller (139) David Coleman,* M. Benedict, Harmony Aeronautics; A. Halder, Oklahoma State Univ.; E. Greenwood, J. Heimerl, Penn State	Aerodynamic Real-time FLIGHTLAB Model for Tiltrotors in AP Mode (5) Francesco Manara,* M. Ludovica Dall'Aglio, A. Mancini, F. Porcacchia, Leonardo Helicopters	Adaptive Speed Gearbox Design for the UH-60A Helicopter with integrated Electric Variator and Frequency investigation (346) Thomas Scheu,* A. Poks, Michael Weigand,* R. Willinger, Vienna University of Technology; Gross, Advanced Drivetrain Technology	Integration of Machine Learning and Probabilistic Methods for Structural Life Assessment in Helicopter Digital Twins (266) Zohreh Asaee,* Y. Bombardier, C. Cheung, G. Renaud, National Research Council Canada	Effects of Near-Boundary Flight on Quadrotor Performance and Inflow (134) Sage Herz,* M. McCrink, Ohio State University
8:30 AM - 9:00 AM Paper 2	Overview of Wind Tunnel Testing of the Joby Aviation eVTOL Isolated Propeller System (392) William Staruk,* C. Allan, J. Bain, M.H-Bleu-Laine, R. Erhard, D. Escobar, Sean Patrick Kelley,* M. Krishnan, J. Lister, E. Sprecher, A. Thai, J. Thomas, M. Tingwald, N. Trembois, Joby Aviation	Subscale Tiltrotor eVTOL Aircraft Dynamic Modeling and Flight Control Software Development (161) Benjamin Simmons,* K. Ackerman, G. Asper, R. Axten, R. Chan, S. Geuther, M. Gray, S. Snyder, NASA Langley	Diamond-like Carbon Coatings for Improved Aerospace Tapered Roller Bearing Loss of Lubrication Performance (183) Carl Hager Jr.,* M. Carl, C. Murttiff, Timken Co.	Lightweight Low-Cost Multifunctional Thermoplastic Composite Airframe (162) Robert Haynes, US Army; H. Luzetsky, E. Phifer,* SURVICE Engineering	An Experimental Parametric Study on the Whirl-Flutter Stability of Tiltrotors (205) Robert Thornburgh, H. Kang, A. Kreshock, Army Research Lab; T. Ivanco, G. McHugh, Martin Sekula,* NASA Langley
9:00 AM - 9:30 AM Paper 3	An Analysis of Large Pitch-Controlled Hexacopters with One Motor Inoperative (7) Weston Fong,* F. Gandhi, North Carolina State University	Modeling, Simulation and System Identification of a Tilt-Wing Aircraft (295) Sebastian Schmid,* J. Cook, M. Karadayi, D. Tataru, Dufour Aerospace	Dissertation on Planet Gear Damage Resistance Capability (252) Sergio Sartori,* L. Bordignon, N. Motta, S. Occhipinti, F. Davide F.D.R. Riccabini, D. Scaltritti, R. Simonetta, Leonardo Helicopters	Fatigue Damage Modeling in Laminated Composite Structures Based on J-Integral Calculation (414) Yuri Nikishkov,* A. Makeev, G. Nikishkov, G. Seon, B. Shonkwiler, University Texas; R. Haynes, P. Matthews, US Army	Dragonfly Preparation for Powered Flight Wind Tunnel and CFD Modeling (97) Peter Lorber,* P. Bowles, K. Sharma, B. Wallace, Sikorsky, LMCO; W. Kellermeier, B. McGrath, Johns Hopkins; K. Edquist, NASA Langley; P. Giles, National Full-Scale Aerodynamics Complex
Refreshment Break 9:30 to 10:15 AM: Exhibit Hall					
10:15 AM - 10:45 AM Paper 4	An Analysis of Rotor-Induced Vibration on Winged eVTOL Aircraft (351) Alexander Stillman,* E. Ferede, F. Gandhi, North Carolina State University	Experimental Results on Closed Loop Helicopter Model Identification (78) Marco Bergamasco, Giorgio Maisano,* Leonardo Helicopters	Analysis of Complex Transmission Systems, Leveraging SPH Analysis and Reduced Order Modeling (262) Spyridon Mallios,* Blaise Cole,* Altair	Determination of Full-Scale Static Test Load Cases of a Light Utility Helicopter (181) Ugur Yolum,* E. Aydın, F. Çimen, Tolga Temmuz Ökten,* Turkish Aerospace	Airbus RACER High Speed Demonstrator Flight Tests (182) Paul Eglin, D. Desvigne, Martin Embacher,* E. Roca-Leon, Airbus Helicopters
10:45 AM - 11:15 AM Paper 5	Performance Analysis of Biplane Tailsitter UAV with Added Tail (330) Nikhil Murkute, Abhishek Abhishek,* S. Gupta, Indian Institute of Technology	Flight-Test System Identification Methodology and Hover Results for a Vectored-Thrust eVTOL Aircraft (220) Benjamin Simmons,* NASA Langley; T. Hamilton, G. Jacobellis, A. Rapsomanikis, N.K. Ofodile, M. Ma, AIBOT	Exploration of Meshless Simulation tools for Rapid Gearbox and Transmission initial analysis (348) Blaise Cole,* Altair	Topology Optimization of Rotorcraft Airframes in Early Design Stages (190) Dominik Schwinn,* K. Atci, D. Kohlgrüber, M. Petsch, P. Weiand, DLR	Methods for Laboratory Replication of Rotary-wing Air Ambulance Vibration Conditions for Neonatal Patient Transport Applications (71) Keely Gibb, A.D.C. Chan, J.R. Green, R.G. Langlois, Carleton University; E. Gerson, K. Greenwood, A.A.M. Ibey, J. Ngoie, S. Redpath, Children's Hospital Ontario; Eric Chen,* N. Francis, A. Law, National Research Council Canada
11:15 AM - 11:45 AM Paper 6	An Update on The Regulatory Readiness Level (RRL): An Objective Measurement of Progress Toward Civil Type Certification (195) Pulkit Agrawal,* Honeywell; Daniel Newman,* Anduril Industries	Development of a Comprehensive Simulation Framework with Pilot-in-the-Loop for Tiltrotor Ship Operations Feasibility Assessment. (260) James Barber,* G. Cito, F. Porcacchia, F. Posterivo, Leonardo SpA		Machine Learning Based Stress Prediction Around the Hole of Attachment Lug Structures for Flaw Tolerance Evaluations (203) Ece Gultekin,* B. Ozkan, E. Eyup Taskinoglu, Turkish Aerospace	Low Ice Adhesion Strength Coated Rotor Blades and the Effects of Surface Temperature on Ice Shedding (310) Jack Tyndall,* J. Palacios, Penn State
11:45 AM - 12:15 PM Paper 7	Accident Survey of Fly-by-Wire Powered-lift Aircraft Toward Understanding Variable Configuration eVTOL Aircraft Certification Risk (342) Martin Shubert,* Tiltrotor Flight Test Consulting; David Sizoo,* FAA	Ship Helicopter Operations: A Machine Learning Approach for Workload Prediction Using Linear Discriminant Analysis (177) Daniel Newton-Young,* N. Watson, M. White, University of Liverpool		Concept Level Topology Optimization of an AAM Fuselage (311) Julien Chaussee,* Altair	Downwash and Outwash of Counter-rotating Coaxial Rotors Hovering in Ground Effect (396) Aditya Suvithiraj Rajendiran Vijayaraj,* Z. Moore, V. Raghav, Auburn University

	Technical Session C: Wed. May 21, 2025, 1:45 p.m. to 6:00 p.m. <i>Note: the main author is listed first. "*" denotes the presenting author.</i>				
	Acoustics II Room 1-C Session Chair: Lauren Weist NASA Ames	Advanced Vertical Flight II Room 5-AB Session Chair: Steven Schafer Bell	Aerodynamics III Room 2-AB Session Chair: Sven Schmitz Penn State	Avionics & Systems I Room 1-B Session Chairs: Harold Tiedeman, Collins Daniel Cooper, Sikorsky LMCO	Dynamics II Room 4-CDE Session Chair: Li Liu Boeing Co.
1:45 PM - 2:15 PM Paper 1	OVERFLOW/PSU-WOPWOP Predictions and NFAC Acoustics Measurements of the Joby Aviation Propeller in Hover and Edgewise Flight (35) Austin Thai,* J. Bain, Joby Aviation	Influence of Chord-to-Radius Ratio and Number of Blades on Cyclorotor Hover Aerodynamic and Aeroacoustic Performance (294) Kartik Venkatraman, C. Bliamis, P.C. Larana, A. van Rooij,* CycloTech	Global Linear Stability Analysis of the Flow over Rotating Blades (375) Viktoriya Giryanskaya,* J. Coder, N. Lorah, Penn State	Analysis and Verification of Safety-Critical TSN Networks (33) Daniel Finnegan,* A. Soares, TTTech North America; W. Zischka, TTTech Computertechnik	Experimental and Analytical Comparison of Whirl-Flutter Stability Varying the Control System Geometry (206) Andrew Kreshock,* H. Kang, R. Thornburgh, Army Research Lab; H. Yeo, US Army; Martin Sekula, NASA Langley
2:15 PM - 2:45 PM Paper 2	Performance and Noise predictions of the Joby eVTOL Propeller NFAC Wind Tunnel Test Using GPU-accelerated Large-Eddy Simulations (85) Samuel Afari,* G. Bres, K. Wang, Cadence Design Systems; J. Bain, A. Thai, Joby Aviation	An Initial Flight Performance Assessment of New Urban Air Mobility Concept Vehicles for Medical Rendezvous Operations (313) Kagan Atci,* H. Inac, P. Weiland, DLR	Aerodynamic Optimization for Rotor Blade with Structural Design in Hover and Forward Flight (70) Seongjoong Park,* J. Choi, Y.E. Kang, J. Lee, K. Yee, Seoul National Univ.; Y. Hong, G. Wilke, DLR	Static System Error Compensation in Air Data Calibration for Tiltrotor System Certification (128) Marco Evangelista,* M. Mori, Leonardo Helicopters	Uncertainty Estimation in Experimental Whirl Flutter Modes Identification (239) Alessandro Velo,* M. Favale, F. Fonte, Leonardo Helicopters; M. Böswald, J. Schwochow, K. Soal, R. Volkmar, DLR
2:45 PM - 3:15 PM Paper 3	Prediction and Reduction of Blade Wake Interaction Noise in High Solidity Rotors using Multi-Fidelity CFD Analysis (405) Dilhara Jayasundara,* P. Gomez, Ian Randall, MagLev Aero	An Experimental Investigation of Quadrotor Variations using NASA's Multirotor Test Bed (96) Sarah Conley,* K. Kallstrom, C. Pereyra, C. Russell, D. Shirazi, S. Wright, NASA Ames	Exploration of Vortex-Thrust: Da Vinci Aerial Screw Physics, Aerodynamics and Performance (63) Koushik Marepally,* J. Baeder, R. Berlin, University Maryland	A Digital Backbone Installed in the RASCAL-X Experimental UH-60M for Rapid Modular Open Systems Approach (MOSA) Integrations (189) Mark Wralstad,* M. Padilla, CRL Technologies; J. Nelson, Intrepid; S. Wigginton, US Army	ATTILA Tiltrotor Whirl Flutter Code-to-Test Correlation (265) Stefan van 't Hoff,* NLR; F. Fonte, A. Velo, Leonardo Helicopters; G. Cassoni, P. De Vita, P. Masarati, Politecnico di Milano
Refreshment Break 3:15 to 4:00 p.m.: Exhibit Hall					
4:00 PM - 4:30 PM Paper 4	Experimental and Numerical Acoustic Scaling Investigation of a Low Tip Speed eVTOL Proprotor in Hover (99) Jonathan Fleming,* M. Langford, W. Walton, Techsburg, Inc.; R. Burdisso, B. Witcher, AVEC, Inc.; N. Alexander, T. Duong, Virginia Tech	Development and Evaluation of a Quad-Heli eVTOL Capable of Safe Fly with a Failed Rotor (133) Harry Chernak,* K. Collins, K.K. Deveerasetty, P. Hruswicki, S.Z. Ali Razvi, Embry-Riddle	Aerodynamic Analysis Framework for eVTOL Aircraft at ERC (212) Florian M. Heckmeier,* J.A. Faust, J. Pflüger, M. Stuhlpfarrer, ERC System; U. Hartmann, Technical University Munich	Integration of HoloLens 2 as a Head-Worn Display in a Research Helicopter (202) Christian Walko,* T. Jusko, M.J. Maibach, DLR	Use of Generalized Predictive Control for Flutter Suppression of the Tiltrotor Aeroelastic System Testbed (TRAST) (350) Thomas Ivanco,* M. Sekula, NASA Langley; A. Kreshock, R. Thornburgh, US Army Research Lab
4:30 PM - 5:00 PM Paper 5	LBM Simulations of Co-axial Rotors (29) Gabriel Reboul,* ONERA; A. Bresciani, von Karman Institute for Fluid Dynamics	Design and Testing of a Ducted Aerial Vehicle for Indoor Inspection (106) Kunal Rahul Yadav,* J. Sirohi, University of Texas; A. Purekar, Innovital Systems	High-Fidelity CFD Maneuver Simulation using a Socket-based Strong Coupling Approach (197) Julius Klauck,* M. Kessler, Universität Stuttgart	Mastering Tilt-Wing Control: Strategies and Challenges (326) Matthias Studiger,* J. Cook, Dufour Aerospace	Experimental Amplitude-Dependent Characterization of the TiltRotor Aeroelastic Stability Testbed (109) Gray Simmons,* C. Riso, Georgia Tech; A. Kreshock, R. Thornburgh, Army Research Lab; M. Sekula, NASA Langley
5:00 PM - 5:30 PM Paper 6	Investigation of Blade Vortex Interaction Noise Reduction with Leading-Edge Serrations Using High-Fidelity Numerical Simulations (173) Huy Tran,* S. Lee, University of California	Assessment of a Slotted, Natural-Laminar-Flow Airfoil for Advanced Air Mobility Applications (46) Christopher Axten,* J. Coder, Y. Keflemariam, Penn State	Effectiveness of Critical Leading-Edge Suction from 2D CFD in Predicting Dynamic-Stall Onset on a Rotor (302) Hari Kiran Balachandran,* A. Gopalarathnam, Y.T. Lee, H.D. Patel, C.A. Yeh, North Carolina State University		Influence of Wing-Propeller Aerodynamic Interactions on Aeroelastic Damping (208) Gray Simmons,* C. Riso, Georgia Tech; C. Cesnik, Jasmine Chang,* University Michigan
5:30 PM - 6:00 PM Paper 7	Uncertainty Quantification of an Unsteady Loading Noise of a Hovering Rotor Using Polynomial Chaos Expansion (60) Hyunjune Gill,* S. Lee, University of California	Multi Modular-Rotorcraft: An Advanced Multi-Functional and Multi-Purpose Rotorcraft (219) Dorsa Shirazi,* D. Kaweesa, NASA Ames	Meshless Large Eddy Simulation of Rotorcrafts Using GPUs (296) Muhammed Kürsat Yurt,* B. Bolgöl, I. Yavrucuk, Technical of University Munich		Predicting Limit-Cycle Oscillations in Propeller-Nacelle Systems with Freeplay (328) Michael Hartin,* C. Riso, Georgia Tech
6:00 PM - 6:30 PM Paper 8					Lichten Winner: Modeling Unsteady Aerodynamics in RCAS for High-Speed Rotor Aeroelastic Applications (209) Angela Buccio,* L. Ahaus, M. Hill, J. Schmaus, H. Xin, Bell

Technical Session C: Wed. May 21, 2025, 1:45 p.m. to 6:00 p.m.
Note: the main author is listed first. "*" denotes the presenting author.

	eVTOL II Room 1-A Session Chair: Jayant Sirohi University Texas	Handling Qualities II Room 5-D Session Chairs: Carl Ott, US Army Derek Geiger, Sikorsky LMCO	Modeling & Simulation II Room 1-D Session Chair: Guiseppe Quaranta Politecnico di Milano	Operations & Infrastructure I Room 4-AB Session Chair: Paul Kennard Heliops	Propulsion III Room 5-C Session Chair: Noah Becker Sikorsky LMCO
1:45 PM - 2:15 PM Paper 1	Machine Learning Based Flight Dynamic Framework for eVTOL Aircraft (267) Pedram Hashem Dabaghian,* A. Halder, Oklahoma State Univ.	Investigation of Contributing Phenomena to Unanticipated Yaw for Accident Mitigation (305) Tobias Ries,* T. Gogel, T. Sor, M. Massana, Airbus Helicopters; P. Zanella, Concepts Beyond; C. Johnson, FAA	Aerodynamics of Airfoils in Reverse Flow and Impact on Flight Dynamics Simulation of VTOL Aircraft (93) Zoren Habana,* J. Goericke, Advanced Rotorcraft Technology; R. Plumley, AFRL; J. Baeder, K. Marepally, University Maryland	A Novel Operational Analysis Tool for Advanced Air Mobility (259) Marilyn Smith,* J. Corman, E. Garcia, B. German, A. Payan, Georgia Tech; A. Bayoumi, W. De Backer, R. Matthews, P. Ziehl, University South Carolina	Multi-objective Design Optimization of a Helicopter Tail Shaft (331) Piyush Sute,* T. Mathur, P. Verma, Indian Institute of Technology Kanpur; P. Hajela, RPI
2:15 PM - 2:45 PM Paper 2	A Numerical Study of Synthetic Turbulence Interaction with Unsteady Vertiport Environment (52) Alireza Maleki,* V. Golubev, R. R. Mankbadi, Embry-Riddle	In-flight Investigations to Evaluate the Suitability of the MCRUER Display to Conduct Mission Task Elements (303) Emily Vo,* M. Jones, Chase Schulze,* Systems Technology Inc.	Leveraging Modeling and Sensitivity Studies for Improving Aerodynamic Predictions for Multirotor Aircraft (57) Dorsa Shirazi,* S. Conley, K. Kallstrom, C. Pereyra, N. Peters, C. Russell, S. Wright, NASA Ames; J. Mills, Embry-Riddle	A Comparative Study of the Use of Experimental and Computational Techniques to Assess Turbulence Above the FATO to Support the Design and Operations of Vertiports in the Built Environment (186) Guy Larose,* M.A. Labbad, J. Chen, S. Schajnoha, RWDI	Tunable Auxiliary Lubrication System for Helicopter Transmissions (243) Lorenzo Alari,* G. Delvecchio, P. Pisani, S. Sartori, D. Scaltritti, M.E. Tamborini, Leonardo Helicopters
2:45 PM - 3:15 PM Paper 3	Comparison of Performance and Blade Loads Analytical Predictions with Wind Tunnel Measurements of a Joby Aviation eVTOL Propeller (153) Daniel Escobar,* W. Staruk, J. Thomas, N. Trembois, Joby	Adapting Rotorcraft Mission Task Elements to Wildfire Applications (402) Shannah Withrow-Maser,* J. Aires, N. Peters, NASA Ames; S. Lyons, Kansas Space Grant	Gaussian Process Surrogate Model for eVTOL Propeller Aerodynamics (397) Peter Ryseck,* M. Cunningham, Racheal Erhard,* F. Guener, M. Londono, Z. Mahboubi, Joby Aviation	Wildlife Strike Mitigation in AAM: Key Technology Gaps and Proposed Solutions (107) Margarete Groll,* P. Stepanian, MIT Lincoln Lab; I. Metz, DLR	Minimum Weight Design of an Electronic Continuously Variable Transmission for Rotorcraft Applications (290) Hans DeSmidt,* Z. Ai, University of Tennessee
Refreshment Break 3:15 to 4:00 p.m.: Exhibit Hall					
4:00 PM - 4:30 PM Paper 4	WITHDRAWN: Design and Fabrication of a Lightweight Kevlar-Based Battery Compartment for eVTOL (217) Abdulhakim Algmuni, Nima Pourmostaghimi,* Y. Sadat-Nejad, MOSTAVIO	Decay Rate and Workload: Elemental Bases of HQRs and PIO Ratings (367) Edward Bachelder,* San Jose State University Research Foundation	Rotor Wake Modeling for Mars Rotorcraft using the Viscous Vortex Particle Method (116) Tove Aagren,* A. Ruan, Analytical Mechanics Assoc.; N. Peters, NASA Ames	Flight Test Evaluation of Autonomous Descending-Decelerating Precision Point-in-Space Approach to the Ground (123) David Zahn,* NASA Ames; G. Patterson, E. Williams, American Systems Corp; S. Eggum, Flight Research Assoc.; T. Fettrow, NASA Langley	Experimental Evidence to Influence Design of Novel Low Lubrication Method for Rotorcraft Secondary Lubrication Systems (279) Pieter Boersma,* T. Currier, J. Ferrante, J. Rosenthal, Zulu Pods
4:30 PM - 5:00 PM Paper 5	Experimental Exploration of Battery-Engine Hybrid-Electric Power Sharing (361) John Schmidt,* A. Datta, H. Xu, University Maryland	A Maneuver Control System Enabling Simplified Vehicle Operations and Tactical Maneuvering for a Tilt-Wing Aircraft (406) Imon Chakraborty,* B. Kunwar, Auburn University; P. Schmidt, Transcend Air	A Velocity Potential-Based Finite State Model for Ground Effect Analysis (135) Andro Metry,* J. V. R. Prasad, Georgia Tech; D.A. Peters, Washington University	Development of a New Fleet Concept for HEMS Operations (317) Peter Weiand,* K. Atci, R. Becker, S. Cornelje, C.D. Fernandes, J. Herzig, H. Inac, M. Lindlar, H. Mainz, F. Reimer, O. Schneider, D. Schwinn, L. Winkler, S. de Graaf, DLR	A Comparison of Direct and Reduction Drive Approaches for Power-Dense eVTOL Applications (89) Lee Rogers,* A. Flores, E. Jones, Drive System Design
5:00 PM - 5:30 PM Paper 6		Minimum Energy Automatic Flight Control Design for eVTOL Transition Phases (321) Namuk Kang,* L. Lu, J. Whidborne, Cranfield University	Real-Time eVTOL Powertrain Modeling for the NASA Vertical Flight Simulator (169) Peter Suh,* K. Barnes, J. Trevino, NASA Armstrong; C. Malpica, NASA Ames; X.C. Fernandez, P.A. Hanlon, K.R. Hunker, D.J. Sadey, T. Tallerico, M.J. Valco, NASA Glenn	eVTOL Vehicle-Agnostic Instrument Flight Procedures Test Plan (124) David Zahn,* A. Guion, NASA Ames; S. Eggum, KBR Wyle	Multifidelity Electric Motor Optimization Considering Mission and Transient Thermal Constraints (373) Seiyon Arulampalam,* B. German, G. Kennedy, C. Smith, Georgia Tech
5:30 PM - 6:00 PM Paper 7		Control Law Design and Handling Qualities for a Coaxial Rotorcraft (403) Barzin Hosseini,* M. Bachfischer, F. Holzapfel, J. Rauleder, Georgia Tech; D. Bridges, G. Hagwood, D. Miller, Piasecki Aircraft	Propeller-Rotor Interaction: a Problem of Helicopter Air-to-Air Refueling (149) Berend van der Wall,* DLR		
6:00 PM - 6:30 PM Paper 8			Development and Integration of Flight Dynamics Models for Study of eVTOL Aircraft in the NASA Vertical Motion Simulator (17) David Caudle,* C. Malpica, R. Singh, P. Suh, NASA; T. Berger, S. Nadell, US Army		

Technical Session D: Thurs. May 22, 2025, 9:45 a.m. to 12:15 p.m.

Note: the main author is listed first. "" denotes the presenting author.*

	Joint Session Part 1: Room 2-AB Aerodynamics IV/ Test & Evaluation III Session Chairs: Tony Gardner, DLR (Aero) Carl Ockier, DLR (T&E) Joe Milluzzo, US Navy (T&E)	Autonomy & UAS II Room 5-AB Session Chair: Elena Shrestha University Michigan	Avionics & Systems II Room 4-AB Session Chairs: Harold Tiedeman, Collins Dan Cooper, Sikorsky LMCO	Dynamics III Room 4-CDE Session Chair: Stephen Wright NASA Ames
9:45 AM - 10:15 AM Paper 1	Understanding the Aeromechanical Behavior of a MGB Cooling Fan (244) Andrea Sangiovanni,* L. Alari, P. Pisani, D. Podda, S. Sartori, D. Scaltritti, Leonardo Helicopters	Design and Development of an Automated Flight Control System for Tilt-wing Aircraft (59) Jacob Cook,* M. Karadayi, M. Minkova-Walker, S. Schmid, M. Studiger, D. Tataru, Dufour Aerospace	Alternative DO-178C Verification Workflow for Enhanced Productivity (381) Guilherme Goretkin,* B. Dion, F.X. Dormoy, Ansys	Modeling and Experimental Validation of Underactuated Rotor Dynamics for Swashplate-less UAVs (67) Denisse Mishell Leines Artieda,* M. Benedict, R.W. Stewart, Texas A&M University
10:15 AM - 10:45 AM Paper 2	Toward the Development of Processes for Assessing the Response of RPAS and UAS to Complex Flow Fields (130) Alanna Wall,* H. Barber, Perry Comeau,* J. Lebrasseur, National Research Council	Optimal Approaches of Unmanned Helicopters in Wind-Sensitive Maritime Operations (248) Damy Zilver, M. Pavel, C. Varriale, Delft University; Mark Voskuijl,* Netherlands Defense Academy	Close Enough for Comfort – Analysis of Landing Zone Evaluations with Autonomous No-Hover Landing in Unprepared Locations (394) Derek Gowanlock,* K. Ellis, B. Carrothers, A. Gubbels, A. Moshchensky, M. Syed, National Research Council	Loose Structural Coupling of a Helicopter Airframe (194) Oskar Wengrzyn,* L. Frie, M. Kessler, University of Stuttgart
10:45 AM - 11:15 AM Paper 3	Investigation of Modeling Approaches to High-Fidelity Computational Predictions of Tiltrotor / Obstacle Aerodynamic Interactions (80) Alex Moushegian,* D. Farish, E. Hayden, Naval Air Warfare Center; A. Bodling, Science & Technology Corp.	Autonomous Ship Deck Landing Strategies for Unmanned Rotorcraft Operating in Harsh Weather Conditions (263) Mark Voskuijl,* Netherlands Defense Academy; R. Bakker, M. van Rooij, NLR; D. Zilver, Royal Netherlands Navy	A Modular Open System Approach for the H-60M Black Hawk — Following the Future Vertical Lift Framework (404) Casey Carter,* PeopleTec Inc; T. Grant, M. Lawrence, S. Rosengren, T. Stanley, T. Willis, Utility Helicopters Project Office	High Advance Ratio Wind Tunnel Testing of a Slowed Mach-Scaled Rotor with Full-Wing and Trailing Propeller Lift and Thrust Compounding (343) Vivek Uppoor,* I. Chopra, H. Zheng, University Maryland
11:15 AM - 11:45 AM Paper 4	Wind Tunnel Investigation of a Rotor Under the Influence of Unsteady Ship Airwakes with Azimuth-Related Measurements (47) Wei-Han Chen,* J. Rauleder, Georgia Tech	Feature-Based Stereo Vision for Ship-Deck Landing (213) Victoria Britcher,* I. Chopra, A. Datta, University Maryland		Towards a 3-D Fluid-Structure Interface for Helicopter Rotors (242) Logan Swaisgood,* Anubhav Datta,* University Maryland
11:45 AM - 12:15 PM Paper 5	Performance Wind Tunnel Testing of an X2 Technology Mach-Scaled Powered Model (87) Antonio Rivera,* D. Dziuba, P. Lorber, C. Sargent, B. Wallace, Sikorsky, LMCO; B. Hein, Craft Engineering Services	Vision-based Landing of UAV on Simulated Ship Deck with Roll, Pitch and Sway Motions (358) Ritwik Shankar,* Abhishek,* C. Prachand, J. Singh, K.S. Venkatesh, Indian Institute Technology		UH-60A High Advance Ratio Performance And Loads Analyses With Comprehensive Analysis (247) Mikel Balmaseda Aguirre,* ONERA; H. Yeo, US Army Research Lab
Lunch on your own 12:15 to 1:30 p.m.: Concessions Registration Area				

Technical Session D: Thurs. May 22, 2025, 9:45 a.m. to 12:15 p.m.

Note: the main author is listed first. "*" denotes the presenting author.

	Modeling & Simulation III Room 1-D Session Chair: David Caudle NASA Ames	Product Support Room 1-B Session Chairs: Thomas Cieslewski, Kaman Dan Amodeo, Sikorsky LMCO	Safety I Room 5-D Session Chairs: Alexia Payan, Georgia Tech Paul Inguanti, Sikorsky, LMCO	Structures & Materials II Room 1-A Session Chair: Sarvi Ghaffari University of Texas
9:45 AM - 10:15 AM Paper 1	Efforts Toward a Piecewise Reduced-Order Model for Unsteady, Complex Ship Airwakes (278) Brenden Oates,* J. Rauleder, M.J. Smith, B.V. Garcia, Georgia Tech	Optimizing Comprehension and Performance in Technical Documentation: Does Adding Multimedia to Written Instructions Help to Safely and Accurately Perform Maintenance Tasks? (144) Myriam Faye,* Nataly Jahchan,* Airbus Helicopters; F. Amadieu, A. Condamines, University of Toulouse	EASA Helicopter Vortex-Ring-State Experimental Research Project (329) Laurent Binet,* ONERA; P. Gasquez, DGA-EV; R. Di Caprio, EASA	Additive Manufactured Crack-Proof Gearbox Housing (255) Paolo Pisani,* L. Alari, D. Bonanno, E. Miles, S. Sartori, F. Montagna, D. Scaltritti, Leonardo Helicopters
10:15 AM - 10:45 AM Paper 2	A Linear Parameter-Varying Finite State Inflow Model Derived from a Free Vortex Wake Model (382) Ashish Kumar Manjhi,* J. Horn, Penn State; U. Saetti, University Maryland	How to Enhance System Integration Test Rigs with Open-Source Real-Time Control and Data Acquisition (277) Darryn La Zar,* ACS	Quantitative Method for the Evaluation of Pilots' Performance to Enhance Training in Flight Simulators Applied to Vortex Ring State (VRS) Recovery Maneuvers (272) Eleni Sotiropoulos-Georgiopoulos,* D. Mavris, A. Payan, Georgia Tech; C. Johnson, FAA	Formability Comparison of Continuous and Stretch Broken Prepreg Laminates (407) Yoni Shchemelinin,* R. Amendola, D. Bajwa, D. Cairns, C. Ridgard, C. Ryan, Montana State University; J. Nelson, Keene State College
10:45 AM - 11:15 AM Paper 3	CFD Based Interaction Modeling for Improving Rotorcraft Analysis (210) Mehmet Ali Erkan,* A.A. Ezertaş, O. Güngör, M.A. Madenci, M. Şenipek, Turkish Aerospace Industries		Identification of Dynamic Rollover Precursors for Enhanced Helicopter Flight Data Monitoring (HFDM) Applications (146) Ilias Baali,* D. Mavris, A. Payan, Georgia Tech; C. Johnson, FAA	Evaluation of SBCF and CCF Forming in Complex Shapes via a Unified Defect Scoring Index (408) Cooper Williams,* D. Cairns, C. Ridgard, C. Ryan, Montana State University; J. Nelson, Keene State College
11:15 AM - 11:45 AM Paper 4	Analytical Linearization of a State-Space Viscous Vortex Particle Method for Rotary-Wing Simulations (110) Hussien Hussien,* U. Saetti, University Maryland		Enhancing Rotorcraft Safety: Zero-Shot Visual Language Model for Obstacle Detection around Helipads from Satellite Imagery (289) Amine Khelifi,* N. Bouaynaya, G. Carannante, Rowan University; C. Johnson, FAA	Scalability, Production, and Application of Stretch Broken Carbon Fiber for Primary Aircraft Structure (413) Christopher Ridgard,* D. Bajwa, R. Amendola, Douglas Cairns,* C. Ryan, Montana State University
11:45 AM - 12:15 PM Paper 5			An Overview of Applied Methodology in the Gathering and Analysis of Rotorcraft Cold Weather Encounters Data (421) Marc Alexander,* National Research Council	Structural Testing of Full-Scale Flap-Bending/Twist Composite Coupled Blades (138) Tyler Sinotte,* D. Schuster, Sikorsky LMCO
Lunch on your own 12:15 to 1:30 p.m.: Concessions Registration Area				

	Technical Session E: Thurs. May 22, 2025, 1:30 p.m. to 5:30 p.m. <i>Note: the main author is listed first. "*" denotes the presenting author.</i>				
	Joint Session Part 2 Room 2-AB Aerodynamics IV Test & Evaluation III Session Chairs: Tony Gardner, DLR (Aero.) Carl Ockier, Airbus (T&E) Joe Miluzzo, USNA (T&E)	Acoustics III Room: 4-AB Session Chair: Eric Greenwood Penn State	Crew Stations Room: 5-C Session Chair: Gary Klein Boeing Co.	Dynamics IV Room: 4-CDE Session Chair: Stephen Wright NASA Ames	eVTOL III Room: 5-AB Session Chair: Monica Syal Zone 5 Technologies
1:30 PM - 2:00 PM Paper 1	Aerodynamic & Acoustic 1/3rd Scaled Fenestron® (192) Laurent Jauffret,* Airbus Helicopters	Follow-on Study on the Applicability of Fly Neighborly Noise Recommendations to UAM Quadrotors in Steady Maneuvers (53) Sesi Kottapalli,* NASA Ames; D. Boyd, NASA Langley	Human-AI Interaction in Autonomous Medical Evacuation Helicopters (282) Sanya Doda, R. Agbeyibor, C. Cortes, Karen Feigh,* J. Kolb, J. Magalhaes, Georgia Tech	Full-Aircraft UH-60M Loads and Performance Correlations at Level and Maneuvering Flight Conditions with HELIOS-RCAS (254) Jinggen Zhao,* Sikorsky LMCO	Multi-Axis Active Vibration Damping Using Electric Rotor Torque with Pitch-Lag Coupling in eVTOL Aircraft: Demonstration of Concept (399) Alexei Severnyak,* C. Rahn, E. Smith, Penn State
2:00 PM - 2:30 PM Paper 2	Wake Measurements of a Hovering Rotor with Dynamic Cyclic Pitch Inputs (216) Daniel Yu,* J. Sirohi, University of Texas	A Computational Study of Bluntness Vortex Shedding Noise Generated by a Small Canonical Rotor for UAM Applications (112) Joshua Blake,* C. Thurman, N. Zawodny, NASA Langley	Comparing Different Pilot Control Schemes for eVTOL and Powered-Lift Aircraft (171) Gregory Khoo, M. Feroskhan, E. Lee, X. Lu, James Wang,& Nanyang Technological University	Effects of Gyroscopic Phenomena on Tuned Vibration Absorbers Design and performance (257) Eleonora Giovanardi,* F. Pellegrino, Leonardo Helicopters; G. Quaranta, Politecnico di Milano;	Experimental Investigation of Propeller-Wing Interactions for VTOL Unmanned Aerial Vehicle (322) Abhijit Gangwar, A. Abhishek,* A. Mondal, T. Upadhyay, Indian Institute of Technology
2:30 PM - 3:00 PM Paper 3	Design and Development of Sikorsky's Rotor Blown Wing Demonstrator (200) Marc Regan, P. Bowles, D. Coleman, J. Kaye, Vera Klimchenko,* A. Rivera, C. Sargent, J. Satira, B. Wallace, Sikorsky LMCO	Novel Methodology for the Prediction of Rotorcraft Detectability using Classic Signal Detection Theory (223) Bianca Erwee,* Leonardo Helicopters	Development of a New Pilot Workload Rating Scale (180) Lauren Duggan,* C. Dadswell, M. White, University Liverpool; P. Comeau,* National Research Council	Multibody Rotor Blade Modeling Based on Component Mode Synthesis (334) Felix Weiss,* J. Merlis, DLR	Sensitivity Analysis of Urban Air Mobility Aircraft Landing Trajectory Deviation to Microscale Wind Disturbances (320) Nithya D S,* Politecnico di Milano & RMIT University; G. Quaranta, Politecnico di Milano; M. Liang, V. Muscarello, RMIT University
Refreshment Break 3:00 to 3:30 PM: Meeting Corridor					
3:30 PM - 4:00 PM Paper 4		Noise of a Propeller Designed for eVTOL Operations in Forward and Edgewise Flight (172) Szu-Fu Huang,* W. Alexander, S. Chaware, N. Intaratep, R. Lundquist, Virginia Tech	Urban Air Mobility Passenger Discomfort Evaluations of Sudden Heave Motion in a Virtual Reality Motion-Base Simulator (27) Curt Hanson,* K. Barnes, S. Ramia, NASA Armstrong		Simulation-Based Evaluation of Motor Failure Resilience in a Prototyped Multirotor eVTOL (218) Mostafa Asadi Khanouki, N. Pourmostaghimi, Younes Sadat-Nejad,* MOSTAVIO
4:00 PM - 4:30 PM Paper 5		WITHDRAWN: Active Noise Control for Rotor Maneuvering using a Variable-diameter Approach (299) Yan Ding,* X. Chen, W. Wang, T. Yang, Q. Zhao, Nanjing University	A Study of Brain Dynamics in Simulated Piloting Tracking Tasks (344) Kyle Pietro,* Roberto Celi,* R. Gentili, B. Hatfield, H. Oh, University Maryland		Multifidelity Multipoint Proprotor Blade Optimization for Urban Air Mobility (69) Christopher Thurman,* L. Wang, NASA Langley
4:30 PM - 5:00 PM Paper 6			Invited Presentation Padfield Best Young Paper Award at ERF 2024: Multisensory Integration Model for Combined Visual-Haptic 2D Localization (154) Madeline Fischer, B. Ganelin, Umberto Saetti,* UMD; M. Godfroy-Cooper, Airbus; Douglas Fischer,* Boeing Co.		
5:00 PM - 5:30 PM Paper 7					

	Technical Session E: Thurs. May 22, 2025, 1:30 p.m. to 5:30 p.m. <i>Note: the main author is listed first. "*" denotes the presenting author.</i>				
	IVHM Room: 1-B Session Chairs: Rohit Majeti, Airbus Casey Carter, PeopleTec	Modeling & Simulation IV Room: 1-D Session Chair: David Caudle NASA Ames	Ops. & Infrastructure II Room: 1-C Session Chair: Shawn Melhorn Sikorsky, LMCO	Safety II Room: 5-D Session Chair: Alexia Payan, GA Tech. Paul Inguanti, Sikorsky, LMCO	Structures & Materials III Room: 1-A Session Chair: Sarvie Ghaffari University Texas
1:30 PM - 2:00 PM Paper 1	Bearing Spall Detection and Remaining Useful Life Prediction Using an Operational Binning Approach for eVTOLs (423) Manu Krishnan,* S. Barbarino, M.H. Bleu-Laine, B. Gestner, H. Leuthold, Joby Aviation	Ground Coverage Simulations for Firefighting Helicopter (39) Arin Goksan,* A. Alper Ezertaş, O. Güngör, Turkish Aerospace	A Review of Proposed Enhancements to the Broken Wheel Vertiport Marking & Symbology (157) Charles Johnson,* G. Morfitt, L. Thompson, FAA	Lessons Learned from the Analysis of North American Vertical Lift Accident and Incident Occurrence Data: Review of Civil Operations (2000 to 2024) (395) Marc Alexander,* H. Morry National Research Council; Gene Munson,* T&E Consultant	Composite Laminate Resin Pooling Defect Strength Reduction Quantification (147) Craig Conklin,* A. Barrett, D. Toni, Sikorsky, LMCO
2:00 PM - 2:30 PM Paper 2	Feature Selection and Gamma Test for Improved Load Estimation Models (235) Catherine Cheung,* N. Fenev, J. Valdés, National Research Council	Lichten Runner-Up: A Real-Time Reduced-Order Model for the Atmospheric Boundary Layer Including Roughness Sublayer (325) Duncan Waanders,* J. Rauleder, S. Salins, M.J. Smith, Georgia Tech.	Hospital Landing Site Safety: A CFD Study of Rotor Downwash and Turbulent Airwake Effects (84) David Souza Branco,* I. Owen, N. Watson, M. White, University Liverpool	Enabling Novel Collaborative Control Paradigms between Humans and Machines in Electric Vertical Takeoff and Landing (eVTOL) Aircraft (359) Natasha Neogi,* M. Graydon, J. Holbrook, J. Maddalon, NASA Langley; G.F. McCormick, Certification Services (Ret.)	Blade Stiffened Carbon/Epoxy Panels with Longitudinally Tapered Acoustic Black Holes for Vibration Reduction (276) Avery Brown, C. Bakis, Bhavya Patel,* N. Robertson, E.C. Smith, Penn State; B. Beck, N. Vljajic, Applied Research Lab; M. Shepherd, Brigham Young Univ.
2:30 PM - 3:00 PM Paper 3	Gross Weight, CG Position, and Airspeed Estimation of Large Multicopters for Advanced Air Mobility (300) Anubhav Halder,* E. Ferede, F. Gandhi, J. Whitt, North Carolina State University	Validation of a State-Space Free Wake Model with a Near-Wake Vortex Lattice Model (155) Batin Bugday,* U. Saetti, University Maryland; J.F. Horn, A.K. Manjhi, Penn State	UCAirLink: A Vertical Takeoff and Landing-Based Air Transportation System for Optimizing Commuter Efficiency (196) Leire Roma Rubi, J. Kam, R. Luo, M. Mueller, Ting-Hao. Wang,* J. Yang, X. Zheng, E. Zou, University California		
Refreshment Break 3:00 to 3:30 PM: Meeting Corridor					
3:30 PM - 4:00 PM Paper 4	Enhancing Advanced Air Mobility through Digital Engineering and Predictive Analytics for Effective Maintenance Strategies (391) Rhea Matthews, M. Ali, Abdel Bayoumi,* A.C. Monroy, K. Fox, J. Werling, Univ. South Carolina		Infrastructure Design Criteria for Accommodating Hydrogen Electric Vertical and Takeoff Landing (H₂eVTOL) Aircraft Technologies at Vertiports (386) Gaël Le Bris,* L.G. Nguyen, WSP		
4:00 PM - 4:30 PM Paper 5	Gearbox Casing Crack Detection based on Vibration Signals in Frequency and Time Domain (28) Changik Cho,* E. Bechhoefer, GPMS International		Fire Risk Assessment Techniques for eVTOL Operations at Heliports (156) Jeff Gonzales,* A. Krebs, R. Naru, Joby Aviation		
4:30 PM - 5:00 PM Paper 6	On the Trustworthiness of Machine Learning Models in Health and Usage Monitoring of In-Service Helicopters (88) Ammar Mechouche,* C. Delcistia Gallimard, M. Houlès, P-L. Maisonneuve, Airbus		Land Use Compatibility for Vertiports: A Comprehensive Approach (77) David Ison,* Washington State Dept. of Transportation		
5:00 PM - 5:30 PM Paper 7			Augusta Regional Airport Preparation for Transformative VTOL Air Vehicle Operations (132) Kaydon Stanzione,* LogistiWerx; Diane Johnston,* Augusta Regional Airport, Georgia		

Forum 81 Special Session Schedule (Ballroom 2-3)

Tuesday, May 20

Special Session 1 (8:00 am – 9:30 am):

NATO Next Generation Rotorcraft Capabilities

Chair: Dan Newman, Auduril Industries

- **Richard Thorpe**, NGRC Senior Technical Officer, NATO Support & Procurement Agency (NSPA)
- **John Martin**, Director of Turboshaft Advanced Programs, GE Aerospace
- **Steve Raeff**, Program Manager of Open Systems Architecture, Lockheed Martin
- **Kirk Avery**, Tactical Mission Systems Chief Architect, Lockheed Martin
- **Charles Gough**, Lead for Operational Analysis, Defence Science & Technology Laboratory (Dstl)

Special Session 2 (10:00 am – 12:00 pm):

Government Civil VTOL R&D

Chair: Luigi Ricci Moretti, VTOL Consultant

- **Arnaud LePape**, Rotorcraft Program Director, ONERA—The French Aerospace Lab
- **Florian Antrack**, Program Manager, Defence Technology, DLR—German Aerospace Center
- **Stefan van 't Hoff**, Team Leader & Principal R&D Engineer, NLR—Netherlands Aerospace Centre
- **Derek (Duff) Gowanlock**, Technology Lead, Flight Autonomy, NRC—National Research Council Canada
- **Dr. Noah Schiller**, Project Manager, Revolutionary Vertical Lift Technology (RVLT), NASA

Opening General Session (1:30 – 5:15 pm):

Keynote Discussion:

- **Col Robert Hurst**, USMC, Program Manager, PMA-275, V-22 Joint Program Office, Dept. of Navy
- **Maj Gen Robert L. Barrie, Jr.**, US Army, Deputy, Acquisition & Systems Mgt, ASA(ALT), Dept. of Army

Straight Talk from the Top:

Moderator: Rex Alexander, Five-Alpha

- **Denis Descheemaeker**, Head of Research & Innovation, Airbus Helicopters
- **Carl Coffman**, VP of Military Sales & Strategy, Bell
- **Chris Speights**, Vertical Lift Chief Engineer, Boeing
- **Roberto Garavaglia**, SVP, Strategy & Rotorcraft Business Evolution, Leonardo Helicopters
- **Richard Benton**, VP/GM, Sikorsky, A Lockheed Martin Co.
- **David Smith**, President/CEO, Robinson Helicopter Co.

44th Annual Nikolsky Lecture:

- **Dr. Peter Lorber**, Sikorsky, a Lockheed Martin Company.

Wednesday, May 21

Special Session 3 (8:00 – 9:30 am):

US Navy/Marine VTOL Programs: V-22 Pilot Panel

Osprey Operations & Modernization Through 2055, led by Col Robert Hurst, USMC, V-22 Joint Program Office, Dept. of Navy

Special Session 4 (10:15 am – 12:15 pm):

US Army Aviation VTOL Programs

Led by BG David Phillips, US Army, Program Executive Officer (PEO) Aviation, Dept. of Army (hybrid)

Special Session 5 (1:45 pm – 3:15 pm):

Designing for Modularity

Chair: Matt Sipe, VP Strategy, Parry Labs

- **Carl Forsling**, Director, Business Development & Strategy, Military Line of Business, Airbus US Space and Defense
- **Joe Pantalone**, Head of Archer Defense & Advanced Programs, Archer Aviation
- **Lee Anderson**, Dir. of Advanced Programs, Bell Textron
- **Mike Sousa**, Development Manager, GE Aerospace

Special Session 6 (4:00 – 6:00 pm):

Uncrewed VTOL

Chair: Luigi Ricci Moretti, VTOL Consultant

- **Mike Fillman**, Head of Aerodynamics and MDO for UxS, AeroVironment
- **Mark Butkiewicz**, VP, Applied Engineering & Applied Technology Operation Manager, SURVICE Engineering
- **John Piasecki**, CEO, Piasecki Aircraft
- **Dr. Hector Xu**, CEO, Rotor Technologies
- **Jim McLaughlin**, Director of S&T for AWPC, Leonardo Helicopters
- **Carl Forsling**, Director, Business Development & Strategy, Military Line of Business, Airbus US Space and Defense

Thursday, May 22

Special Session 7 (9:45 am – 12:15 pm):

Challenges of Vertical Flight

Chair: Rex Alexander, Five-Alpha

- **Rex Alexander**, President, Five-Alpha
- **Dr. Richard Brown**, Founder/CTO, Sophrodyne
- **Ryan King**, Vertical Flight Infrastructure Research Engineer, FAA (invited)
- **Mickey Radotich**, Aerospace Engineer, NASA Ames Research Center
- **Juliet Page**, Principal Engineer, Blue Ridge Research & Consulting
- **Marilyn Pearson**, AAM Regulatory Affairs Specialist, CAE
- **LT Mark Zinderman**, Flight Safety Officer, National Capital Region Air Defense Facility, US Coast Guard
- **Gwen Lighter**, CEO, GoAERO

Special Session 8 (1:30 pm – 3:00 pm):

Developments in eVTOL Propulsion

Chair: Ken Swartz, Aeromedia Consultants

- **David Eichstedt**, VP of Product Mgt, VerdeGo Aero
- **John Wyzykowski**, Sr. Engineering Expert, Propulsion, Horizon Aircraft
- **Ian Randall**, CEO, MagLev Aero
- **John Piasecki**, CEO, Piasecki Aircraft

Special Session 9 (3:30 pm – 5:15 pm):

Progress in eVTOL Aircraft Developments

Chair: Siena Whiteside, NASA Langley Research Center

- **Matthew Smith**, Director of Certification & Airworthiness, AIR EV
- **Jacob Cook**, Flight Dynamics & Control System Lead, Dufour Aerospace
- **Dr. Marco Stuhlpfarrer**, VP Technology & Innovation, ERC
- **Furqan**, CEO, Sora Aviation
- **Jim Tighe**, CTO, Wisk