

Vertical Flight Society Announces Winner of 2023 Alfred Gessow Best Paper Award

Technical Paper by Philippe Petit of the German Aerospace Center (DLR) Selected as Best of 21 Finalists for Best Paper of Forum 79

FAIRFAX, VA, UNITED STATES, July 17, 2023 /EINPresswire.com/ -- The Vertical Flight Society (VFS) announced today the winner of its prestigious Alfred Gessow Award for best overall technical paper presented at the 79th Annual Forum and Technology Display. This year's winning paper is from the Crew Stations sessions entitled, "Validation of a Motion Sickness Prediction Model via Flight Tests on DLR's Bo-105 Helicopter," by Philippe Petit of the German Aerospace Center (DLR). Petit is a researcher in the field of guidance, navigation and control, and is responsible for the data fusion algorithms of DLR's experimental EC135 helicopter, the ACT/FHS. Concurrently, he is pursuing his PhD at TU Braunschweig on the influence of motion sickness on the design of helicopter flight controls.



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The DLR Bo 105 ACT/FHS helicopter was the testbed for the research paper that won the VFS Gessow Award. (DLR photo)

DLR developed a motion sickness prediction model aimed at vertical lift applications. To validate it, flight tests with DLR's MBB Bo-105 helicopter were conducted; as reported in the winning Gessow paper, a total of 32 test subjects were flown in 16 sorties on 30-minute sinusoidal flight paths of various frequencies. The test design and implementation included the development of a suitable measurement flight instrumentation, auditory cueing systems for accurate following of the test trajectory, and questionnaires for recording motion sickness during flight. The results

showed that the prediction model agrees well with the motion sickness observed during flight.

The selection process, which began last October, was very rigorous. Out of 330+ abstracts received, technical committee chairs selected 283 papers for publication. During the Forum, the session and technical committee chairs then selected the best papers from each of the 21 technical papers to be considered for the Gessow Award. Then, Petit's paper was selected as the best of the best.

All of the best papers are available for purchase in the Vertical Flight Library & Online Store (www.vtol.org/library).

Acoustics: "Evaluation of Acoustic Propagation in Layered Media Using Wave Confinement," by Subhashini Chitta, John Steinhoff, Wave CPC; Mary Houston, Analytical Mechanics; James Stephenson, US Army

Advanced Vertical Flight: "Development, Simulation and, Flight Testing of Damage Tolerant Control Laws for the ADAPT™ Winged-Compound Helicopter Scaled Demonstrator," by Samuel Nadell, Tom Berger, US Army; Alex DiJoseph, Eric Huang, Piasecki Aircraft Corp.

Aerodynamics: "Fundamental Test of a Hovering Rotor: Comprehensive Measurements for CFD Validation," by Thomas Norman, James Heineck, Edward Schairer, Lauren Wagner, Gloria Yamauchi, Michelle Dominguez, Alex Sheikman, NASA Ames Research Center; Norman Schaeffler, NASA Langley Research Center; Austin Overmeyer, Manikandan Ramasamy, Christopher Cameron, US Army

Aircraft Design: "Blade Shape Optimization of Rotors using Neural Networks," by Hrithwik Shalu, Bharath Govindarajan, Indian Institute of Technology Madras; Ananth Sridharan, VTOL Analytics LLC; Rajnesh Singh, DEVCOM Army Research Laboratory

Avionics & Systems: "Evaluation of an Automatic System for Cockpit Integration Testing," by David Frisini, Giorgia Giulianini, Marco Romano, Nicola Zonzini, Glauco Rinaldi, TXT e-Tech; Vincenzo Taumaturgo, Leonardo Helicopters

Crash Safety: "A Summary of Test Results from a NASA Lift + Cruise eVTOL Crash Test," by Justin Littell, Jacob Putnam, NASA Langley Research Center

Crew Stations & Human Factors (Gessow Winner): "Validation of a Motion Sickness Prediction Model via Flight Tests on DLR's Bo-105 Helicopter," by Philippe Petit, German Aerospace Center (DLR)

Dynamics: "Wind Tunnel Testing, Aeromechanics Predictions on Slowed Mach-Scaled Thrust Compounding Rotorcraft with a Trailing Propeller," by Noam Kaplan, Mrinalgouda Patil, Inderjit Chopra, Anubhav Datta, University of Maryland

Electric VTOL: "Fundamental Understanding of Hybrid-Electric Power," by Matt Arace, Anubhav Datta, University of Maryland

Handling Qualities: "Piloted Simulation Evaluation of Maneuver Optimization Control for a Coaxial Compound Helicopter," by Joseph Horn, Ryan Perry, Pennsylvania State University; Derek Bridges, Nicholas Kuhn, Grey Hagwood, Jr., Piasecki Aircraft; Tom Berger, Anthony Gong, US Army

Health & Usage Management Systems: "Towards an Evaluation Process for Regime Recognition Approaches: "Addressing Variability in Labeling Training Data," by Catherine Cheung, Emma Seabrook, National Research Council Canada

Manufacturing Tech. & Processing: "Computational Fluid Dynamics Simulation for Additive Friction Stir Deposition of Aluminum Alloy," by Xuxiao Li, Manoj Rajanna, Jim Lua, Global Engineering, Materials; Alan Timmons, Gabriel Murray, Nam Phan, Naval Air Warfare Center; Richard Eberheim, Solvus Global

Modeling & Simulation: "Estimation of Probability of Exceeding SC-VTOL Performance Requirements During Automatic Landing Using Subset Simulation," by Christoph Krammer, Florian Holzapfel, Technical University of Munich

Operations: "Simulation-Assisted, Weather-Aware Urban Air Mobility System Planning," by Michael Yablonski, Kimley-Horn, Associates; Alexander Klein, AvMet Applications

Product Support Systems Technology: "SmartHangars and SAE International Aircraft Charging Standards," by Joshua Portlock, Richard Watson, Electro.Aero

Propulsion: "Full Scale Gear Tooth Bending Fatigue Tests Obtained Early in the Development of a Rotorcraft Transmission," by Yuriy Gmirya, Peter Palcic, Dave Binney, Wei Hu, Erin Carter, Sikorsky

Safety: "A Comparison of Traditional and Vuichard Vortex Ring State Recovery Techniques Using On-Line Simulation," by Eleni Sotiropoulos-Georgiopoulos, Alexia Payan, Dimitri Mavris, Georgia Institute of Technology; Charles Johnson, Federal Aviation Administration

Structures & Materials: "Vibratory Loads/Stress Analysis and Fatigue Alleviation with Rotorcraft Comprehensive Modeling Tool," by Dooyong Lee, Chengjian He, Advanced Rotorcraft Technology; Mulugeta Haile, DEVCOM Army Research Lab

Systems Engineering Tools & Processes: "System Simulation at Airbus Helicopters: From Early Validation to Formal Certification," by Nicolas Brisset, Andrew Duffy, Airbus

Test & Evaluation: "CH-53K Maneuvering Envelope Expansion Challenges," by John Rucci, Rob Pupalaikis, Glen Knaust, Sean Maloney, Alex Faynberg, Don Ream, Steven Spoldi, Rich Lamb, Sikorsky; Laura Slingerland, Kenneth Cahill, Naval Air Systems Command

Unmanned VTOL: "Intelligent Wind Estimation for Chemical Source Localization," by Jared Cooper, Michael DeVore, Barron Associates; Jeremy Hopwood, Craig Woolsey, Virginia Tech; Stephan DeWekker, University of Virginia

In addition, "Operation Ivory Soap and the Largest Helicopter Rescue of WWII," by Paul Fardink, was the winner of the Bernard Lindenbaum Best Historical Paper.

Forum 79 was held May 16-18, 2023, in West Palm Beach, Florida. Forum 80 is scheduled for May 7-9, 2024, in Montreal, Quebec, Canada. Petit will present the winning Gessow paper at the 49th Annual European Rotorcraft Forum (ERF), Sept. 5-7, 2023, in Bückeburg, Germany.

Founded in 1943 as the American Helicopter Society, the Vertical Flight Society today is the international professional organization that advocates, promotes and supports vertical flight technology. For more than 80 years, the Society has provided global leadership for the advancement of vertical flight.

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