Press Release

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Vertical Flight Society Announces Winner of
2022 Alfred Gessow Best Paper Award

Selected from 21 Finalists for Best Paper from Forum 78

Fairfax, Virginia — The Vertical Flight Society (VFS) announced today the winner of the Society's prestigious Alfred Gessow Award for the best overall technical paper presented at the 78th Annual Forum and Technology Display. This year's winning paper is from the Handling Qualities session entitled, "Toward a UAS Handling Qualities Specification: Development of UAS-Specific MTEs," by Dr. Christina Ivler and Kate Russell of the University of Portland; and Drs. Anthony Gong, Tom Berger and Mark J.S. Lopez of US Army Combat Capabilities Development Command (DEVCOM) Aviation and Missile Center (AvMC).

Dr. Ivler is an assistant professor of mechanical engineering at the University of Portland. Her research interests are in rotorcraft system identification, control and handling qualities. She received her B.S. and M.S. degrees from the University of California Davis and her doctorate in Aeronautics and Astronautics from Stanford University. The winning Forum 78 paper highlighted key outcomes of the University of Portland's unmanned aircraft systems (UAS), including proposed UAS-specific maneuvers as mission task elements (MTEs), the validation of performance specifications, and validation of the Froude-scaled ADS-33E-PRF Level 1 attitude bandwidth metric as a predictive metric.

The selection process, which began in October 2021, was very rigorous. Out of 285 abstracts received, Forum 78 committee chairs selected 219 papers for publication. During the Forum, the session and technical committee chairs selected the best papers from each of the 21 technical papers for final consideration. Then the Society's Deputy Technical Directors for Aeromechanics, Vehicle Design, Vehicle Integrity, System Integration, Systems Engineering, and Operations and Product Support winnowed that number down to seven finalists. Following that, the VFS Technical Director and a committee of technical experts reviewed and ranked the papers, and in that ranking, determined that the selected paper was 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).

The full list of all Forum 78 best papers (with links):

- **Acoustics**: Helicopter Noise Source Separation Using an Order Tracking Filter, by Joel Sundar Rachaprolu and Eric Greenwood, Pennsylvania State University
- **Advanced Vertical Flight**: Robotic Hummingbird versus Quadrotor: a Flight Dynamics and Gust Response Comparison, by David Coleman and Moble Benedict, Texas A&M University
- **Aerodynamics**: High Speed and Highly Efficient Rotor Blade Design, by Byung-Young Min, Vera Klimchenk, Annie Gao, Alex F. Dunn, Claude G. Matalanis and Brian E. Wake, Sikorsky, a Lockheed Martin Co.

- **Aircraft Design** (best overall in Vehicle Design disciplines): Wing Lift Enhancement from Aft Rotor Induced Suction, by Richard Healy and Farhan Gandhi, Rensselaer Polytechnic Institute
- **Avionics & Systems** (best overall in Systems Integration disciplines): Evaluation of Flight Control System Architectures for the AH-64, by Bryan C. H. Chu, Gary Klein and Russell Enns, The Boeing Company
- **Crash Safety** (best overall in Vehicle Integrity disciplines): Advanced Seat Belt System for Occupant Restraint, by Marv Richards, Safe Inc.
- **Crew Stations & Human Factors:** Differential Role of Gravitoinertial Cues for Active and Passive Control in Degraded Visual Environments, by Martine Godfroy-Cooper, U.S. Army DEVCOM AvMC; J.C. Sarrazin, ONERA; E. Bachelder and J. D. Miller, U.S. Army DEVCOM AvMC; and Dr. B. Bardy, Euromov
- **Dynamics**: Time-Frequency Analysis of Experimental and Analytical Hub Loads of a Rotor Undergoing a Rotor Speed Change, by Martin K. Sekula, NASA Langley Research Center; and Carl Russell, NASA Ames Research Center
- **Electric VTOL Technical Committee**: Fabrication, Testing, and Comparative Analysis of Lithium Sulfur and Lithium-Ion Electrochemistries, by Emily Fisler and Anubhav Datta, University of Maryland
- **Handling Qualities** (best overall in Aeromechanics disciplines, and overall Gessow Winner): Toward a UAS Handling Qualities Specification: Development of UAS-Specific MTEs, by Christina M. Ivler, Kate Russell, University of Portland; Anthony Gong, Tom Berger and Mark J.S. Lopez, U.S. Army DEVCOM AvMC
- **Health and Usage Management Systems** (best overall in Systems Engineering disciplines): Improving the Performance of Bearing Analysis, by Eric Bechhoefer and Joshua Kethan, GPMS Inc.
- **Manufacturing Tech. & Processing**: Manufacturing Innovation for Bell's Future Factory, by Amber Pike, Bell Textron Inc.
- **Modeling & Simulation**: Rotorcraft Pitch-Surge Motion Cueing Requirements for a Simulated Offshore Approach Task, by Josephine Roscoe, Mark D. White, Steven J. Hodge and Gareth D. Padfield, University of Liverpool
- **Operations**: Expectations, Test Results, and Lessons Learned, Flight Testing an RF DILR ALE, by Mike Lengyel, Bob Burzynski, Dan Ferrante and Sid McManus, Elbit America
- **Product Support Systems Technology**: Scheduled Maintenance Program Development for the Leonardo AW609 Tiltrotor via the Maintenance Review Board Process Utilizing MSG-3, by Titos M. Gosalvez and Nicholas Flynn, Leonardo Helicopters
- **Propulsion**: Dynamic Load Analysis of Motion Converter Ball Bearings in a Pericyclic Transmission, by Nick Weinzapfel and Nathan Bolander, Sentient Science; Tanmay Mathur, AgustaWestland; Hans DeSmidt, University of Tennessee; and Edward Smith, Pennsylvania State University
- **Safety**: A Structured and Comprehensive Air Vehicle Risk Assessment, by Laurence H. Mutuel, Bell Textron Inc.
- **Structures & Materials:** Improved Strain Gage Instrumentation Strategies for Rotorcraft Blade Measurements, by Timothy Davis, U.S. Army DEVCOM AvMC
- **Systems Engineering Tools & Processes**: Sikorsky Airframe Full Spectrum Customer/Supplier Collaboration, by Darryl Toni, Sikorsky, a Lockheed Martin Company
- **Test & Evaluation** (best overall in Operations & Support disciplines): Automatic Category A Takeoff for H145 – Development and Flight Testing, by Carl Ockier, Dr. Daniel Reber, Marc Salesse-Lavergne and Paul Prévost, Airbus

In addition, the **History Committee** recognized God's Machine: The Miracle at Gander, by Paul J. Fardink, US Army (Ret.) as the winner of the Bernard Lindenbaum Best Historical Paper.

This year's Forum 78 was held in May in Fort Worth, Texas. Next year, the Society's 79th Annual Forum & Technology Display will be held May 16-18, 2023, in West Palm Beach, Florida. As the Forum 78 Alfred Gessow

Best Paper Award winner, Dr. Ivler will present the paper at the 48th Annual European Rotorcraft Forum (ERF) on Sept. 7, 2022, in Winterthur, Switzerland.

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

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