

# **28th AIAA/CEAS Aeroacoustics Conference 2022**

Southampton, United Kingdom  
14 – 17 June 2022

Volume 1 of 7

ISBN: 978-1-7138-5363-3

**Printed from e-media with permission by:**

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



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

The contents of this work are copyrighted and additional reproduction in whole or in part are expressly prohibited without the prior written permission of the Publisher or copyright holder. The resale of the entire proceeding as received from CURRAN is permitted.

For reprint permission, please contact AIAA's Business Manager, Technical Papers. Contact by phone at 703-264-7500; fax at 703-264-7551 or by mail at 34922 Uwytkug'Xcmg{'Ftkxg.'Uwky'422, Reston, VA 20191, USA.

# TABLE OF CONTENTS

## VOLUME 1

### **ACOUSTIC/FLUID DYNAMICS INTERACTIONS I: BOUNDARIES AND SHEAR LAYERS**

On the Modeling of Wall Surface Pressure Spectra for Trailing Edge Noise Prediction .....	1
<i>Carolyn A. Kissner, Sebastien Guerin, Stefano Bianchi, Thomas Node-Langlois</i>	
Wall-Modelled LES on Hierarchical Cartesian Mesh for Trailing Edge Noise Prediction .....	24
<i>Varun Bharadwaj Ananthan, Jürgen Dierke, Roland Ewert, Johannes Kreuzinger</i>	
Trailing Edge Noise Prediction Based on Solutions to the Orr Sommerfeld Equation .....	41
<i>Stewart A. Glegg, Siddhartha Verma, Lyubov Denissova</i>	
Pressure Gradient Effects on Low-Wavenumber Wall-Pressure Fluctuations in Turbulent Boundary Layer Flows .....	47
<i>Humza Butt, Shishir Damani, Surabhi Srivastava, Jarrod T. Banks, Vidya Vishwanathan, William J. Devenport, Todd Lowe, Stewart A. Glegg</i>	
Sound Radiated by a Supercritical Airfoil Operating in the Incompressible Regime .....	66
<i>Manuj Awasthi, Tingyi Zhang, Danielle Moreau, Charitha De Silva, Rio Baidya</i>	

### **AIRFRAME/HIGH-LIFT NOISE I: HIGH LIFT SYSTEMS**

Phased Array Characterization of Slat Noise Radiation from a High-Lift Common Research Model.....	90
<i>William M. Humphreys, David P. Lockard, Christopher J. Bahr</i>	
Aeroacoustic Simulations of the High-Lift Common Research Model and Validation with Experiment .....	114
<i>David P. Lockard, Meelan M. Choudhari, Veer N. Vatsa</i>	
An Approach Towards Semi-Empirical Slat Track Noise Prediction .....	142
<i>Michael Pott-Pollenske, Meike Jansen</i>	
Parametric Study of the Effect of Slat Track Geometry on Noise Emissions .....	158
<i>Evelien Van Bokhorst, Johan Kok, Marthijn Tuinstra</i>	
New Insights on Slat Noise Based on a Revisit of Previous Experimental-Numerical Studies .....	171
<i>Daniel Sampaio Souza, Filipe Amaral, Fernando Himeno, Carlos Pagani, Leandro Simões, Daniel Rodriguez, Marcello Medeiros</i>	

### **ADVANCED TESTING TECHNIQUES I: SOURCE LOCALIZATION / TEST FACILITIES**

Evaluation of Advanced Acoustic Imaging Methods for Microphone--Array Measurements in Closed--Section Wind Tunnels.....	185
<i>Roberto Merino-Martinez, Colin Vandercreek, Mirjam Snellen</i>	
Application of a Noise Source Separation Method (AFINDS) to External Array Measurements Taken on Short Cowl Engines in Anechoic, Outdoor, and Indoor Facilities.....	210
<i>Brian J. Tester, Stefan Funke, Kevin M. Britchford, Christopher J. Knighton</i>	
Extension of the Source Localization Method SODIX for the Determination of Partially Coherent Sound Sources .....	239
<i>Sebastian Oertwig, Henri A. Siller, Timo Schumacher, Stefan Funke</i>	
Design and In-Situ Calibration of a Beamforming Array for High-Frequency Noise Measurements in a Hybrid-Anechoic Wind Tunnel .....	256
<i>Máté Szoke, Aurelien Borgoltz, Nanyaporn Intaratap, Matthew Kuester, Patricio A. Ravetta</i>	

Accounting for the Influence of Decorrelation in Microphone Phased Array Deconvolution Methods.....	275
<i>Christopher J. Bahr</i>	

### **COMPUTATIONAL AEROACOUSTICS I: AEROFOIL NOISE**

Direct Numerical Simulation of Controlled Diffusion Airfoil Self-Noise.....	294
<i>Andrea Arroyo Ramo, Stéphane Moreau, Richard D. Sandberg, Michaël Bauerheim, Marc C. Jacob</i>	
Acoustic Investigation of the Transonic RAE 2822 Airfoil with Large-Eddy Simulation .....	316
<i>Regis Koch, Marlène Sanjosé, Stéphane Moreau</i>	
Numerical Analysis of Poro-Serrated Trailing-Edge Noise .....	326
<i>Sutharsan Satcunanathan, Matthias Meinke, Wolfgang Schroeder</i>	
Broadband Trailing-Edge Noise Predictions Using Incompressible Large Eddy Simulations.....	339
<i>Thomas Lloyd, Artur Lidtke, Maarten Kerkvliet, Johan Bosschers</i>	
Efficient Prediction of Leading Edge Noise with a Synthetic Turbulence Approach .....	356
<i>Maks J. Groom, Beckett Yx Zhou, Qiqi Wang</i>	

### **DUCT ACOUSTICS I: ACOUSTIC LINERS**

Design and Evaluation of a Zero Mass Flow Liner .....	363
<i>Ralf Burgmayer, Friedrich Bake, Lars Enghardt</i>	
An Initial Assessment of Variable Depth Liner Optimization for Ducted Proprotor Applications .....	379
<i>Matthew B. Galles, Michael G. Jones, Douglas M. Nark</i>	
Drum-Like Liners to Attenuate Low Frequencies in Presence of Flow: An Analytical, Experimental and Numerical Study .....	393
<i>Charlotte Comte, Thomas Humbert, Garret C. Lam, Randolph C. Leung, Yves Auregan, Gwenael Gabard</i>	
Evaluation of Variable-Depth Liners with Slotted Cores .....	405
<i>Michael G. Jones, Douglas M. Nark, Noah H. Schiller</i>	
Modelling of Acoustic Liners Consisting of Helmholtz Resonators Coupled with a Second Cavity by Flexible Walls.....	419
<i>Fleming Kohlenberg, Anita Schulz, Lars Enghardt, Karsten Knobloch</i>	

### **JET AEROACOUSTICS I: EXPERIMENTAL JET NOISE**

Experimental and Numerical Investigation of Nozzle Shape to Enhance Jet Noise Shielding Effect.....	435
<i>Junichi Akatsuka, Kei Wada, Tatsuya Ishii</i>	
Acoustic Mach Number, Jet Mach Number Or Jet Velocity: Choosing the Optimal Control Property for Jet Noise Experiments at Different Test Rigs .....	445
<i>Christian Jente</i>	
The Jet Noise of a Convergent-Divergent Nozzle .....	458
<i>Marcus Harper-Bourne</i>	
Flow and Noise from Supersonic Plug Nozzles .....	484
<i>Khairul Q. Zaman, Amy F. Fagan, James E. Bridges, Brian Heberling</i>	
Pressure Fluctuations Due to 'Trapped Waves' in Heated Jets .....	507
<i>Puja Upadhyay, Khairul Q. Zaman</i>	

## **PROPELLER, ROTORCRAFT AND V/STOL NOISE I: INSTALLED PROPELLER**

Analytical Study of the Aerodynamic Noise Emitted by Distributed Electric Propulsion Systems .....	516
<i>Daniel Acevedo Giraldo, Michel Roger, Marc C. Jacob, Hadrien Beriot</i>	
Theoretical Investigation of the Turbulent Inflow Noise Produced by a Shrouded Propeller .....	534
<i>Sung Tyaek Go, Michael J. Kingan, Ryan S. McKay, Rajnish N. Sharma</i>	
Investigation of the Interaction Tones Produced by a Contra-Rotating Unmanned Aerial Vehicle Propeller .....	549
<i>Riul Jung, Michael J. Kingan, Priyanka Dhopade, Rajnish N. Sharma</i>	
Experimental Investigation of the Aeroacoustic Interaction Effects of Installed Pusher Propellers .....	576
<i>Alessandro Di Marco, Roberto Camussi, Elisa De Paola, Luana Georgiana Stoica, Nicola Paletta, Carlo Aquilini, Simone Mancini, Roberto Pasta, Luca Flamini, Luca Cucinella, Fabio Rusconi</i>	
Abatement of a Multi-Rotor Tonal Noise Component with Phase Control Technology .....	588
<i>Ofek Hertzman, Shir Fligelman, Oksana Stalnov</i>	

## **URBAN AIR MOBILITY/UNMANNED AIR VEHICLE AND ELECTRIC AIRCRAFT GENERATION I: MISC**

Auralization of eVTOL Vehicles Through Empirical Assumptions Or Simple Analytical Model .....	604
<i>Ana Luisa P. Maldonado, Vincent Jurdic, David Hiller, Henry Harris</i>	
Development of a Noise-Based Route Optioneering Tool for Advanced Air Mobility (AAM) Vehicles .....	627
<i>James Woodcock, Syed Hasan, Jesus Garcia Paje, Ryan Biziosek, Pierce Henning, Andy Guthrie, Vincent Jurdic, Ana Luisa Maldonado, David Hiller</i>	
Annoyance Factors of a Maneuvering Multicopter Drone .....	639
<i>Erica Gallo, Guillaume Beaulieu, Christophe F. Schram</i>	
Investigation of Small-Scale Rotor Aeroacoustic in DLR's Acoustic Wind Tunnel Braunschweig.....	651
<i>Karl-Stéphane Rossignol, Jianping Yin, Lukas Rottmann</i>	
Prediction-Based Approaches for Generation of Noise-Power-Distance Data with Application to Urban Air Mobility Vehicles .....	667
<i>Stephen A. Rizzi, Stefan J. Letica, D D. Boyd, Leonard V. Lopes</i>	

## **ACOUSTIC/FLUID DYNAMICS INTERACTIONS II: BOUNDARIES AND SHEAR LAYERS**

An Aeroacoustic Numerical Model of the Transonic Flow Past a Sphere .....	687
<i>Nathan Duggins, Matteo Angelino, Aldo Rona</i>	
Predicting the Sound Refraction on Shear Layers with Deep Neural Networks .....	700
<i>Antonio Alguacil, Michaël Bauerheim, Lorenzo Becherucci, Marc C. Jacob, Stephane Moreau</i>	
The Effect of Tripping Height, Geometry and Roughness on the Flow and Noise Characteristics of a NACA-0012 Aerofoil .....	715
<i>Max M. Scholz, Tze Pei Chong, Edward Smith</i>	
Modeling the Surface Pressure Spectrum Beneath Turbulent Boundary Layers in Pressure Gradients .....	728
<i>Danny Fritsch, Vidya Vishwanathan, Christopher J. Roy, Todd Lowe, William J. Devenport, Paul Croaker, Graeme Lane, Oksana Tkachenko, David Pook, Shubham Shubham, Richard D. Sandberg</i>	

## VOLUME 2

Analysis of the Quadrupole Noise Produced by a Stalled NACA0012 Aerofoil at a Low Reynolds Number.....	755
<i>Jacob Turner, Jae Wook Kim</i>	
Reconstruction of the Deterministic Turbulent Boundary Layer for the Study of Aerofoil Self-Noise Mechanisms in the Spatial, Temporal and Frequency Domains .....	766
<i>Tze Pei Chong</i>	

### **AIRFRAME/HIGH-LIFT NOISE II: LANDING GEAR**

Further Noise Reduction of Regional Jet Two-Wheel Main Landing Gear .....	776
<i>Yasushi Ito, Takehisa Takaishi, Hirokazu Shoji, Akihisa Shimada, Kensuke Hayashi, Yosuke Ueno</i>	
Landing Gear Noise Mitigation by an Upstream Installed Fairing.....	792
<i>Miro Gondrum, Ansgar Niemöller, Matthias Meinke, Wolfgang Schroeder, Alejandro Rubio Carpio, Daniele Ragni, Francesco Avallone</i>	
Flow Control and Passive Low Noise Technologies for Landing Gear Noise Reduction.....	802
<i>Gareth J. Bennett, Jiang Lai, Gordon O'Brien, Daniele Ragni, Francesco Avallone, Michael Pott-Pollenske</i>	
Boeing-Safran Landing Gear Noise Reduction Project on 2020 Boeing ecoDemonstrator Program.....	822
<i>Eric Nesbitt, Takao Suzuki, Navid Daneshvarn, Amine Ghouali</i>	
Predictions of LAGOON Nose Landing Gear Flow and Noise Using Wall-Modeled Large Eddy Simulations.....	852
<i>Man Long Wong, Gaetan K. Kenway, Aditya S. Ghate, Gerrit-Daniel Stich, Cetin C. Kiris</i>	

### **ADVANCED TESTING TECHNIQUES II: SOURCE LOCALIZATION / TEST FACILITIES**

Optimal Initial Stencil Pattern for Adaptive Array Reduction Beamforming Arrays.....	886
<i>Elias Arcondoulis, Yu Liu</i>	
Experimental Validation and Performance Analysis of Deep Learning Acoustic Source Imaging Methods.....	900
<i>Elias Arcondoulis, Qing Li, Sheng Wei, Yu Liu, Xu Pengwei</i>	
Functional Beamforming Linear Programming for Determining Aeroacoustic Component Spectra.....	918
<i>Robert P. Dougherty</i>	
Southampton Anechoic Wind Tunnel (SotonAWT) Aerodynamic and Acoustic Characterisation .....	932
<i>Zoya Z. Ivanova, David Angland</i>	
Design, Manufacturing and Experimental Assessment of an Acoustic Liner Demonstrator for a Turning Vane of S1MA Large Wind Tunnel Facility .....	942
<i>Fabien Mery, Remi Roncen, Frank Simon, Loïc Ostorero, Marlon Botte</i>	
A Novel Test Bed for the Aeroacoustic Investigation of UCAV Configurations with Highly Integrated Propulsion Systems .....	955
<i>Karl-Stéphane Rossignol, Michael Pott-Pollenske, Jan Delfs, Alexander Kolb, Zimmermann Patrick</i>	

### **COMPUTATIONAL AEROACOUSTICS II: JET / TU RESOLVING COMPUTATION**

A non-Lighthill Hybrid Method for Low-Frequency Sound Radiation in Subsonic Jet.....	969
<i>Yihong Fang</i>	

Comprehensive Acoustic Modelling of the Installation Effects of a Subsonic Jet Beneath a Flat Plate .....	979
<i>Étienne Spieser, César Legendre, Christophe Bailly</i>	
Aeroacoustic Investigation of Automotive Engine Cooling Modules Using the Lattice-Boltzmann Method .....	992
<i>Safouane Tebib, Athreya Ballapur Jayasimha, Stephane Moreau, Bruno Desmory, Manuel Henner, Adrien Mann, Charles Luzzato</i>	
Two Computational Studies of a Flatback Airfoil Using Non-Zonal and Embedded Scale-Resolving Turbulence Modelling Approaches .....	1003
<i>Marian Fuchs, Pascal Weihing, Timo Kuehn, Michaela Herr, Alexandre Suryadi, Charles Mockett, Henry Knobbe-Eschen, Felix Kramer, Thilo Knacke</i>	
Wall-Resolved LES of a Linear Compressor Cascade with Moving Endwall .....	1032
<i>Lorenzo Becherucci, Regis Koch, Stéphane Moreau</i>	
Lattice-Boltzmann Calculations of Rotor Aeroacoustics in Transitional Boundary Layer Regime .....	1048
<i>Damiano Casalino, Gianluca Romani, Raoyang Zhang, Hudong Chen</i>	

### **JET AEROACOUSTICS II: EXPERIMENTAL / SUPERSONIC**

Noise from Low-Bypass Confluent Nozzles: Mixing Length, Extraction Ratio, and Core Temperature Effects .....	1064
<i>David N. Ramsey, Aharon Z. Karon, Robert Funk, Krishan K. Ahuja</i>	
Flow-Acoustic Interactions in Low-Bypass Confluent Nozzles: Unheated Flow, Unity Extraction Ratio .....	1082
<i>David N. Ramsey, Reagan Mayo, Aharon Z. Karon, Robert Funk, Krishan K. Ahuja</i>	
Jet-Noise Investigations in a Small Scale Facility .....	1100
<i>Henri A. Siller, Wolfram Hage, Christian Jente, Alessandro Bassetti</i>	
Mach Number Dependence of Tone Generation in Impinging Round Jets .....	1110
<i>Mathieu Varé, Christophe Bogey</i>	
Experimental Investigation of the Supersonic Jet Noise from Aircraft Engines Using Acoustic Imaging .....	1124
<i>Nicolas Aujogue, Jérôme Huber, Emmanuel Julliard, Jérôme Antoni, Quentin Leclère</i>	
Experimental Study of Underexpanded Screeching Jet and Its Interaction with Upstream Reflector .....	1141
<i>David Morata, Kyle A. Miller, Dimitri Papamoschou</i>	

### **JET AEROACOUSTICS III: INSTALLED JET NOISE**

Engine Integration of High Aspect Ratio Rectangular Jet Nozzle (unheated Subsonic Flow) .....	1162
<i>Christian Jente</i>	
Effects of the Upstream-Propagating Guided Jet Waves on the Mixing Layers of Mach Number 0.9 Free Jets .....	1179
<i>Christophe Bogey</i>	
Real-Time Jet-Plate Interaction Noise Estimation Based on Near-Field Sensor Readings .....	1193
<i>Matteo Mancinelli, Peter Jordan, Anton Lebedev, Redouane Kari</i>	
Exploring Flexible Trailing Edge Properties to Reduce Installed Jet Noise in a Jet-Plate Configuration .....	1202
<i>Matteo Mancinelli, Peter Jordan, Anton Lebedev, Redouane Kari</i>	
Installed Jet Noise Reduction Using a Zigzag Vortex Generator .....	1211
<i>Anderson Proenca, Jack Lawrence</i>	

Jet-Installation Noise Reduction with Permeable Flaps at In-Flight Conditions .....	1224
<i>Leandro F. Rego, Riccardo Zamponi, Daniele Ragni, Francesco Avallone, Damiano Casalino, Marc Cruellas Bordes</i>	

## **PROPELLER, ROTORCRAFT AND V/STOL NOISE II: INSTALLED PROPELLER**

Towards Numerical Simulations of Noise Installation Effects for Pusher Propeller Configurations .....	1239
<i>Simone Mancini, Carlo Aquilini, Alexander Kolb, Alessandro Di Marco, Roberto Camussi, Nicola Paletta</i>	
Wavelet-Based Decomposition of the Tonal-Broadband Components of Propeller Noise .....	1259
<i>Stefano Meloni, Elisa De Paola, Edoardo Grande, Daniele Ragni, Luana Georgiana Stoica, Alessandro Di Marco, Roberto Camussi</i>	
Analytical Investigation of Propeller-Wing Interaction Noise .....	1269
<i>Deepak C. Akiwate, Anthony Parry, Phillip Joseph, Chaitanya C. Paruchuri</i>	
Numerical Characterisation of Noise Generated by a Distributed-Propulsion Propeller.....	1283
<i>Sidharath Sharma, Stephen Ambrose, Richard Jefferson-Loveday</i>	
Source Noise Mechanisms of Co-Rotating and Counter Rotating Rotors in Hover for Air Mobility Applications.....	1298
<i>Peter N. Sorensen, Daniel R. Cuppoletti</i>	
Unsteady Thrust Prediction of a Ducted Propeller in a Strut Wake .....	1310
<i>Yendrew Yauwenas, Con J. Doolan, Paul Croaker, Richard Howell, Paul Dylejko</i>	

## **TURBOMACHINERY AND CORE NOISE I: TURBOMACHINERY BROADBAND NOISE**

On the Tip Leakage Noise Generating Mechanisms of Single-Fixed Aerofoil .....	1328
<i>Ivan Saraceno, Sergi Palleja-Cabre, Prateek Jaiswal, Chaitanya C. Paruchuri, Bharath Ganapathisubramani</i>	
Direct Noise Predictions of Fan Broadband Noise Using LES and Analytical Models .....	1345
<i>Jean Al Am, Vincent Clair, Alexis Giauque, Jérôme Boudet, Fernando Gea-Aguilera</i>	
Fan Wake Prediction Via Machine Learning .....	1367
<i>Zijie Huang, Hao Shen, Kelly Kung, Luis Carvalho, Austin Thai, Berkely Watchmann, Tyler Ramsarran, Julian Winkler, Aaron Reimann, Michael Joly, Kin Gwn Lore, Jeff Mendoza, Sheryl M. Grace</i>	
Fan-Stage Broadband Interaction Noise Trends .....	1391
<i>Nuo Li, Berkely Watchmann, Tyler Ramsarran, Julian Winkler, Aaron Reimann, Dmytro Voytovych, Jeff Mendoza, Sheryl M. Grace</i>	
Experimental Research on New Acoustic Liners Combined with Fine-Perforated-Film .....	1407
<i>Yo Murata, Tatsuya Ishii, Shunji Enomoto, Hideshi Oinuma, Kenichiro Nagai, Junichi Oki, Hirofumi Daiguji</i>	
An Extension of the Acoustics Evaluation of the NASA SDT Turbofan with Lattice-Boltzmann Methods .....	1423
<i>Davide Cerizza, Damiano Casalino, Ignacio Gonzalez-Martino</i>	

## **ACOUSTIC/FLUID DYNAMICS INTERACTIONS III: MISC**

Linear Theory and Experiments for Laminar Bias Flow Impedance: Orifice Shape Effect.....	1441
<i>Lionel Hirschberg, Juan G. Guzman Inigo, Alessia Aulitto, Javier Sierra, David Fabre, Aimee Morgans, A. Hirschberg</i>	
Influence of Chamfers on Broadband Orifice Noise in a Water-Pipe Flow .....	1464
<i>Shravan Kottapalli, A. Hirschberg, Nicholas Waterson, David M. J. Smeulders, Gunes Nakiboglu</i>	



### VOLUME 3

Effect of Coating Thickness on Aerodynamic Noise Reduction by Porous-Coated Cylinders .....	1489
<i>Sparsh Sharma, Thomas F. Geyer, Elias Arcondoulis</i>	
Numerical Investigation of Aerodynamic Noise Generation by Porous-Coated Staggered Cylinders.....	1499
<i>Sparsh Sharma, Thomas F. Geyer</i>	

#### **AIRFRAME/HIGH-LIFT NOISE III: TRAILING EDGE NOISE**

Application of Wavelet Analysis to Trailing-Edge Noise .....	1511
<i>Dong Hun Kang, Seongkyu Lee</i>	
A Framework for Multi-Fidelity Wind-Turbine Aeroacoustic Simulations .....	1532
<i>Damiano Casalino, Wouter C. Van Der Velden, Gianluca Romani</i>	
Trailing Edge Noise Reduction Using Velvety Serrations .....	1553
<i>Peng Zhou, Xiangtian Li, Yuhong Li, Hanbo Jiang, Jingwen Guo, Siyang Zhong, Xin Zhang, David England</i>	
Flow-Field and Noise Characterization of a Controlled-Diffusion Airfoil.....	1565
<i>Sidharth Krishnan Kalyani, Stéphane Moreau, Daniele Ragni</i>	

#### **COMPUTATIONAL AEROACOUSTICS III: BOUNDARY CONDITIONS / MISC**

Revisiting the Boundary Conditions for Unsteady Flows Adjacent to Rigid and Dynamic Solid Walls.....	1576
<i>Blaine Vollmer, Sandeep R. Murthy, Daniel J. Bodony</i>	
Aeroacoustic Wave Equation Based on Pierce's Operator Applied to the Sound Generated by a Mixing Layer .....	1585
<i>Stefan Schoder, Manfred Kaltenbacher, Étienne Spieser, Hugo Vincent, Christophe Bogey, Christophe Bailly</i>	
Impedance Boundary Condition in Frequency Domain DG Code for Modelling Liner Effects in Complicated Intake Ducts .....	1598
<i>Stanislav Proskurov, Michael Moessner, Jan Delfs</i>	
On the Implementation and Further Validation of a Time Domain Boundary Element Method Broadband Impedance Boundary Condition .....	1617
<i>Fang Q. Hu, Douglas M. Nark</i>	

#### **DUCT ACOUSTICS II: ACOUSTIC LINERS**

Using Slow Sound to Achieve Unidirectional Acoustic Propagation.....	1634
<i>Vassos Achilleos, Yves Auregan, Vincent Pagneux</i>	
Experimental and Numerical Assessment of Novel Acoustic Liners for Aero-Engine Applications.....	1639
<i>Suresh Palani, Paul Murray, Alan McAlpine, Kylie Knepper, Christoph Richter</i>	
Optimal Selection of Snapshots in the Reduced Basis Method for Linearized Aeroacoustic with Impedance Boundary Conditions .....	1658
<i>Remi Roncen, Philip Edel, Christophe Peyret</i>	
An Acoustic Liner with a Multilayered Active Facesheet.....	1671
<i>Chelsea Dodge, Brian M. Howerton, Michael G. Jones</i>	

**INTERIOR NOISE/STRUCTURAL ACOUSTICS AND METAMATERIALS I:  
METAMATERIALS**

- The Impact of Additive Manufacturing on the Acoustic Performance of Novel Porous Materials..... 1681  
*Agnieszka H. Ciochon, John Kennedy, Raphael Leiba, Lara Flanagan*
- Homogenisation of Perforated Plates ..... 1691  
*Shiza Naqvi, Lorna J. Ayton*
- Reflected Wave Manipulation by Acoustic Metasurface in Shear Flows..... 1709  
*Renhao Qu, Jingwen Guo, Yi Fang, Wei Yi, Siyang Zhong, David England, Xin Zhang*

**JET AEROACOUSTICS IV: INSTALLED JET NOISE**

- Jet Installation Noise Modelling Informed by GPU LES ..... 1719  
*Hussain Ali Abid, Annabel P. Markesteijn, Vasily Gryazev, Sergey A. Karabasov, Hasan Kamliya Jawahar, Mahdi Azarpeyvand*
- On Investigating the Hydrodynamic Field for Jets with and Without Installation Effects ..... 1737  
*Hasan Kamliya Jawahar, Mahdi Azarpeyvand*
- Scarfed Nozzle for Jet Installation Noise Reduction ..... 1750  
*Hasan Kamliya Jawahar, Mahdi Azarpeyvand*
- LES Study of Noise and Its Sources of Closely Installed Jets..... 1763  
*Zhong-Nan Wang, Anderson Proenca, Jack Lawrence, Paul G. Tucker*

**JET AEROACOUSTICS V: JET NOISE MODELING**

- Acoustic Optimization of Supersonic Multi-Stream Nozzles..... 1775  
*Dimitri Papamoschou*
- A Deep Neural Networks Based Prediction Method for the Turbulence Mixing Jet Noise ..... 1817  
*Baohong Bai, Dakai Lin, Xiaodong Li*
- Predictions of the Azimuthal Variation of the Noise from Chevron Jets Using an Acoustic Analogy ..... 1832  
*Stewart J. Leib, James E. Bridges*
- The Effects of Internal Nozzle Blockage in a Single Stream Jet on Far-Field Jet Mixing Noise..... 1857  
*Matthew Wellman, Anderson Proenca, Jack Lawrence, Rod Self*

**PROPELLER, ROTORCRAFT AND V/STOL NOISE III: HELICOPTER NOISE**

- Time Variation of Helicopter Rotor Broadband Noise..... 1879  
*Ze Feng Gan, Kenneth S. Brentner, Eric Greenwood*
- Large-Eddy Simulation and Broadband Acoustic Prediction of an Helicopter Rotor in Hover ..... 1897  
*Regis Koch, Marlène Sanjosé, Stéphane Moreau*
- Extensions and Applications of Lyu and Ayton's Serrated Trailing-Edge Noise Model to Rotorcraft ..... 1914  
*Sicheng (Kevin) Li, Seongkyu Lee*

**AIRFRAME/HIGH-LIFT NOISE IV: MISC & ACOUSTIC/FLUID DYNAMIC  
INTERACTION IV: ACTIVE CONTROL**

- Modeling Aeolian Tones by Global Instability Modes ..... 1934  
*Robin Prinja, Peter Jordan, Florent Margnat*
- Towards Wall-Modeled LES with Lattice Boltzmann Method for Aeroacoustics: Application and Understanding ..... 1944  
*Malav Soni, Roland Ewert, Jan Delfs, Kannan Masilamani*

Identifying Spanwise Source Distribution of Tonal Trailing-Edge Noise with Microphone Array Techniques and TR-PIV .....	1966
<i>Yoann Beausse, Florent Margnat, Vincent Valeau, Laurent Brizzi</i>	
Computational Study of Aerofoil's Self-Noise When Subject to Leading Edge Jet Blowing Flow Control.....	1977
<i>Yang Chen, Eldad J. Avital, Srimanta Santra</i>	
Application of Local Blowing to a Structured Porous-Coated Cylinder for Flow and Noise Control .....	1989
<i>Reza Maryami, Elias Arcondoulis, Chenghao Yang, Máté Szoke , Zilun Xiang, Jing Guo, Renke Wei, Yu Liu</i>	

### **COMPUTATIONAL AEROACOUSTICS IV: HIGH ORDER SCHEMES / INTEGRAL METHODS**

Improvement of High-Order Finite-Difference Schemes at Solid Walls for the Linearized Euler Equations.....	2009
<i>Marian G. Izsak, Hans-Jakob Kaltenbach</i>	
Effect of a 2D Hill on the Propagation of Wind Turbine Noise .....	2028
<i>Jules Colas, Ariane Emmanuelli, Didier Dragna, Richard Stevens, Philippe Blanc-Benon</i>	
Wall-Resolved Large-Eddy Simulations of Inclined Deep Cavity Flows in Acoustic Resonance.....	2042
<i>You-Wei Ho, Jae Wook Kim</i>	
Time-Domain Simulations of the Noise Propagation in Porous Media and Its Surroundings Using the Discontinuous Galerkin Method.....	2055
<i>Thomas Deconinck, Benjamin De Brye, Xavier Robin, Benoit Meys</i>	
Lessons Learned on the Use of Data Surfaces for Ffowcs Williams-Hawkings Calculations: Airframe Noise Applications.....	2067
<i>Andre F. Ribeiro, Mehdi R. Khorrami, Ryan Ferris, Benedikt Koenig, Patricio A. Ravetta</i>	

### **DUCT ACOUSTICS III: ACOUSTIC LINERS**

Direct Measurements of Aerodynamic Drag of Acoustic Liners .....	2095
<i>Mingyang Zheng, Chao Chen, Xiaodong Li</i>	
Nonlinear Three-Port Measurements for the Determination of High-Level Excitation Effects on the Acoustic Properties of Perforates .....	2110
<i>Shail A. Shah, Hans Boden, Susann Boij</i>	
Development and Validation of a Single Degree of Freedom Perforate Impedance Model Under High SPL and Grazing Flow .....	2117
<i>Paul Murray, Massimiliano Di Giulio</i>	
Reduction of Tip-Leakage Noise by Using Over-Tip Liners .....	2135
<i>Sergi Palleja-Cabre, Ivan Saraceno, Suresh Palani, Chaitanya C. Paruchuri</i>	
Optimisation of Non-Locally Reacting Liners for Improved Duct Attenuation.....	2148
<i>Nicola Gravagnone, Paul Murray, Massimiliano Di Giulio</i>	

### **JET AEROACOUSTICS VI: JET NOISE MODELING**

Aeroacoustic Analysis of a Subsonic Jet Using the Discontinuous Galerkin Method.....	2171
<i>Daniel Lindblad, Spencer Sherwin, Chris Cantwell, Jack Lawrence, Anderson Proenca, Margarida Moragues Ginard</i>	
An Empirical Model of Noise Sources in Subsonic Jets, Formulated in a Linear Resolvent Framework.....	2192
<i>Ugur Karban, Benjamin Bugeat, Anurag Agarwal, Lutz Lesshafft, Peter Jordan</i>	

A Multi-Objective Optimization of a Wave-Packet Model Using Near-Field Subsonic Jet Data.....	2206
<i>Giorgio Palma, Stefano Meloni, Roberto Camussi, Umberto Iemma, Christophe Bogey</i>	

#### **VOLUME 4**

Flow and Noise Predictions of the Isolated Subsonic Jets from the Doak Laboratory Experiment .....	2219
<i>Vasily Gryazev, Annabel P. Markesteijn, Sergey A. Karabasov, Jack Lawrence, Anderson Proenca</i>	

#### **PROPELLER, ROTORCRAFT AND V/STOL NOISE IV: INSTALLED PROPELLER**

Investigation into the Mechanisms of Propeller-Wing Interaction Noise.....	2232
<i>Chaitanya C. Paruchuri, Deepak C. Akiwate, Sergi Palleja-Cabre, Amin Karimian, Phillip Joseph, Anthony Parry</i>	
Aeroacoustic Interactions of a Trailing Edge Mounted Propeller and Flat Plate.....	2249
<i>Liam P. Hanson, Kabilan Baskaran, Bin Zang, Mahdi Azarpeyvand</i>	
On the Effect of Inflow Distortions of Propeller Noise.....	2265
<i>Federico Petricelli, Sergi Palleja-Cabre, Chaitanya C. Paruchuri, Phillip Joseph, Amin Karimian, Stefano Meloni, Roberto Camussi</i>	
Computational Aeroacoustic Analysis of a Wing-Tip Mounted Propeller and High-Lift Device.....	2280
<i>Myles Morelli, Alberto Guardone, Beckett Yx Zhou</i>	
Laminar Separation Bubble Noise in a Propeller Operating at Low-Reynolds Numbers .....	2298
<i>Edoardo Grande, Daniele Ragni, Francesco Avallone, Damiano Casalino</i>	

#### **TURBOMACHINERY AND CORE NOISE II: FAN TONE NOISE**

Inlet Radiated Noise Predictions for the NASA Source Diagnostic Test Fan Using Physics-Based Simulations.....	2317
<i>Alexander A. Svetgoff, David Stephens, Edmane Envia</i>	
Prediction of Swirl Effects on Fan-OGV Interaction Tones.....	2330
<i>Oluwaseun Adetifa, Alan McAlpine, Howoong Namgoong</i>	
Acoustic Assessment of BLI Effects on Airbus Nautilus Engine Integration Concept - Part I: Noise Generation .....	2345
<i>Majd Daroukh, Cyril Polacsek, Marco Carini</i>	
Measurements of Fan Inflow Distortion Noise Generation in a Low Speed Fan - Part I: Aerodynamic Analyses.....	2360
<i>Luciano Caldas, Lukas Klähn, Robert Meyer, Ulf Tapken</i>	
Measurements of Fan Inflow Distortion Noise Generation in a Low Speed Fan - Part II: Acoustic Analyses .....	2375
<i>Lukas Klähn, Luciano Caldas, Ulf Tapken</i>	

#### **URBAN AIR MOBILITY/UNMANNED AIR VEHICLE AND ELECTRIC AIRCRAFT GENERATION II: MISC**

On Rotor Aeroacoustic Optimization for Urban Air Mobility .....	2391
<i>Olivia L. Pinto, Gabriele Bossotto, Frederico Afonso, Fernando Lau</i>	
Time-Resolved Flow Field and Acoustic Measurements of a Ducted and Unducted Rotor .....	2405
<i>Daniel R. Cuppoletti, Troy Riley</i>	
Aeroacoustic Investigation of an Urban-Air-Mobility Ducted Fan .....	2417
<i>Stephane Moreau, Yann Pasco, Gyuzel Yakhina</i>	

## **HYBRID ANECHOIC WIND TUNNEL WORKSHOP I**

Kevlar Wall Displacement Method for Transient Flows in Wind Tunnels .....	2425
<i>Joseph P. Marcheggiani, Stewart A. Glegg</i>	
Design, Construction, and Characterization of the University of Toronto Institute for Aerospace Studies Hybrid Anechoic Wind Tunnel.....	2443
<i>Raymond Alsaif, Nadim Arafa, Marinus Okoronkwo, Zhe Lu, Satoshi Baba, Neil Farvolden, Philippe Lavoie, Alis Ekmekci</i>	
Verification of Acoustic Wave Propagation Characteristics Using Laser Monopole Sound Source.....	2461
<i>Sayumi Kaneko, Yuta Ozawa, Taku Nonomura, Keisuke Asai, Hiroki Ura</i>	

## **AIRFRAME/HIGH-LIFT NOISE V: HIGH LIFT SYSTEMS**

Effect of Slat Tracks and Inboard Slat Tip Geometry on Airframe Noise.....	2471
<i>Andre F. Ribeiro, Mitsuhiro Murayama, Yasushi Ito, Kazuomi Yamamoto, Tohru Hirai</i>	
An Experimental Investigation of the 30P30N Multi-Element High-Lift Airfoil with Porous Slat Cusp.....	2483
<i>Renke Wei, Yu Liu, Mengyu Yang, Yannian Yang, Xiaodong Li, Elias Arcondoulis</i>	
Slat Noise Reduction Based on Turbulence Attenuation Downstream of Shear-Layer Reattachment.....	2499
<i>Kazuomi Yamamoto, Mitsuhiro Murayama, Kazuhide Isotani, Yosuke Ueno, Kensuke Hayashi, Tohru Hirai</i>	
Noise Reduction Design for High Lift Devices of Regional Jet.....	2514
<i>Mitsuhiro Murayama, Ryotaro Sakai, Yasushi Ito, Kohzai Masataka, Yuzuru Yokokawa, Hiroki Ura, Kazuomi Yamamoto, Takehisa Takaishi, Kensuke Hayashi, Yosuke Ueno, Kazuhide Isotani</i>	

## **ADVANCED TESTING TECHNIQUES III: MISC & ACOUSTIC/FLUID DYNAMIC INTERACTION V: CAVITY**

Resonator-Based Pressure Sensor for Wall Pressure.....	2536
<i>Shishir Damani, Erik Braaten, Máté Szoke, William N. Alexander, William J. Devenport, N. Agastya Balantrapu, Benjamin P. Pearce, Timothy A. Starkey, Alastair P. Hibbins, J. Roy Sambles</i>	
Interferometric Rayleigh Scattering for Flow Analysis : Fabry-Pérot Interferogram Analysis.....	2553
<i>Igor Kurek, Pierre Lecomte, Thomas Castelain, Emmanuel Jondeau, Christophe Bailly</i>	
Effect of Flow-Induced Surface Vibration on Deep Cavity Aeroacoustics.....	2571
<i>Muhammad Rehan Naseer, Irsalan Arif, Garret C. Y. Lam, Randolph C. Leung</i>	
Experimental Investigation of Supersonic Cavity Flow Using Fast Free-Based Porphyrin Anodized-Aluminum Pressure-Sensitive Paint .....	2583
<i>Yoshinori Oka, Takayuki Nagata, Yuta Ozawa, Taku Nonomura, Keisuke Asai</i>	

## **COMPUTATIONAL AEROACOUSTICS V: MISC**

An Efficient Hybrid Computational Aeroacoustic Process: Validation and Applications for Vehicle Development .....	2591
<i>Carlo Alberto Perugini, Gilberto Arzilli, Antonio Torluccio, Reinhard Blumrich, Andreas Wagner</i>	
Fast Non-Empiric Tonal Noise Prediction Model for Installed Propulsors.....	2603
<i>Andrea Franco, Michael Moessner, Roland Ewert, Jan Delfs</i>	

A Computational Aeroacoustics Approach to Wind Noise Over Facades .....	2619
<i>Ana Luisa P. Maldonado, Jon Sims, Ben Cox, Braulio G. Pimenta, Roberto F. Bobenrieth Miserda, Joy Stevens, Tanisha Mascarenhas</i>	
Full-Scale Application of Porous Leading-Edge Treatments in a Fan Stage for Mitigating Rotor- Stator Interaction Noise .....	2641
<i>Christopher Teruna, Leandro F. Rego, Damiano Casalino, Daniele Ragni, Francesco Avallone</i>	

#### **DUCT ACOUSTICS IV: ACOUSTIC LINERS**

Impact of the Engine Fan Source and Wall Boundary Layer on Inlet Liner Design .....	2659
<i>Giuseppe Dilillo, Paul Murray, Massimiliano Di Giulio</i>	
Improved Aero Engine Inlet Attenuation from Novel Broadband Liners .....	2678
<i>Giuseppe Dilillo, Paul Murray, Massimiliano Di Giulio</i>	
Refinement of Impedance Models for Single and Two Degree of Freedom Linings Based on Grazing Flow Duct Predictions and Measurements .....	2693
<i>Walter Eversman</i>	
Lattice-Boltzmann Numerical Investigation of a Realistic Multi-Cavity Acoustic Liner with Grazing Flow Interactions .....	2723
<i>Lucas M. Pereira, Lucas A. Bonomo, Andrey R. Da Silva, Julio A. Cordioli, Francesco Avallone</i>	

#### **JET AEROACOUSTICS VII: NOISE MITIGATION**

The Effects of Active Control on Near-Field Pressure Fluctuations in Supersonic Rectangular Twin Jets.....	2742
<i>Ryan P. Leahy, Ata Ghassemi Isfahani, Nathan J. Webb, Mo Samimy</i>	
Resolvent Analysis of a Biconical Tactical Jet Nozzle .....	2758
<i>Sandeep R. Murthy, Daniel J. Bodony</i>	
Comparison of the Thrust-Based Noise Reduction Performance Between Micro-Vortex Generators and Chevrons .....	2777
<i>Junhui Liu, Yuyu Khine, Mohammad Saleem, Omar Lopez Rodriguez, Ephraim Gutmark</i>	

#### **PROPELLER, ROTORCRAFT AND V/STOL NOISE V: INSTALLED PROPELLER**

Influence of Trim Control Strategy on Noise Radiated by Multi-Rotor Systems.....	2809
<i>Caterina Poggi, Giovanni Bernardini, Massimo Gennaretti</i>	
Aeroacoustic Radiation of a Low Reynolds Number Two-Bladed Rotor in Interaction with a Cylindrical Beam.....	2820
<i>Romain Gojon, Nicolas Doué, H�el�ene Parisot-Dupuis, Bertrand Mellot, Thierry Jardin</i>	
Experimental Characterisation of Small-Scaled Propeller-Wing Interaction Noise .....	2832
<i>Nur Syafiqah Jamaluddin, Alper Celik, Kabilan Baskaran, Djamel Rezgui, Mahdi Azarpeyvand</i>	
Simplified Models for Propeller Potential Interaction Noise .....	2842
<i>Erica Gallo, Alessandro Zarri, Georgios Bampanis, Maria Chiara Fasinella, Christophe F. Schram</i>	

#### **TURBOMACHINERY AND CORE NOISE III: COMBUSTION NOISE / FAN TONES**

CAA Prediction of Turbofan Engine Combustion Noise Directivity .....	2854
<i>Kenji Homma, Aaron Reimann, Julian Winkler, Jeff Mendoza</i>	

Impact of Future Low-Emissions Combustor Technology on Acoustic Scaling Laws .....	2864
<i>Duane C. McCormick, Lennart S. Hultgren, Jeffrey M. Mendoza</i>	
A Magnus-Expansion-Based Model for the Sound Generated by Non-Plane Entropy Perturbations Passing Through Nozzles .....	2881
<i>Saikumar Reddy Yeddula, Juan G. Guzman Inigo, Aimee Morgans, Dong Yang</i>	
Effect of Steady and Fluctuating Heat Transfer on Acoustic and Entropy Transfer Functions of a Nozzle.....	2890
<i>Saikumar Reddy Yeddula, Juan G. Guzman Inigo, Aimee Morgans</i>	

## **HYBRID ANECHOIC WIND TUNNEL WORKSHOP II**

Analytical Shear Layer Corrections for Acoustic Transmission in Kevlar Walled Wind Tunnels and Their Experimental Validation .....	2902
<i>Andreas Fischer, Oliver Lylloff, Christian Bak, Efren Fernandez Grande</i>	
Steady and Unsteady Loading and Radiated Far-Field Sound of Three NACA Series Airfoils in a Uniform Flow .....	2925
<i>John A. Branch, Bin Zang, Mahdi Azarpeyvand</i>	
Benchmarking of the NACA 633-018 Trailing-Edge Noise in a Broad Reynolds Number Range as Part of the IEA Task 39 .....	2942
<i>Guillem Verges I Plaza, Andreas Fischer, Oliver Lylloff, Christian Bak, Anders S. Olsen, Franck Bertagnolio, Salil Luesutthiviboon, Lourenco Tercio Lima Pereira, Daniele Ragni, Francesco Avallone, Alexandre Suryadi, Michaela Herr</i>	

## **VOLUME 5**

### **ACOUSTIC/FLUID DYNAMICS INTERACTIONS VI: MISC**

An Experimental Study of Aerodynamic Noise of the Wavy and Vibrissa Shaped Cylinders.....	2966
<i>Xiao Liu, Guanjiang Chen, Bin Zang, Mahdi Azarpeyvand</i>	
An Experimental Study of Rod-Airfoil Interaction Noise Mitigation with Leading-Edge Serrations .....	2981
<i>Xiao Liu, Bin Zang, Mahdi Azarpeyvand</i>	
Effects of Flat-Plate Extension of Trailing Edge on Noise Generation for NACA 0012 Airfoil at Moderate Reynolds Numbers Using Direct Noise Simulations .....	2997
<i>Ruixian Ma, Jiangbo Huang, Zhansheng Liu, Mingfu Liao</i>	
Investigation of Curle's Dipolar Sources on a Porous Airfoil Interacting with Incoming Turbulence .....	3009
<i>Riccardo Zamponi, Sutharsan Satcunanathan, Stephane Moreau, Matthias Meinke, Wolfgang Schroeder, Christophe F. Schram</i>	

### **AIRFRAME/HIGH-LIFT NOISE VI: LEADING EDGE NOISE**

Effects of Porous Gap Fillers on 30P30N Leading-Edge Slat Noise. Part I: Surface Pressure and Acoustics .....	3031
<i>Yang Zhang, Louis N. Cattafesta, Meelan M. Choudhari, Kyle A. Pascioni, Mehdi R. Khorrami, David P. Lockard, Travis L. Turner</i>	
Effects of Porous Gap Fillers on Leading-Edge Slat Noise of 30P30N. Part II: PIV Measurements.....	3044
<i>Yang Zhang, Louis N. Cattafesta, Meelan M. Choudhari, Kyle A. Pascioni, Mehdi R. Khorrami, David P. Lockard, Travis L. Turner</i>	
On the Alleviation of Background Noise for the High-Lift Common Research Model Aeroacoustic Test.....	3055
<i>Florence V. Hutcheson, David P. Lockard, Daniel Stead</i>	

Development of Slat Gap and Slat Cove Filler Treatments for Noise Reduction Assessment on the High Lift Common Research Model in the NASA LaRC 14x22 .....	3071
<i>Travis L. Turner, John W. Mulvaney, David P. Lockard, Albert R. Allen, Scott E. Brynildsen</i>	

### **COMPUTATIONAL AEROACOUSTICS VI: MISC**

A Model-Free Entropic Lattice Boltzmann Method for Cavity Aeroacoustics at Transonic Speeds .....	3109
<i>Maruthi N. Hanumantharayappa, Chakradhar Thantapanally, Viswanathan Kumaran, Santosh Ansumali</i>	
Effect of a Small Hump on Wall-Pressure Fluctuations in a Compressible Turbulent Channel Flow .....	3118
<i>Yi Liu, Kan Wang, Meng Wang</i>	
Acoustic Assessment of BLI Effects on Airbus Nautilus Engine Integration Concept - Part II: Noise Radiation .....	3126
<i>Mathieu Lorteau, Thomas Le Garrec, Majd Daroukh, Cyril Polacsek</i>	

### **COMMUNITY NOISE, SONIC BOOM AND METRICS I: PROPULSION AIRFRAME AEROACOUSTICS AND AIRCRAFT SYSTEM NOISE FLIGHT TEST**

Propulsion Airframe Aeroacoustics and Aircraft System Noise Flight Research Test: NASA Overview .....	3140
<i>Russell H. Thomas, Yueping Guo, Ian Clark, Jason June</i>	
Propulsion Airframe Aeroacoustics and Aircraft System Noise Flight Test on the Boeing 2020 ecoDemonstrator Program.....	3163
<i>Michael Czech, Russell H. Thomas, Yueping Guo, Jason June, Ian Clark, Christopher Shoemaker</i>	
Assessment of Next Generation Airframe System Noise Prediction Methods with PAA and ASN Flight Test Data .....	3177
<i>Yueping Guo, Russell H. Thomas</i>	
Fan Acoustic Flight Effects on the PAA & ASN Flight Test .....	3196
<i>Ian Clark, Russell H. Thomas, Yueping Guo</i>	

### **DUCT ACOUSTICS V: ACOUSTIC LINERS / IMPEDANCE EDUCATION**

Influence of the Shape of a Short Circular Hole with Bias Flow on Its Acoustic Response .....	3211
<i>Juan G. Guzman Inigo, Aimee Morgans</i>	
A Comparison of In-Situ and Impedance Education Experimental Techniques for Acoustic Liners with Grazing Flow and High SPL .....	3221
<i>Lucas A. Bonomo, Nicolas T. Quintino, Andre Spillere, Julio A. Cordioli, Paul B. Murray</i>	
Observations on Impedance Education in a Grazing Flow Duct Facility.....	3243
<i>Walter Eversman</i>	

### **JET AEROACOUSTICS VIII: JET NOISE MODELING**

Low-Order Modelling of NASA Three-Stream Jets Using Acoustic Analogy Informed by Large Eddy Simulations .....	3274
<i>Vasily Gryazev, Annabel P. Markesteijn, Sergey A. Karabasov</i>	
GPU-Accelerated Large-Eddy Simulations of Supersonic Jets from Twin Rectangular Nozzle .....	3288
<i>Guillaume A. Brès, Sanjeeb T. Bose, Christopher B. Ivey, Michael Emory, Frank Ham</i>	
Wall-Modeled Large-Eddy Simulation of Jet Noise in Flight Conditions .....	3303
<i>Gerrit-Daniel Stich, Aditya S. Ghate, Jeffrey A. Housman, Cetin C. Kiris</i>	



Numerical Simulation of the Noise Radiated by Free Hot Supersonic Twin Jets .....	3340
<i>Julien N. Troyes, François Vuillot</i>	

### **PROPELLER, ROTORCRAFT AND V/STOL NOISE VI: INSTALLED PROPELLER**

Propeller Tip Geometry Effect on the Acoustic Signature, Evaluated by a Wavelet-Based Beamforming.....	3359
<i>Edo Barlell, Oksana Stalnov</i>	
Numerical Investigation of the Unsteady Aeroacoustic Field of a One-Bladed Cyclorotor.....	3371
<i>Felipe S. Reckziegel, Roberto F. Bobenrieth Miserda, Adriano T. Fabro</i>	
Numerical Parametric Investigation of Aeroacoustic Installation Effects in a Distributed Electric Propulsion System.....	3385
<i>Antoine Hajczak, Julien Christophe, Cansev Y. Kucukosman, Christophe F. Schram</i>	
A Mid-To-High Fidelity Aerodynamic Noise Simulation Framework for Installed Propeller Configurations.....	3404
<i>Seyed Mohsen Alavi Moghadam, Jürgen Dierke, Michael Moessner, Roland Ewert, Jan Delfs</i>	

### **ACOUSTIC/FLUID DYNAMICS INTERACTIONS VII: CAVITY NOISE**

Exploring Angle-Of-Attack Effects in the Aero-Acoustic Response of a Weapons Bay at Transonic and Supersonic Mach Number .....	3436
<i>David Bacci, Alistair J. Saddington</i>	
Numerical Investigation of Nonlinear Sound Attenuation in High Subsonic Duct Flow Using Cylindrical Liners.....	3466
<i>Emerson A. Camargo, Roberto F. Bobenrieth Miserda, Braulio G. Pimenta, Adriano T. Fabro</i>	
On the Rossiter-Heller Frequency of Resonant Cavities .....	3479
<i>Damiano Casalino, Ignacio Gonzalez-Martino, Simone Mancini</i>	
Effects of Grazing Flow Profile on the Acoustic and Aerodynamic Responses of a Slit-Resonator.....	3494
<i>Chao Chen, Xiaodong Li</i>	

### **AIRFRAME/HIGH-LIFT NOISE VII: TRAILING EDGE NOISE**

Study of the Development of a Boundary Layer by Measuring the Unsteady Surface Pressure.....	3513
<i>Laura Botero, Fernanda Leticia Dos Santos, Cornelis Venner, Leandro D. De Santana</i>	
Numerical Investigation of Airfoil Self-Noise Control by Trailing-Edge Blowing .....	3534
<i>Chenghao Yang, Yu Liu, Yannian Yang, Elias Arcondoulis, Jing Guo, Reza Maryami</i>	
Analytical Green's Function for the Scattering by a Flat Plate with Serrated Edges at High Frequencies.....	3552
<i>Benshuai Lyu</i>	
Comparison of Finlet Rails and Fences for Trailing Edge Noise Reduction in NACA0012 Aerofoil .....	3568
<i>Suresh Palani, Chaitanya C. Paruchuri, Phillip Joseph, Sergey A. Karabasov, Sergey Utyuzhnikov, William J. Devenport, Stewart A. Glegg</i>	

### **DUCT ACOUSTICS VI: MODE DETECTION / MISC**

High-Frequency Ducted Broadband Acoustic Mode Detection in the Swirling Flows .....	3581
<i>Ram Kumar Venkateswaran, Phillip Joseph, Chaitanya C. Paruchuri</i>	
Modal Axial Group Velocity in Ducted Swirling Flows and Its Application to the Detection of Broadband Acoustic Modes.....	3609
<i>Ram Kumar Venkateswaran, Phillip Joseph, Chaitanya C. Paruchuri</i>	

A Fast Method for Calculating Sensitivities of Acoustic Propagation in Ducts to Small Changes in Geometry and Mean Flow .....	3644
<i>Rhiannon Hawkins, Alexander G. Wilson</i>	

**INTERIOR NOISE/STRUCTURAL ACOUSTICS AND METAMATERIALS II: MISC & CAA VII: MISC**

CFD-Based Study on One- And Two-Point Statistics of Wall Pressure Fluctuations.....	3676
<i>Nan Hu</i>	

**VOLUME 6**

Zonal Hybrid Computational Aeroacoustics Simulation of Trailing Edge Noise Using a High-Order Discontinuous Galerkin Method.....	3689
<i>Daniel Kempf, Claus-Dieter Munz</i>	
Application of Richardson Extrapolation Method to Aerodynamic and Aeroacoustic Characteristics of Low Reynolds Number Vertical Axis Wind Turbines .....	3699
<i>Shubham Shubham, Nigel Wright, Anton Ianakiev</i>	

**JET AEROACOUSTICS IX: SUPERSONIC JETS**

Screech Mode Staging in Rectangular and Elliptical Jets .....	3722
<i>Daniel M. Edgington-Mitchell, Jayson Beekman, Petronio Nogueira</i>	
Estimation of Time-Resolved Three-Dimensional Velocity Fields of Underexpanded Jets in Flapping Screech Mode .....	3736
<i>Chungil Lee, Hiroki Nishikori, Takayuki Nagata, Yuta Ozawa, Taku Nonomura, Keisuke Asai, Tim Colinius</i>	
Under-Expanded Jet Noise Prediction Using Surrogate Models Based on Artificial Neural Networks .....	3759
<i>Francesco Centracchio, Stefano Meloni, Hasan Kamliya Jawahar, Mahdi Azarpeyvand, Roberto Camussi, Umberto Iemma</i>	
Some Perspectives on Jet Noise with Relevance to Launch Vehicle Acoustics.....	3769
<i>Max Kandula</i>	

**JET AEROACOUSTICS X: SUPERSONIC JETS**

Installed F404 Noise Radiation Characteristics from Far-Field Measurements .....	3782
<i>Matt Christian, Logan T. Mathews, Kent L. Gee, Jacob Streeter, Alan Wall, Jon Johnson, Steven Campbell</i>	
Acoustic Source Characterization of an Installed GE F404 Engine Using Near-Field Acoustical Holography .....	3802
<i>Logan T. Mathews, Kent L. Gee, Kevin M. Leete, Alan T. Wall</i>	
Acoustic Emission Due to the Interaction Between Shock and Instability Waves in Supersonic Jet Flow from a Circular Nozzle .....	3818
<i>Binhong Li, Benshuai Lyu</i>	
Contoured Insert Jet Noise Reduction Concept Applied to a Lab-Scale Representation of an Afterburning Supersonic Jet .....	3841
<i>Nathan E. Murray, Charles E. Tinney, Praveen Panickar</i>	

## **PROPELLER, ROTORCRAFT AND V/STOL NOISE VII: MISC**

- Fuselage Scattering Effects in a Hovering Quadcopter Drone ..... 3854  
*Alessandro Zarri, Edoardo Dell'Erba, Christophe F. Schram*
- Turbulence Ingestion of a Non-Axisymmetric Wake by an Open Rotor ..... 3865  
*Jarrold T. Banks, Humza Butt, N. Agastya Balantrapu, William J. Devenport, William N. Alexander, Stewart A. Glegg, Christopher Hickling*
- Experimental Investigation of Aeroacoustic Interaction Between Propeller and Duct ..... 3886  
*Jianwei Sun, Koichi Yonezawa, Hao Liu*

## **URBAN AIR MOBILITY/UNMANNED AIR VEHICLE AND ELECTRIC AIRCRAFT GENERATION III: WHOLE AIRCRAFT NOISE**

- Aeroacoustic Design and Optimisation of an All-Electric Ducted Fan Propulsion Module for Low-Noise Impact..... 3901  
*Fabio Casagrande Hirono, Antonio Torija Martinez, Andrew Elliott, James Taylor, Samuel Grimshaw, Demetrios Lefas*
- Examination of Broadband and Tonal Noise Sources Produced by eVTOL Propellers and Drive Systems..... 3915  
*Jeremiah Whelchel, William N. Alexander, Naina Pisharoti, Stefano Brizzolara, Rohit Murali, Daniel Stilwell*

## **PROPELLER, ROTORCRAFT AND V/STOL NOISE VII: MISC**

- Acoustic Flight Test of the Joby Aviation Advanced Air Mobility Prototype Vehicle ..... 3962  
*Kyle A. Pascioni, Michael E. Watts, Mary Houston, Andrew Lind, James H. Stephenson, Jeremy Bain*

## **URBAN AIR MOBILITY/UNMANNED AIR VEHICLE AND ELECTRIC AIRCRAFT GENERATION III: WHOLE AIRCRAFT NOISE**

- Measurement and Modelling of Noise-Power-Distance Curves of a Fixed-Wing UAV..... 3981  
*Daniel C. Amargianitakis, Rod Self, Anderson Proenca, Cameron Boyd, Oliver Westcott, Mario Ferraro, Mehmet Ali Erbil, Robert Entwistle*

## **ACOUSTIC/FLUID DYNAMICS INTERACTIONS VIII: MISC**

- Three Dimensional Internal and Near-Wall Flow Features of a Structured Porous Coated Cylinder ..... 3998  
*Elias Arcondoulis, Yu Liu, Yannian Yang, Daniele Ragni, Alejandro Rubio Carpio, Francesco Avallone*
- Wing Tip Vortex Formation Noise..... 4014  
*Tingyi Zhang, Danielle Moreau, Con J. Doolan, Charitha De Silva, Jeffrey R. Fischer, Jiawei Tan, Yuchen Ding, Chaoyang Jiang*
- Noise Reduction Potential of Flow Permeable Materials for Jet-Flap Interaction Noise ..... 4036  
*Christian Jente, Johannes Schmidt, Jan Delfs, Karl-Stéphane Rossignol, Michael Pott-Pollenske, Henri A. Siller*
- The Effect of Pressure Gradient on the Aeroacoustics and Wake Dynamics of a Finite Wall-Mounted Square Cylinder..... 4054  
*Chaoyang Jiang, Charitha De Silva, Con J. Doolan, Danielle Moreau*
- On the Aerodynamic-Noise Sources in a Circular Cylinder Coated with Porous Materials ..... 4068  
*Riccardo Zamponi, Francesco Avallone, Daniele Ragni, Sybrand Van Der Zwaag*

## **AIRFRAME/HIGH-LIFT NOISE VIII: LEADING EDGE NOISE / CYLINDER FLOWS**

Angle of Attack Effects on the Wall-Pressure Fluctuations of an Airfoil in Turbulence .....	4082
<i>Bente Meijerink, Fernanda Leticia Dos Santos, Laura Botero, Cornelis Venner, Leandro D. De Santana</i>	
The Use of Porous Meshes to Reduce Landing Gear Wake - Flap Interaction Noise .....	4104
<i>Francisco Javier Martinez Lara, David England</i>	
On the Turbulence Distortion Effects for Airfoil Leading-Edge Noise Prediction .....	4116
<i>Fernanda Leticia Dos Santos, Laura Botero, Cornelis Venner, Leandro D. De Santana</i>	
Reduction of Leading-Edge Noise by Tailored Turbulence Anisotropy .....	4134
<i>Alistair Hales, Lorna J. Ayton, Roman Kisler, Ahmed Mahgoub, Chaoyang Jiang, Rowena Dixon, Charitha De Silva, Danielle Moreau, Con J. Doolan</i>	
Extracting Noise Producing Coherent Structures in Cylinder Flows from TR PIV Data.....	4153
<i>Robin Prinja, Florent Margnat, Peter Jordan</i>	

## **COMMUNITY NOISE, SONIC BOOM AND METRICS II: WHOLE AIRCRAFT / AIRPORT NOISE**

Aircraft System Noise Assessment of the NASA Single-Aisle Over-The-Wing Nacelle Configuration.....	4162
<i>Kelly M. Shelts, Ian Clark, Russell H. Thomas</i>	
System Noise Technology Roadmaps for a Transonic Truss-Braced Wing and Peer Conventional Configuration.....	4179
<i>Jason June, Russell H. Thomas, Yueping Guo</i>	
Variable Noise Reduction Systems for a Notional Supersonic Business Jet .....	4193
<i>Jeffrey J. Berton</i>	
Quantifying Uncertainty of Landing and Takeoff Noise for Commercial Supersonic Aircraft .....	4216
<i>James E. Bridges, David Stephens, Jeffrey J. Berton</i>	
On the Design of Variable Noise Reduction Systems for Supersonic Transport Take-Off Certification Noise Reduction .....	4238
<i>Laurens Voet, Raymond L. Speth, Jayant S. Sabnis, Choon S. Tan, Steven R. Barrett</i>	

## **DUCT ACOUSTICS VII: EXPERIMENTAL DUCT ACOUSTICS**

Quiet High Speed Fan II (22") Duct Mode Characteristics as Measured by the Rotating Rake Mode Measurement System While Operated in the NASA Glenn 9x15 Low Speed Wind Tunnel.....	4255
<i>Daniel L. Sutliff</i>	
Source Diagnostic Fan II (22") Duct Mode Characteristics as Measured by the Rotating Rake Mode Measurement System While Operated in the NASA Glenn 9x15 Low Speed Wind Tunnel.....	4276
<i>Daniel L. Sutliff</i>	
Sound Production Due to Main-Flow Oriented Vorticity-Nozzle Interaction in Absence of a Net Swirl .....	4291
<i>Lionel Hirschberg, Friedrich Bake, Steven J. Hulshoff</i>	
Near-Field Measurements of Stationary and Rotating In-Duct Sound Sources with Pressure-Sensitive Paint .....	4300
<i>Michael Hilfer, Maximilian Behn, Christian Klein, Thomas Ahlefeldt, Ulf Tapken, Lars Koop, Lars Enghardt</i>	
Characterisation of the Aeroacoustic Properties of Ventilation Extraction and Supply Valves Based on an Active Two-Port Formulation.....	4319
<i>Olivier Van Dessel, Hervé Denayer, Wim De Roeck</i>	

## **GENERAL ACOUSTICS I: MISC**

Numerical Investigation of the Noise Radiated by an H-Darrieus Wind Turbine at Different Tip Speed Ratios .....	4338
<i>Kartik Venkatraman, Stéphane Moreau, Julien Christophe, Christophe F. Schram</i>	
An Analytical Model of Sound Refraction by the Fuselage Boundary Layer for Fan Tone Radiation from a Turbofan Aero-Engine .....	4352
<i>Dionysios-Marios Rouvas, Alan McAlpine</i>	
Development of the SmartAnswer Demonstrator: A Didactic Wind Tunnel for Aeroacoustic Applications.....	4376
<i>Simone Tamaro, Riccardo Zamponi, Christophe F. Schram</i>	
Reduction of Tip-Leakage Noise by Using Porosity .....	4390
<i>Sergi Palleja-Cabre, Ivan Saraceno, Chaitanya C. Paruchuri, Phillip Joseph</i>	
Direct Numerical Simulations of Nonlinear Infrasound Propagation in the Atmosphere .....	4400
<i>Liam J. Tope, Jae Wook Kim, Peter Spence</i>	

## **VOLUME 7**

### **JET AEROACOUSTICS XI: SUPERSONIC JETS**

Study of Broadband Shock-Associated Noise Using the Parabolised Floquet Equations .....	4416
<i>Petrônio A. Nogueira, Daniel M. Edgington-Mitchell</i>	
DMD-Based Superresolution Measurement of a Supersonic Jet Using Dual Planar PIV and Acoustic Data .....	4430
<i>Yuta Ozawa, Hiroki Nishikori, Takayuki Nagata, Taku Nonomura, Keisuke Asai, Tim Colonius</i>	
Noise Modelling of Highly Over-Expanded TIC Nozzle Flows .....	4440
<i>Amal Roy A. Murali, Sergey A. Karabasov, Vasily Gryazev, Xianzong Meng</i>	
Effects of Screech on Jet Coupling in Twin Square Jets .....	4459
<i>Aatresh Karnam, Myeonghwan Ahn, Ephraim Gutmark, Mihai Mihaescu</i>	

### **JET AEROACOUSTICS XII: COHERENT STRUCTURES / STABILITY**

The Influence of Nozzle-Exit Boundary-Layer State on Evolution and Radiation of Wavepackets in Subsonic Jets .....	4475
<i>Chandan Vempati, Santosh Hemchandra, Arnab Samanta</i>	
A Cause and Effect Modal Decomposition Framework for Resonance Instability .....	4488
<i>Spencer L. Stahl, Chitrarth Prasad, Datta V. Gaitonde</i>	
Can We Describe Acoustic Eigenmodes with a Vortex Sheet in a Jet? .....	4511
<i>Matteo Mancinelli, Eduardo Martini, Vincent Jaunet, Peter Jordan</i>	
Analysis of Axisymmetric Screech Tones in Round Twin-Jets Using Linear Stability Theory.....	4521
<i>Michael Stavropoulos, Matteo Mancinelli, Peter Jordan, Vincent Jaunet, Daniel M. Edgington-Mitchell, Petronio Nogueira</i>	
Application of 3D-Parabolized Stability Equations to Asymmetric Jets .....	4533
<i>Mateus P. Avanci, Jean-Christophe Robinet, Peter Jordan, Jérôme Huber, Grégoire Pont</i>	

## **PROPELLER, ROTORCRAFT AND V/STOL NOISE VIII: MISC**

Optimisation of Propellers with Noise-Based Constraints Including a Deep Learning Method for Aerofoil Prediction .....	4549
<i>Shaun F. Pullin, Beckett Yx Zhou, Mahdi Azarpeyvand</i>	
Theoretical Study of the Unsteady Motion Influence on Rotor Aerodynamic Noise .....	4565
<i>Siyang Zhong, Peng Zhou, Hanbo Jiang, Han Wu, Jingwen Guo, Xin Zhang</i>	
Aeroacoustic and Aerodynamic Characteristics of Propeller Tip Geometries .....	4579
<i>Liam P. Hanson, Kabilan Baskaran, Shaun F. Pullin, Beckett Yx Zhou, Bin Zang, Mahdi Azarpeyvand</i>	
From the Blade Geometry to Prediction of Tonal Noise Component in Hover.....	4600
<i>Aleksandra Kvurt, Oksana Stalnov</i>	

## **COMMUNITY NOISE, SONIC BOOM AND METRICS III: MISC**

Geometric Acoustics for Aircraft Noise Scattering .....	4624
<i>Yueping Guo, Russell H. Thomas</i>	
Aircraft Noise and Performance Data for a Notional Supersonic Business Jet .....	4646
<i>Jeffrey J. Berton</i>	
Aircraft Community Noise Prediction in 3D Environment Using Gaussian Beam Tracing.....	4662
<i>Yunusi Fuerkaiiti, Damiano Casalino, Francesco Avallone, Daniele Ragni</i>	

## **DUCT ACOUSTICS VIII: ACOUSTIC LINERS / NOISE RADIATION**

A Semi-Empirical Model to Predict the Noise Radiation in the Far-Field of a Ducted Propeller .....	4679
<i>Jeffrey R. Fischer, Con J. Doolan, Paul Croaker, Richard Howell, Paul Dylejko</i>	
Validation of the Instrumentation and Measurement of an Acoustic Liner Test Rig by a Combined Frequency and Modal Approach .....	4694
<i>J�r�mie Derr�, Florent Mercat, Olivier Deille, Emmanuel Julliard</i>	
Multimodal Characterisation of Acoustic Liners Using the MAINE Flow Facility .....	4709
<i>Thomas Humbert, Joachim Golliard, Eric Portier, Gwenael Gabard, Yves Auregan</i>	
Open-To-Ducted Transfer Function for Point Dipole Sources.....	4720
<i>Ben Baddour, Phillip Joseph, Alan McAlpine, Ronnie Leung</i>	

## **JET AEROACOUSTICS XIII: SUPERSONIC JETS AND MISC**

On the Preference of Round Twin Jets to Present Flapping Oscillations .....	4737
<i>Daniel Rodriguez, Petronio Nogueira, Michael Stavropoulos, Daniel M. Edgington-Mitchell, Peter Jordan</i>	
Downstream Fluidic Injection Based Directionally Targeted Jet Noise Reduction System.....	4751
<i>Pankaj Rajput, Sunil Kumar</i>	
Effects of Initial Shear Layer State on Screech in a Rectangular Jet.....	4768
<i>Gao Jun Wu, Sanjiva K. Lele, Jinah Jeun</i>	
Analysis of Spatospectral Lobes in Installed F404 Engine Noise Radiation.....	4779
<i>Tyce Olaveson, Jacob Ward, Jon Johnson, Kent L. Gee, Alan T. Wall</i>	

## **PROPELLER, ROTORCRAFT AND V/STOL NOISE IX: MISC**

Generation of Noise Exposure Contours for eVTOL Aircraft Including Transition .....	4796
<i>Daniel C. Amargianitakis, Rod Self, Anderson Proenca, Antonio Torija Martinez, Athanasios Synodinos</i>	
Coupled Unsteady RANS and FW-H Methodology for Aeroacoustics Prediction of High-Speed Propellers.....	4827
<i>Fabiola P. Costa, Niklas Andersson, Jesuino T. Takachi, Cleverson Bringhenti</i>	
Computational Analysis of Noise Generation by a Rotor at the Rear of an Axisymmetric Body of Revolution .....	4841
<i>Di Zhou, Kan Wang, Meng Wang</i>	
Theoretical Investigation of Noise from Rotating Blades with Serrated Trailing Edges.....	4854
<i>Haopeng Tian, Benshuai Lyu</i>	

## **ACOUSTIC/FLUID DYNAMICS INTERACTIONS IX: MISC**

Statistical Modelling of Aerofoil Self-Noise Subjected to Structured Porous Trailing Edges .....	4869
<i>Max M. Scholz, Till Biedermann, Tze Pei Chong, Edward Smith</i>	
Noise Generation by Two Staggered Circular Cylinders of Equal Diameter in Cross-Flow.....	4883
<i>Thomas F. Geyer, Lars Enghardt</i>	
The Effect of the Splitter Plate on the Aeolian Tone Mitigation .....	4903
<i>Guanjiang Chen, Xiao Liu, Bin Zang, Mahdi Azarpeyvand</i>	
The Effect of Angle of Attack on Turbulence Interaction Noise with a Porous Leading Edge.....	4915
<i>Luke Bowen, Alper Celik, Mahdi Azarpeyvand, Michelle F. Westin</i>	

## **DUCT ACOUSTICS IX: DUCT ACOUSTICS MODELING**

Stabilisation of the Hydrodynamic Instability by the Critical Layer .....	4929
<i>Matthew J. King, Edward J. Brambley</i>	
Far-Field Radiation of Higher Order Modes Out of an Unbaffled Circular Duct with Flow: Analytical and Numerical Validation .....	4944
<i>Courtney Ford, Antonio Pereira, Christophe Bailly</i>	

## **DUCT ACOUSTICS VI: MODE DETECTION / MISC**

Propagation of Acoustic Waves in Axially Varying Ducts with Potential Flow Using the Multimodal Formulation .....	4955
<i>Bruno Mangin, Majd Daroukh, Gwenael Gabard</i>	

## **DUCT ACOUSTICS IX: DUCT ACOUSTICS MODELING**

Numerical Investigations on Acoustic Propagation Effects for Highly Integrated Intake Ducts .....	4976
<i>Patrick Zimmermann, Alexander Kolb, Simone Mancini, Karl-Stéphane Rossignol</i>	
CFD/CAA Coupling for the Prediction of Fan Tone Noise Propagation and Radiation Through a Drooped Intake .....	4989
<i>Rie Sugimoto, Alexander O. James, Alan McAlpine, Richard J. Astley</i>	

## **GENERAL ACOUSTICS II: MISC & AIRFRAME/HIGH-LIFT NOISE IX: TRAILING EDGE NOISE**

Passive Operation of a Blade-Mounted, Ultrasonic Bat Deterrent Using an Exhaust Diffuser .....	5004
<i>Zhangming Zeng, Anupam Sharma</i>	
Influence of the Free-Stream Turbulence on an Airfoil's Wall-Pressure Fluctuations .....	5018
<i>Laura Botero, Fernanda Leticia Dos Santos, Cornelis Venner, Leandro D. De Santana</i>	
Towards a Semi-Empirical Trailing Edge Noise Model Valid for Attached and Separated Turbulent Boundary Layers .....	5035
<i>Benjamin Cotte, Sayahnya Roy, David Raus, Rayan Oueini</i>	
Executing the Source-Radiation Targeting on Aerofoil Trailing Edge Noise by the Finlet-Serration .....	5047
<i>Jung-Hoon Kim, Max M. Scholz, Tze Pei Chong, Phillip Joseph, Tomas Vronsky</i>	
Improving Accuracy of Airfoil Trailing Edge Noise Models with Turbulent Flow Anisotropy .....	5060
<i>Hussain Ali Abid, Annabel P. Markesteijn, Sergey A. Karabasov, Bin Zang, Mahdi Azarpeyvand, Yannick D. Mayer</i>	

## **PROPELLER, ROTORCRAFT AND V/STOL NOISE X: MISC**

A Data-Driven Approach for Enhancement of Propeller Performance Prediction .....	5081
<i>Beckett Yx Zhou, Liam P. Hanson, Shaun F. Pullin, Bin Zang, Jeremiah Hauth, Xun Huan</i>	
Aerodynamic and Aeroacoustic Characteristics of Different Pitch Propellers .....	5094
<i>Kabilan Baskaran, Alper Celik, Nur Syafiqah Jamaluddin, Djamel Rezgui, Mahdi Azarpeyvand</i>	
Aerodynamic and Aeroacoustic Characteristics of Propellers with Different Blade Numbers .....	5105
<i>Kabilan Baskaran, Nur Syafiqah Jamaluddin, Alper Celik, Djamel Rezgui, Mahdi Azarpeyvand</i>	
Aerodynamic and Aeroacoustic Study of Low Reynolds Number Rotors: Influence of Pitch Angle, Airfoil Camber and Thickness.....	5117
<i>Pietro Li Volsi, Thierry Jardin, Romain Gojon, David Gomez-Ariza, Jean-Marc Moschetta, H�el�ene Parisot-Dupuis, Gianluigi Brogna</i>	
Aeroacoustic Testing of UAS-Scale Rotors for a Quadcopter in Hover and Forward Flight.....	5138
<i>Nicole A. Pettingill, Nikolas S. Zawodny, Christopher S. Thurman</i>	

### **Author Index**