

30th AIAA/CEAS Aeroacoustics Conference 2024

Rome, Italy
4 – 7 June 2024

Volume 1 of 9

ISBN: 979-8-3313-0224-5

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

Diffraction by Sharp Edges of Noncanonical Shape with Mean Flow and Surface Impedance.....	1
<i>Yueping Guo</i>	
Design of an Acoustic Shielding Flap Concept with Prediction and Validation.....	17
<i>Ian Clark, Yueping Guo, Russell H. Thomas</i>	
Inverse Prediction of a Disturbance Generator's Motion Using Far-Field Pressure.....	39
<i>Martin Lafargue, Siddharta Verma</i>	

AIRFRAME/HIGH-LIFT NOISE I

Fast Turn–Around Slat Noise Prediction Model.....	52
<i>Jose Rendon, Noah Turner, Stephane Moreau, Alejandro Marulanda-Tobón, Henry Laniado, Laura Botero-Bolivar, Leandro D. De Santana</i>	
Performance Evaluation of Far-Field Noise Prediction Models for High-Lift Devices Using Reynolds-Averaged Navier-Stokes Simulations.....	67
<i>Dominic G. Geneau, Marinus K. Okoronkwo, Philippe Lavoie, Stephane Moreau, Oksana Stalnov</i>	
Noise Emission from the Flap Profile of a Two-Element 30P30N High-Lift Airfoil.....	84
<i>Marinus K. Okoronkwo, Dominic G. Geneau, Hadar Ben-Gida, Philippe Lavoie, Stephane Moreau, Oksana Stalnov</i>	
Flap Side Edge Aeroacoustics of the 30P30N High-Lift Airfoil.....	98
<i>Neil Farvolden, Ross Cruikshank, Marinus K. Okoronkwo, Satoshi Baba, Hadar Ben-Gida, Philippe Lavoie, Oksana Stalnov, Stephane Moreau</i>	
Airframe Noise Source Localization on the Basis of Surface Pressure.....	109
<i>Jan Delfs</i>	

ADVANCED TESTING TECHNIQUES: PHASED ARRAYS I

Towards Acoustic Imaging for Digital Twin. Experimental Validation on a Rod-Airfoil Wind Tunnel Test.....	121
<i>Simon Bouley, Olivier Minck, Lars Erbig, Claudio Colangeli, Raphael Hallez, Jacques Cuenca, Marijn Sanders</i>	
PIV Based Coherence Loss Correction for Acoustic Imaging in Open Jet Wind Tunnels.....	137
<i>Joannès Chambon, Olivier Minck, Simon Bouley, Francesco Scarano, Antonio A. Pereira</i>	
Phased Microphone Array on Aircraft Fuselage.....	150
<i>Yueping Guo</i>	

COMPUTATIONAL AEROACOUSTICS I

On the Impact of Operating Conditions and Testing Environment on the Noise Sources in an Industrial Engine Cooling Fan.....	164
<i>Francesco Bellelli, Renzo Arina, Francesco Avallone</i>	
Aerodynamic Noise Prediction of Strut-Braced Wing Aircraft.....	184
<i>Emanuele Sticchi, Daniele Ragni, Damiano Casalino, Francesco Avallone</i>	
Boundary Integral Formulation for Sound Scattered by Deformable Bodies.....	197
<i>Beatrice De Rubeis, Massimo Gennaretti, Caterina Poggi, Giovanni Bernardini</i>	

COMMUNITY NOISE METRICS: PSYCHOACOUSTICS

Annoyance Model Assessments of Urban Air Mobility Vehicle Operations.....	212
<i>Stephen A. Rizzi, Andrew Christian, Stefan J. Letica, Shane V. Lympany</i>	
Psychoacoustic Characterization of Multirotor Drones in Realistic Flyover Maneuvers.....	234
<i>Renatto M. Yupa-Villanueva, Roberto Merino-Martinez, Anique Altena, Mirjam Snellen</i>	
Intrusive Noise from Aircrafts, an Experimental Standard to Characterize Airport Noise Within Living Environments.....	250
<i>Giulio Marsigli</i>	
Noise from Flight Procedure Designed with Statistical Wind: Auralization and Psychoacoustic Evaluation.....	267
<i>Evangelia Maria Thoma, Roberto Merino-Martinez, Tomas Grönstedt, Xin Zhao</i>	
Assessing the Noise Annoyances by the Air Traffic Around Hong Kong International Airport.....	282
<i>Chunhui Wu, Stéphane Redonnet</i>	

DUCT ACOUSTICS: IMPEDANCE EDUCATION I

Local Effects of Sheared Grazing Flow on Impedance Education.....	307
<i>Lucas A. Bonomo, Edward James Brambley, Lucas M. Pereira, Nicolas T. Quintino, Julio A. Cordioli, Francesco Avallone</i>	
An Impedance Education Technique for the Multimodal Cylindrical Duct with Termination Reflecting.....	316
<i>Haoyu Kuai, Kang Gao, Weikang Jiang</i>	
Impedance Education Considering Shear Flow in the MAINE Flow Facility.....	330
<i>Jinyue Yang, Thomas Humbert, Joachim Golliard, Gwenaël Gabard</i>	
Boundary Layer Effects on Experimental Impedance Education.....	341
<i>Nicolas T. Quintino, Lucas A. Bonomo, Lucas M. Pereira, Julio A. Cordioli, Francesco Avallone</i>	
Inverse Impedance Education of Liners in the MAINE Flow Facility: Flow Effects.....	354
<i>Hamid Rashidi, Joachim Golliard, Thomas Humbert</i>	

INTERIOR NOISE/STRUCTURAL ACOUSTICS AND METAMATERIALS I

Numerical Assessment of the Correction Defect Induced by Spacetime Coordinate Transformations in the Design of a Convective Meta-Device.....	362
<i>Giada Colombo, Giorgio Palma, Lorenzo Burghignoli, Umberto Lemma</i>	
Wind Tunnel Testing of Directionally Sensitive Meander Metasurface and Sub-Resonant Sensor Arrays.....	370
<i>Charles A. Galluscio, Shishir Damani, William N. Alexander, William J. Devenport, Timothy Starkey</i>	
Broadband Duct Noise Reduction Using Multi-Chamber Micro-Perforated Panel Absorbers.....	384
<i>Jiayu Wang, Laura Brady, Gareth J. Bennett</i>	
Transmission Loss Investigation of Acoustic Metamaterials Via Adaptive Finite Elements.....	398
<i>Martino C. Moruzzi, Maria Cinefra, Sara Bagassi</i>	
Wave Propagation in Pre-Stressed Structures with Geometric Non-Linearities Through Carrera Unified Formulation	405
<i>Matteo Filippi, Dario Magliacano, Marco Petrolo, Erasmo Carrera</i>	

JET AEROACOUSTICS: ROCKETS AND HIGH-SPEED JETS

Experimental Investigation of Noise Mitigation in Liquid Rocket Engine Via Water Injection.....	419
<i>Xihai Xu, Junlin Liu, Xiaodong Li</i>	
Shock Separation and Resonance in Rocket Nozzles.	438
<i>Chi Co Tran, Petrônio A. Nogueira, Daniel M. Edgington-Mitchell</i>	
Properties of the Tones Emerging in the Near-Field Pressure Spectra of Hot High-Speed Jets	453
<i>Christophe Bogey</i>	
Swirling Flow Effects on Highly-Heated Aerospoke Nozzle Jets	466
<i>Thomas Golliard, Mihai Mihaescu</i>	
Aeroacoustic Analysis of NASA's Space Launch System Artemis-I Mission	491
<i>Makayle S. Kellison, Kent L. Gee, Whitney L. Coyle, Mark C. Anderson, Logan T. Mathews, Grant W. Hart</i>	

JET AEROACOUSTICS: NOZZLE EFFECTS

Investigation on Noise and Flow Characteristics of Supersonic Dual-Stream Co-Axial Convergent-Divergent Jets	513
<i>Alessandro Zarri, Julien De Decker, Bora O. Cakir, Alan Viladegut, Guillaume Grossir, Julien Christophe, Christophe Schram, Matteo Mancinelli</i>	
Study of a Plug Nozzle for Supersonic Aircraft Concepts.....	528
<i>Khairul Q. Zaman, John H. Korth, Amy F. Fagan, James E. Bridges</i>	
Aerodynamic and Acoustic Characterization of Rectangular and Beveled Installed Nozzles.....	548
<i>Julien Christophe, Julien De Decker, Alessandro Zarri, Christophe Schram</i>	

PROPELLER, ROTORCRAFT AND V/STOL NOISE I

Preliminary Noise Emission Analysis of an Elastic Small Scale Propeller	561
<i>Alice Zanella, Francesco A. Caccia, Luca Abergo, Alberto Guardone</i>	
Aeroacoustic Analysis of Tilted Propellers During Forward Flight and Descent	576
<i>Amin Karimian, Chaitanya Paruchuri, Phillip Joseph, Changsheng Zhao, Yu Liu</i>	
Aeroacoustic Optimization of Installed Propeller Configurations with Scattering and Shielding Effects.....	596
<i>Maks J. Groom, Beckett Y. Zhou, Leonard V. Lopes</i>	

PROPELLER, ROTORCRAFT AND V/STOL NOISE II

Numerical Simulations of Cylinder-Induced Turbulence Ingestion in Forward Flight Propellers	612
<i>Leone Trascinelli, Liam P. Hanson, Gianluca Romani, Damiano Casalino, Beckett Y. Zhou, Bin Zang, Mahdi Azarpeyvand</i>	
Mid-Fidelity Simulation of a Tandem Propeller and Wing Configuration for EVTOL Vehicles.....	631
<i>Kieran Barry, Shaun Pullin, Beckett Y. Zhou, Luis Fernando Lopes De Moraes Filho</i>	
Time Domain Measurement and Prediction of Propeller Noise Due to Locally Distorted Inflow	653
<i>Minki Cho, Chaitanya C. Paruchuri, Phillip Joseph</i>	
Comparison Between Band-Stop and Broadband Noise Absorbers for Propellers in Non-Uniform Inflow	670
<i>Leandro A. Castelucci, Marijn Sanders, Ysbrand Wijnant, Kees Venner, Lionel Hirschberg</i>	

PROPELLER, ROTORCRAFT AND V/STOL NOISE III

Assessment of Rotor Tonal Noise in the Time and Frequency Domains with Small in Diameter Propellers.....	691
<i>Asaf Kor, Oksana Stalnov</i>	
Noise Decomposition of Dual Synchronized Propellers in Hover	701
<i>Mansi Bhardwaj, Tze Pei Chong, Chaitanya Paruchuri, Phillip Joseph</i>	
LBM and iLES Comparison for the Aerodynamic and Acoustic Characteristics of a Low-Speed Rotor.....	712
<i>Jose Rendon, Stephane Moreau, Romain Gojon, Michaël Bauerheim</i>	
A Numerical and Analytical Approach of the Sound-Scattering Effects in Rotor-Strut Interaction Noise of Small-Size Drones	726
<i>Jose Rendon, Andrea Arroyo Ramo, Stephane Moreau, Michel Roger</i>	

VOLUME 2

ACOUSTIC/FLUID DYNAMICS INTERACTIONS II

Evaluating Models for Sub-Convective Pressure Fluctuations in Turbulent Boundary Layers.....	750
<i>Shishir Damani, Humza Butt, William J. Devenport, Todd Lowe</i>	

Aerodynamic Characterisation of Communicating Turbulent Boundary Layers Through a Porous Medium Subjected to a Pressure Differential	766
<i>Thomas P. Hunter, Francesco Avallone, Nguyen Anh Khoa Doan, Daniele Ragni</i>	
Experimental and Numerical Investigation of the Turbulent Boundary Layer of a Grazing Flow Over Porous Materials	783
<i>Olivier K. Moriaux, Riccardo Zamponi, Sutharsan Satcunanathan, Matthias Meinke, Wolfgang Schroeder</i>	
Investigation of Flow-Induced Forces on Isolated Wall-Mounted Bluff Bodies	800
<i>Paul P. Trzcinski, Michael H. Krane, Jeff R. Harris, Mitchell J. Swann, Adam S. Nickels</i>	
Aerodynamic Noise from Circular Cylinders Under Turbulent Inflow Conditions.....	811
<i>Thomas F. Geyer, Andreas Lucius, Marc Schneider, Lars Enghardt</i>	
A Parametric Study of Far-Field Sound Radiated by an Idealised Tip Leakage Flow.....	823
<i>Manuj Awasthi, Angus O. Wills, Danielle Moreau, Paul Croaker, Paul Dylejko</i>	
An Approximation Method to Identify the Near-Field Sound Patterns in Aerodynamic Flows	849
<i>Siyang Zhong, Wangqiao Chen, Peng Zhou</i>	

AIRFRAME/HIGH-LIFT NOISE II

Analysis and Modelling of Wake-Airfoil Interaction Aeroacoustics	862
<i>Marios I. Spiropoulos, Filipe R. Amaral, Florent Margnat, Vincent Valeau, Peter Jordan, Laurent Philippon, Damien Eysseric</i>	
Effectivity Assessment of Noise Reduction Technology by Means of Flight Tests.....	885
<i>Michael Pott-Pollenske, Fabian Reuschling, Ezzad Megat, Henri A. Siller</i>	
Time-Space POD Decomposition of the Slat Velocity Field of the 30P30N High-Lift Model	899
<i>Yang Zhang, Louis Cattafesta</i>	
Aeroacoustic Computations of a Transonic Truss-Braced Wing Aircraft: Part 1 – Aerodynamic and Airframe Noise Simulations	910
<i>Ryan Ferris, Mehdi R. Khorrami</i>	
Aeroacoustic Computations of a Transonic Truss-Braced Wing Aircraft: Part 2 – Acoustic Signature and Noise Source Identification	931
<i>Patricio A. Ravetta, Mehdi R. Khorrami, Ryan Ferris</i>	
LBM-Based Direct Noise Computation of a Swept High-Lift Wing Section with Slat-Track and Active Noise Control	951
<i>Malav Soni, Roland Ewert, Michael Pott-Pollenske, Jan W. Delfs</i>	

ADVANCED TESTING TECHNIQUES: PHASED ARRAYS II

A Miniaturized, Flush-Mount, IEPE MEMS Piezoelectric Pressure-Field Microphone for Aeroacoustic Applications.....	972
<i>David A. Mills, William Patterson, Philip Fournier, Daniel Trabbic, James Underbrink, Mark Sheplak</i>	
Research on Phase Characteristics of Tonal Noise in Landing Gear	987
<i>Hangyuan Lei, Hao Guo, Peiqing Liu, Yifeng Sun, Shujie Jiang</i>	

Feasibility of Hovering Small-Scale Low Reynolds Number Rotor-Beam Source Localization by Microphone Array Measurements	995
<i>Helene Parisot-Dupuis, Romain Gojon, Nicolas Doué</i>	
Enhancing Aeroacoustic Wind Tunnel Studies Through Massive Channel Upscaling with MEMS Microphones	1009
<i>Ernst Daniel, Reinhard Geisler, Florian Philipp, Thomas Ahlefeldt, Armin Goudarzi, Spehr Carsten</i>	
On Source Localization and Far Field Extrapolation for Jet Aeroacoustics Measurements in Wind Tunnels	1025
<i>Alessandro Bassetti, Henri A. Siller</i>	
Implementation of a Jet Collector and Dissipation Cavity into a Closed Anechoic Chamber for Jet Noise Studies	1040
<i>Jonathan R. Moreno, Luca Franceschelli, Daniel De La Prida, Luis A. Azpicueta-Ruiz, Marco Raiola</i>	

COMPUTATIONAL AEROACOUSTICS II

On the Noise Mechanisms of a Controlled Diffusion Airfoil at Pre-Stall	1054
<i>Zhou Ziyang, Stephane Moreau, Marlène Sanjosé</i>	
Adjoint-Based Jet Noise Minimization Using Geometrical Acoustics	1068
<i>Tejal K. Shanbhag, Beckett Y. Zhou, Carlos Ilario, Juan J. Alonso</i>	
Low-Cost Computational Modeling of Aeroacoustic Interactions Between Adjacent Propellers	1083
<i>Frits De Prenter, Alessandro Zarri, Damiano Casalino</i>	
Open Fan Noise Confinement Effects in a Closed Wind-Tunnel: Numerical Methodology and Evaluation	1099
<i>Mathieu Lorteau, Thomas Le Garrec, Vincent Daydé-Thomas</i>	

DUCT ACOUSTICS: MODELING

Part-Span Approximation of Tone Noise Propagation in an Aeroengine Intake. Part 1: Linear Propagation	1110
<i>Joseph Binns, Long Wu, Alexander G. Wilson</i>	
Part-Span Approximation of Tone Noise Propagation in an Aeroengine Intake. Part 2: Non-Linear Propagation	1132
<i>Joseph Binns, Long Wu, Alexander G. Wilson</i>	
Aerodynamic Noise from Turbulent Channel Flow Using Compressible Simulations	1154
<i>Xavier Gloerfelt</i>	
Acoustic Power Computation for Ports and Nonorthogonal Modes in Ducts	1181
<i>Mads Jakob Herring Jensen, Elin Svensson</i>	
Silencers in Flow Ducts Using Double-Layer MPA	1187
<i>Stefan Becker, Benedikt Berchtenbreiter, Dominik Grützner, Felix Czwiolong</i>	
Experimental and Numerical Parameter Study of a Helmholtz Resonator with a Flexible Wall	1202
<i>Fleming Kohlenberg, Karsten Knobloch</i>	

INTERIOR NOISE/STRUCTURAL ACOUSTICS AND METAMATERIALS II

- Variable-Kinematics Finite Elements for Propagation Analyses of Two-Dimensional Waveguides 1217
Matteo Filippi, Dario Magliacano, Marco Petrolo, Erasmo Carrera
- Innovative Honeycomb Design for Low Frequency Applications..... 1225
Luigi Maria Cardone, Giuseppe Catapane, Giuseppe Petrone
- Acoustic Characterization of Metamaterial Structures Fabricated Via Foamed Filament 3D Printing 1239
Luigi Maria Cardone, Giuseppe Catapane, Giuseppe Petrone, Sergio De Rosa, Antonino Squillace, Luca Landolfi, Andrea Lorenzo Henri Sergio Detry
- Vacuum Controller for Tuneable Structured Fabric Vibration Absorbers..... 1249
Lisa Ortis, Paolo Gardonio, Emiliano Rustighi, Ciro Malacarne, Matteo Perini

JET AEROACOUSTICS: MEASUREMENTS

- Measurement of Wall Shear Stress in Convergent Nozzles..... 1259
Puja Upadhyay, Nicholas Georgiadis, Mark Wernet, Khairul Q. Zaman
- Acoustic Characterisation of Subsonic and Supersonic Elliptical Jets 1276
Jayson Beekman, Joel Weightman, Peter Jordan, Petrônio A. S. Nogueira, Daniel M. Edgington-Mitchell
- Jet Noise Line Sources Extraction from Particle Image Velocimetry Data Using Hilbert Proper Orthogonal Decomposition 1294
Marco Raiola, Jochen Kriegseis
- Jet Noise Reduction of V-Tail Aircraft with Nozzle to Enhance the Shielding Effect..... 1306
Junichi Akatsuka, Junpei Hisasue, Yusuke Nishizaki, Kazuhide Isotani, Tatsuya Ishii
- Effect of Fluidic Injection on the Radiated Sound in a Mach 0.5 Jet 1318
Ambica Singh, Arun Kumar Perumal, Arnab Samanta

JET AEROACOUSTICS: COHERENT STRUCTURES I

- A Dynamical System Method for Finding Flow Structures from Jet LES Data..... 1329
Vasily Gryazev, Vladimir Riabov, Annabel Markesteijn, Umberto Armani, Vassili Toropov, Sergey A. Karabasov
- PIV Measurements of Subsonic Installed Jets 1344
Filipe R. Amaral, Peter Jordan
- Stability of Co-Axial Jets with Temperature Non-Uniformity 1359
Christine Ng, Daniel M. Edgington-Mitchell, Petrônio A. S. Nogueira
- Inner Sound Field Generated by Large-Scale Coherent Structures of Ring Mode in the Near-Nozzle Region of a Subsonic Circular Jet: An Asymptotic Description of Aeroacoustics 1379
Zhongyu Zhang, Xuesong Wu
- Dynamics and Modeling of the Near-Field Pressure Fluctuations of Turbulent Subsonic Jets 1396
Jiali Xu, Benshuai Lyu, Binhong Li, Sergey A. Karabasov, Annabel P. Markesteijn

Stability Analysis of Confined Two-Dimensional Compressible Shear Flows.....	1414
<i>Haosen Liu, Benshuai Lyu</i>	

PROPELLER, ROTORCRAFT AND V/STOL NOISE IV

Fast Prediction of Full-Scale Helicopter Rotor Noise Using Acoustic Modal Analysis.....	1426
<i>Guowei Zhang, Sumeet Kumar, Ilkay Yavrucuk</i>	
Large-Eddy Simulation and Broadband Acoustic Prediction of a Helicopter Rotor in Forward Flight	1444
<i>Stephane Moreau, Marlène Sanjosé, Régis Koch</i>	
On the Noise Generation Mechanisms of Side-By-Side Rotors Operating Near Ground	1455
<i>Yan Wu, Daniele Ragni, Damiano Casalino, Francesco Avallone</i>	

VOLUME 3

Experimental Aeroacoustics Investigation of Interacting Tandem Propellers in Hover	1477
<i>Alex Zanotti, Daniele Granata, Donato Grassi, Ilaria Savoldi, Luca Riccobene, Alberto Savino</i>	
A Numerical Study on the Reduction of Rotor Blade-Airframe Interaction Noise Through Airframe Permeability.....	1491
<i>Sinforiano Cantos, Peng Zhou, Zhida Ma, Yuhong Li</i>	
Framework for Multi-Fidelity Assessment of Open Rotor Propeller Aeroacoustics	1503
<i>Guangyuan Huang, Ankit Sharma, Xin Chen, Atif Riaz, Richard Jefferson-Loveday</i>	

PROPELLER, ROTORCRAFT AND V/STOL NOISE V

Conversion of the Advanced Noise Control Fan to an Open Rotor Configuration in Support of NASA's Efficient Quiet Integrated Propulsor Technical Challenge	1514
<i>Daniel L. Sutliff, Clifford A. Brown, Kelvin Figueroa-Ibrahim, Scott Morris, Mark Ross, Ryne Wang</i>	
Experimental Characterisation of Cylinder-Induced Turbulence Ingestion in Propellers Operating in Edgewise Flight.....	1536
<i>Liam P. Hanson, Bin Zang, Mahdi Azarpeyvand</i>	
Aeroacoustic Simulations of a Pylon-Mounted Propeller Configuration at Low Reynolds Number	1551
<i>Sophie Le Bras, Korcan Kucukcokun, Daniel Acevedo-Giraldo, Michel Roger</i>	
Development and Application of a Beamforming Method for Extracting the Tonal Noise Components of Counter-Rotating Open Rotors.....	1567
<i>Bálint Soós, Kristóf Tokaji, Csaba Horváth</i>	
Numerical Investigation of the Blades Number Influencing the Turbulence-Ingesting Noise of the Propeller	1583
<i>Denghui Qin, Xun Huang</i>	
An Aeroacoustic Investigation of Propeller Installation Effects in the Vicinity of an Airfoil	1602
<i>Leone Trascinelli, Liam P. Hanson, Luis Fernando Lopes De Moraes Filho, Bin Zang, Beckett Y. Zhou, Mahdi Azarpeyvand</i>	

Aerodynamic and Aeroacoustic Experimental Investigation of a Three Propellers DEP Configuration: The VENUS Project.....	1618
<i>Elisa De Paola, Luana Georgiana Stoica, Alessandro Di Marco, Roberto Camussi, Giorgio Palma, Lorenzo Burghignoli, Umberto Lemma, Antonio Visingardi, Luca Flamini, Nikos Pepelas, Fabio Rusconi</i>	

PROPELLER, ROTORCRAFT AND V/STOL NOISE VI

NASA/ONERA Collaboration on Small Hovering Rotor Broadband Noise Prediction Using Lattice-Boltzmann Method and Structured Navier-Stokes Solvers.....	1632
<i>Christopher Thurman, D. Douglas Boyd Jr., Pieter Buning, Gabriel Reboul, Christophe Benoit</i>	
Unconventional Application of Serrated Trailing Edges for Quieter Propeller Drones.....	1644
<i>Paolo Candeloro, Daniele Ragni, Tiziano Pagliaroli</i>	
An Experimental Investigation on the Effect of Blade Pitch on Broadband Noise and Turbulence Field.....	1660
<i>Daniel R. Cuppoletti</i>	
An Improved Modeling of the Unsteady Flows for the Aerodynamic Noise Prediction of Coaxial Counter-Rotating Rotors.....	1672
<i>Siyang Zhong, Zhida Ma, Wangqiao Chen, Peng Zhou</i>	
Acoustic and Aerodynamic Performance of Co-Axial Contra-Rotating Rotors with Unequal Diameters	1692
<i>Sergi Palleja-Cabre, Chaitanya C. Paruchuri, Phillip Joseph</i>	
Aeroacoustics, Psychoacoustics, and Aerodynamic Characteristics of Innovative Looped Propellers Using Catenary Curves.....	1705
<i>Eiji Shima, Jianwei Sun, Hao Liu, Koichi Yonezawa, Homare Kaneko</i>	
Passive Noise Control for Low Reynolds Number Rotors	1719
<i>Santiago Montoya-Ospina, Frank Simon, Romain Gojon, Helene Parisot-Dupuis</i>	

TURBOMACHINERY AND CORE NOISE I

Entropy-Patch-Choked-Nozzle Interaction: Quasi-Steady-Modeling-Regime Limits Probed	1736
<i>Kurt Kowalski, Steven J. Hulshoff, Philip Ströer, Jan Withag, Aurélien Genot, Aimee S. Morgans, Friedrich Bake, Kees Venner, Marijn Sanders, Lionel Hirschberg</i>	
High-Frequency Acoustic Propagation in a Thermally Choked Low-Mach Dual-Mode Ramjet.....	1760
<i>Frédéric Olivon, Jean-étienne Durand, Aurélien Genot, Estelle Piot</i>	
Characterizing Fan Broadband Noise Using Engine Intra-Stage Measurements	1775
<i>Ram Kumar Venkateswaran, Phillip Joseph, Chaitanya C. Paruchuri</i>	
On the Numerical Investigation of the Tip Leakage Noise Sources of a Stationary Aerofoil	1815
<i>Ivan Saraceno, Chaitanya Paruchuri, Bharathram Ganapathisubramani, Antonio Alguacil, Stephane Moreau, Marlene Sanjose</i>	
Numerical Simulation on the Tone-Reduction and Duct-Mode Structure-Variation of Axial-Turbine with Bionic Configuration.....	1826
<i>Kangshen Xiang, Jianxin Lian, Liangji Zhang, Weijie Chen, Weiyang Qiao</i>	

Numerical Study on the Duct-Mode Regulating of Axial-Fan Using Stator Casing Fence..... 1846
Liangji Zhang, Hongmei Wang, Jianxin Lian, Hang Tong, Weijie Chen, Weiyang Qiao

Imposing Realistic Unsteady Flow Structures Though Inflow Boundary Conditions..... 1857
Bernhard Semlitsch

ACOUSTIC/FLUID DYNAMICS INTERACTIONS III

Experimental Study on Flow Characteristics and Noise Generation of Polygonal Cylinders 1866
Xuqi Zhang, Reza Maryami, Yu Liu, Lian Gan

Towards a Novel Physics-Based Correction to Amiet's Theory for Inflow-Turbulence Noise
Prediction 1881
Andrea Piccolo, Riccardo Zamponi, Francesco Avallone, Daniele Ragni

On the Impact of the Acoustic Wave Direction on the In-Orifice Flow Dynamics of an Acoustic
Liner Grazed by a Turbulent Flow 1896
*Angelo Paduano, Lucas M. Pereira, Lucas A. Bonomo, Julio A. Cordioli, Damiano Casalino,
Francesco Avallone*

AIRFRAME/HIGH-LIFT NOISE III

Wavepackets Driving Trailing Edge Noise. Part I – Direct Simulation and Experiments..... 1915
*Zhenyang Yuan, Simon Demange, Simon Jekosch, Ennes Sarradj, Kilian Oberleithner, André
Cavalieri, Ardeshir Hanifi*

Experimental Aeroacoustic Characterization of a Supercritical Wing-Tip Model..... 1928
*Satoshi Baba, Hadar Ben-Gida, Guang C. Deng, Oksana Stalnov, Stephane Moreau, Philippe
Lavoie*

Statistical Characteristics of Wall Pressure Fluctuations Near Trailing-Edge Serrations Under Zero
Pressure Gradient 1941
Haopeng Tian, Benshuai Lyu

A Rapid Three-Dimensional Serrated Trailing-Edge Noise Model Based on Analytical Green's
Functions 1954
Sicheng Zhang, Benshuai Lyu

COMPUTATIONAL AEROACOUSTICS III

Field Inversion Machine Learning Based Stochastic Noise Generation Model for Jet Noise
Prediction 1975
Levent Ugur, Filipi T. Kunz, Beckett Y. Zhou

A Data-Driven Method for Stall Noise Predictions..... 2004
*Aurelien Ghiglino, Beckett Y. Zhou, John Branch, Bin Zang, Mahdi Azarpeyvand, Jose
Rendon, Stephane Moreau*

A Machine Learning FRPM Model for Broadband Noise Prediction 2021
Filipi Teixeira Kunz, Levent Ugur, Beckett Y. Zhou, Roland Ewert

Adjoint-Based Tonal and Broadband Aeroacoustic Optimization of Propeller Blades with Amiet
Model 2048
Luca Abergo, Alberto Guardone, Shaun Pullin, Beckett Y. Zhou

COMMUNITY NOISE METRICS: AIRPORT/FLEET NOISE

Detection of Noise Events from Aircraft During Landing Approach	2064
<i>Henri A. Siller, Sébastien Legrand, Louis Vaille, Simon Kieffer</i>	
Aircraft Noise Model Improvement by Calibration of Noise-Power-Distance Values Using Acoustic Measurements.....	2073
<i>Rebekka C. Van Der Grift, Mirjam Snellen, Alireza Amiri Simkooei, Dick G. Simons</i>	
Assessing the Performance of the sonAIR Aircraft Noise Model in Predicting Noise Levels at Schiphol Airport	2088
<i>Robbert Boelhouwer, Rebekka C. Van Der Grift, Mirjam Snellen, Dick G. Simons, Jonas Meister, Jean-Marc Wunderli</i>	

DUCT ACOUSTICS: EXPERIMENTS I

Feasibility of Duct Source Identification in the Rotating Frame from External Measurement	2098
<i>Kang Gao, Weikang Jiang, Lixi Huang</i>	
Feasibility of In-Duct Aeroacoustic Source Characterization with External Antenna: A Flanged Duct Configuration.....	2112
<i>Benjamin Etchebarne, Sandrine Fauqueux, Mathieu Lorteau, David Marx, Vincent Valeau</i>	
Advances in Measuring the Near Acoustic Field of a Ducted Fan	2128
<i>Kyle Miller, Dimitri Papamoschou</i>	
Comparison of Experimental Data and Empirical Models for Nonlinear Acoustic Properties of Perforates.....	2143
<i>Hans Boden, Shail A. Shah, Susann Boij</i>	

GENERAL ACOUSTICS I

Aeroacoustic Source Separation of Non-Stationary Signals in Time Domain with RPCA	2166
<i>Mitchell J. Swann, Adam S. Nickels, Michael H. Krane, Jeff R. Harris</i>	
Tonal Aeroacoustic Sources of a Cambered Airfoil Using Wavelet Beamforming	2176
<i>Jessica Eburn, Stephane Moreau, Jose Rendon, Philippe Lavoie, Oksana Stalnov</i>	
Artificial Neural Networks Prediction of Wall-Pressure Spectrum	2203
<i>Andrea Arroyo Ramo, Antonio Alguacil, Michaël Bauerheim, Stephane Moreau, Marc C. Jacob</i>	

VOLUME 4

Turbulent Boundary Layer Trailing Edge Noise in the UTIAS Hybrid Anechoic Wind Tunnel	2221
<i>Reuben W. Haklander, Philippe Lavoie, Oksana Stalnov, Stephane Moreau</i>	

JET AEROACOUSTICS: SCREECH

The Weakly Nonlinear Development of Shock Cells in Screeching Jets	2237
<i>Zhengxuan Song, Xuesong Wu, Zhongyu Zhang, Yihong Fang</i>	

Multimodal Behaviour in Screeching Elliptical and Rectangular Jets	2253
<i>Soudeh Mazharmanesh, Petrônio A. S. Nogueira, Joel Weightman, Jayson R. Beekman, Daniel M. Edgington-Mitchell</i>	
Screech Predictions in Military-Style Rectangular Nozzles	2262
<i>Petrônio A. Nogueira, Joel Weightman, Daniel M. Edgington-Mitchell</i>	
Jet-Plate Interaction in a Supersonic Screeching Jet	2278
<i>Matteo Mancinelli, Stefano Meloni, Roberto Camussi</i>	

JET AEROACOUSTICS: SUPERSONIC TWIN JETS

Experimental Validation of PSE Wavepacket Models for Supersonic Twin Jets Using Schlieren Imaging and Potential-Momentum-Theory-Based SPOD	2288
<i>Ivan Padilla Montero, Daniel Rodriguez, Vincent Jaunet, Peter Jordan</i>	
Pressure Measurements at the Mixing-Layer Boundary of Supersonic Twin Jets	2306
<i>Ivan Padilla Montero, Daniel Rodriguez, Vincent Jaunet, Steve Girard, Damien Eysseric, Peter Jordan</i>	
Large-Eddy Simulations of Bi-Modal Excitation in a Supersonic Rectangular Jet	2328
<i>Benjamin J. Malczewski, Reda R. Mankbadi, Vladimir V. Golubev, Saman Salehian</i>	
Hybrid Active-Passive Flow and Acoustic Control in Supersonic Rectangular Twin Jets	2343
<i>Abhilash Yarlagadda, Noah Hiler, Karli Katterle, Nathan Webb, Mo Samimy</i>	

PROPELLER, ROTORCRAFT AND V/STOL NOISE VII

Influence of the Rotor Blade Pitch Angle on the Far-Field Noise Emissions of a Ducted Tail Rotor	2355
<i>Jose Rendon, Stephane Moreau, Marlène Sanjosé</i>	
A GPU-Accelerated Mid-Fidelity Aerodynamic and Aeroacoustic Simulation Framework	2371
<i>Shaun F. Pullin, Maks J. Groom, Beckett Y. Zhou, Mahdi Azarpeyvand</i>	
Tone Noise Characterization of an Open-Fan Engine Using Source-Mode Integral Formulations	2383
<i>Vincent Daydé-Thomas, Cyril Polacsek, Sandrine Fauqueux, Xavier Gloerfelt, Jacky Marjono</i>	

PROPELLER, ROTORCRAFT AND V/STOL NOISE VIII

Towards the Optimization of Propeller Tonal Noise in the Frequency Domain Using the Discrete Adjoint Method	2401
<i>Enrico Foglia, Majd Daroukh, Martin Buszyk, Itham Salah El-Din, Stephane Moreau</i>	
Impact of Turbulent Inflow on the Far-Field Noise Generated by a Propeller Operating at Low Reynolds Number	2419
<i>Giorgia Capobianchi, Sara Montagner, Andrea Piccolo, Alessandro Di Marco, Francesco Avallone, Gioacchino Cafiero, Daniele Ragni, Elisa De Paola, Luana Georgiana Stoica</i>	
Effect of Serrated Structures on Unsteady Flow and Noise Reduction in a Miniature Centrifugal Fan	2433
<i>Peiran Jiang, Hao Cheng, Han Chen, Yu Liu</i>	
Aerodynamic and Aeroacoustic Analysis of Looped Propeller Blades	2447
<i>Justin Du Plessis, Abdessalem Bouferrouk</i>	

TURBOMACHINERY AND CORE NOISE II

Inflow Distortion Noise and Turbulence Measurements in a Low Speed Fan Test Rig	2466
<i>Lukas Klähn, Robert Meyer, Ulf Tapken</i>	
A Numerical Study on the Flow and Acoustic Mechanisms of Fan Rotor-Stator Interaction Noise Reduction with the Wavy Leading-Edge Stator.....	2487
<i>Liangji Zhang, Hang Tong, Aneeb M. Siddiqui, Hongmei Wang, Weiyang Qiao</i>	
Noise Reduction of Aero-Engines Using Innovative Stators with Leading Edge Features	2502
<i>Edouard Salze, Antonio A. Pereira, Christoph Brandstetter, Vincent Clair, Fernando Gea-Aguilera, David Lamidel, Jacky Marjono, Martin Buszyk, Cyril Polacsek, Raluca Maier, Cristian Stanica, Valeriu Dragan, Teodor Stanescu, Michael Bauer</i>	
Aeroacoustic Performances of the ECL5 UHBR Turbofan Model with Serrated OGVs: Design, Predictions and Comparisons with Measurements	2518
<i>Martin Buszyk, Cyril Polacsek, Thomas Le Garrec, Raphaël Barrier, Edouard Salze, Jacky Marjono</i>	

WORKSHOP: FAN BROADBAND NOISE PREDICTION

Effect of Straight and Swept FEGV Placement on Fan Broadband Interaction Noise	2545
<i>Nuo Li, Julian Winkler, Aaron C. Reimann, Dmytro Voytovych, Jeff M. Mendoza, Sheryl Grace</i>	
Predictions of Fan Noise and Performance at Transonic Operating Conditions Using GPU-Accelerated Large-Eddy Simulations	2567
<i>Guillaume A. Brès, Kan Wang, Christopher B. Ivey, Sanjeeb T. Bose, Gaku Okubo, Toshihiro Kamatsuchi, Hisato Tanaka</i>	
Noise Predictions of a Rotor Ingesting a Turbulent Boundary Layer at Different Operating Conditions	2585
<i>Augustin Salet, Damiano Casalino, Ignacio Gonzalez-Martino</i>	

ACOUSTIC/FLUID DYNAMICS INTERACTIONS IV

Investigation of Spectral Broadening of Sound Waves by a Turbulent Shear Layer Using Particle Image Velocimetry.....	2600
<i>Francesco Scarano, Antonio A. Pereira, Emmanuel Jondeau, Joannes Chambon, Vincent Clair, Edouard Salze</i>	
Identification of the Mechanism of Low Frequency Pressure Fluctuations Using Vortex Identification Methods.....	2621
<i>Laura Breitenbücher, Andreas Wagner, Bastian Buderer, Thomas Wiegand, Maarten Brink</i>	
Identification of Sources of Sub-Convective Wall Pressure Fluctuations Using Space-Time Pressure-Velocity Correlations	2636
<i>Humza Butt, Shishir Damani, William J. Devenport, Todd Lowe</i>	
Correction of Sensor-Size-Related Attenuation for Wall Pressure Fluctuations Measurements.....	2655
<i>Nan Hu</i>	
Aeroacoustic Properties of Flatback Airfoil at Low Angles of Attack	2668
<i>Jing Guo, Reza Maryami, Guanqing Liu, Xiaoning Wang, Xuqi Zhang, Yu Liu</i>	

AIRFRAME/HIGH-LIFT NOISE IV

Aeroacoustic Evaluation of the NASA High-Lift Common Research Model Model with Standard and DLR Krüger Slat Configuration	2682
<i>Armin Goudarzi, Thomas Ahlefeldt, Daniel Ernst, Carsten Spehr</i>	
Wavepackets Driving Trailing Edge Noise. Part II – Resolvent-Based Model	2697
<i>Simon Demange, Zhenyang Yuan, André Cavalieri, Ardeshir Hanifi, Kilian Oberleithner</i>	
Experimental Investigation of Reynolds Number Scaling on the Aeroacoustics of a Simple Landing Gear Wheel.....	2713
<i>Zoya Ivanova, David Angland, Aline Scotto</i>	
Flow Topology and Noise Sources of a Deflected Spoiler Mounted to a Flat Plate.....	2729
<i>Owen Parnis, David Angland</i>	
Experimental Characterization of the Side-Edge Triple-Vortex System on a Supercritical Wing Model	2754
<i>Hadar Ben-Gida, Satoshi Baba, Oksana Stalnov, Stephane Moreau, Philippe Lavoie</i>	
Porous Fairings for Landing Gear Noise Mitigation	2772
<i>Miro Gondrum, Matthias Meinke, Wolfgang Schroeder, Francesco Avallone, Daniele Ragni</i>	
Landing Gear Noise Reduction Using Porous Plates	2786
<i>Yasushi Ito, Takehisa Takaishi, Mitsuhiro Murayama, Kazuomi Yamamoto, Tohru Hirai</i>	
Computational Study on Porous-Plates for Reducing Airframe Noise Associated with Landing Gear Bay	2804
<i>Mitsuhiro Murayama, Kazuomi Yamamoto, Yasushi Ito, Takehisa Takaishi, Tohru Hirai, Kentaro Tanaka</i>	

COMPUTATIONAL AEROACOUSTICS IV

Development of Second-Order Time-Accurate PISO Algorithm and Consistent Rhie and Chow Formulation for Hybrid CAA Applications Using OpenFOAM.....	2820
<i>Ammad Ammad, Alexander Kabat Vel Job, Klaus Ehrenfried, Ennes Sarradj</i>	
Effect of Three-Dimensionality on the Aerodynamic Noise from Flow Past a Cylinder	2832
<i>Kai Lok Leung, Stéphane Redonnet</i>	
Numerical Simulation of Subsonic Jet Noise on Non-Conformal Mesh by Spectral Difference Method	2850
<i>Junhui Gao, Jiamin Zhao</i>	
Investigation of Jet-Pylon Interaction Noise Using LBM	2869
<i>Guillaume Daviller, Etienne Charles, Jean François Boussuge, Florian Renard, Jérôme Huber</i>	
Simulation and Mechanism Analysis of Sound Radiation by Coherent Structures in Subsonic Jets: A Non-Lighthill Hybrid Method.....	2882
<i>Yihong Fang, Jiaming Hu, Zhengxuan Song, Cheng Cheng</i>	
Shape Sensitivities of 2D Airfoils for Broadband Noise Reduction Using the Adjoint Method and Semi-Analytical Models	2890
<i>Antoine Hajczak, Martin Buszyk</i>	

Computational Study on Sound Scattering by Jet Shear Layers.....	2908
<i>Laura Martin, Christophe Bogey, Vincent Clair, Gwenael Gabard</i>	

SONIC BOOM AND SUPERSONIC AIRCRAFT NOISE

Sonic Boom Numerical Validation of a Mach 4.7 Experimental Test	2921
<i>Samuele Graziani, Nicole Viola, Roberta Fusaro, Sebastien Hengy, Marie Albisser, Bastien Martinez</i>	
Improvement on Open Source CFD Methodology to Evaluate Near-Field Sonic Boom	2940
<i>Antimo Glorioso, Francesco Petrosino, Mattia Barbarino, Giuseppe Pezzella, Antonio Viviani</i>	

VOLUME 5

Acoustical Propagation of Weak Shockwaves into a Shadow Zone with Turbulence: Laboratory-Scale Experiment.....	2955
<i>Edouard Salze, Sébastien Ollivier, Emmanuel Jondeau, Philippe Blanc-Benon</i>	
Multipath Interpretation of Secondary Sonic Boom Signatures	2970
<i>Victor W. Sparrow, Kimberly A. Riegel</i>	
Sonic Boom Measurements from the SpaceX Transporter-8 Falcon-9 Rocket Landing at Vandenberg Space Force Base.....	2978
<i>Mark C. Anderson, Kent L. Gee</i>	
From Single Event to Scenario Noise Assessment of SST Business Jet Concept Aircraft	2991
<i>Lothar Bertsch, Michel Nöding, Robert Jaron, Martin Plohr</i>	
An Assessment of High-Altitude Cruise Noise	3023
<i>Antonio Filippone</i>	

GENERAL ACOUSTICS II

Acoustic Emission of Thermodiffusive Unstable Premixed Lean Hydrogen-Air Slit Flames	3033
<i>Borja Pedro Beltran, Matthias Meinke, Wolfgang Schroeder</i>	
Artificial Neural Networks for the Prediction of Johnson-Champoux-Allard Parameters in Porous Samples	3045
<i>Alessandro Casaburo, Giuseppe Petrone, Francesco Franco, Sergio De Rosa</i>	
Benchmarking Wind Turbine Noise Predictions in Real Weather Conditions.....	3057
<i>Andrea P. Bresciani, Baris Kale, Laura Botero-Bolivar, Julien Christophe, Christophe Schram</i>	
An Experimental-Data-Driven Deep Learning Strategy for Structural Health Monitoring of a Plate in Acoustic Fields	3072
<i>Federica Angeletti, Marco Sabatini, Paolo Gasbarri, Giovanni B. Palmerini</i>	
Active Impedance Control Optimization for Attenuation of Acoustic Cavity Modes	3082
<i>Emanuele De Bono, Davide Ponticelli, Sergio De Rosa, Giuseppe Petrone, Morvan Ouisse, Emeline Sadoulet-Reboul, Rafael Teloli</i>	

JET AEROACOUSTICS: MODELING I

The Shape of Subsonic Jet Noise	3094
<i>Barbara Hasparyk, Peter Jordan, Eduardo Martini, Lutz Lesshafft</i>	
Low-Order Empirical Noise Modeling of Internally Mixed Exhaust Systems.....	3117
<i>James E. Bridges</i>	
Computational Aeroacoustic Study of Coannular Nozzles with Internal Mixing Geometries at High Transonic Mach Numbers.....	3135
<i>Gao Jun Wu, Olivia G. Martin, Sanjiva K. Lele</i>	
Resolvent Modeling of Subsonic Jet Noise	3163
<i>Barbara Hasparyk, Peter Jordan, Lutz Lesshafft, Ethan Pickering, Tim Colonius</i>	
Mach Number Effect on Resolvent Mode of Ideally Expanded Supersonic Jet.....	3179
<i>Yuta Ozawa, Taku Nonomura</i>	
On the Generation and Propagation of Guided Jet Waves.....	3186
<i>Petrônio A. Nogueira, André Cavalieri, Eduardo Martini, Aaron Towne, Peter Jordan, Daniel M. Edgington-Mitchell</i>	

JET AEROACOUSTICS: COHERENT STRUCTURES II

An Optical Method for Reconstructing Coherent Structures in Fluid Flows with a Single Camera Perspective.....	3209
<i>Daniel G. Smith, Callum Atkinson, Petrônio A. S. Nogueira, Daniel M. Edgington-Mitchell</i>	
Coherent Structures in Subsonic Elliptical Jets.....	3227
<i>Filipe R. Amaral, Peter Jordan, Mateus Avanci, Jean-Christophe Robinet, Jérôme Huber, Grégoire Pont</i>	
Coherence Decay in Turbulent Jets by Stochastic Modelling Under Location Uncertainty	3238
<i>Gilles Tissot, André Cavalieri, Tim Colonius, Peter Jordan, Etienne Mémin</i>	
Localized Resolvent-Mode Bases for Turbulence Statistics.....	3255
<i>Ethan R. Eichberger, Liam Heidt, Tim Colonius</i>	
Canonical Correlation Decomposition of Numerical and Experimental Data for Observable Diagnosis.....	3269
<i>Benshuai Lyu</i>	
Effect of Axis Switching on the Coherent Structures of an Elliptical Jet	3293
<i>Naia Suzuki, André Cavalieri, Daniel M. Edgington-Mitchell, Petrônio A. Nogueira</i>	

PROPELLER, ROTORCRAFT AND V/STOL NOISE IX

Numerical Investigation and Validation of Noise Sources of a Distributed Propulsion System.....	3305
<i>Robin Wickersheim, Manuel Keßler, Julia Sembowski, Dustin Bongen, Jorge P. Gomes</i>	
Collective Blade Pitch Angle Effect on Grid Turbulence Ingestion Noise by an Isolated Propeller	3322
<i>Luca Nicola Quaroni, Roberto Merino-Martinez, Fernanda D. Monteiro, S. Satish Kumar</i>	

Sound Perception Study of Auralized Novel Propeller Design for Future Electrical Air Mobility Platforms	3340
<i>Roalt Aalmoes, Kylie Knepper, Naomi Sieben, Wouter De Haan, Gabriel Margalida, Tomas Sinnige</i>	
Numerical Analysis of Propeller-Airfoil Interaction in a Distributed Propulsion System Using a Hybrid LES and FW-H Approach	3348
<i>Zhe Yang, Matthias Meinke, Wolfgang Schroeder</i>	
Experimental Investigation with a Distributed Propulsion Large Scale Model in the DNW-NWB Wind Tunnel	3363
<i>Jorge M. Pereira Gomes, Robin Wickersheim</i>	
Effect of Rotor Axial Spacing on Ducted Counter-Rotating UAV Propeller Noise.....	3389
<i>Muwanika Jdiobe, Takao Suzuki, Ryan Paul, Kurt Rouser</i>	
Experimental Validation of Vortex Particle Method for Modeling of Rotor Interaction Noise	3409
<i>Witold Klimczyk, Pawel Kekus-Kumor, Adam Sieradzki</i>	

PROPELLER, ROTORCRAFT AND V/STOL NOISE X

Numerical Investigation of Open Fan's Tonal Noise Prediction in Low and High Speed Condition	3423
<i>Masakazu Sugiyama, Nassim Jaouani, Fabrice Falissard, Gabriel Reboul, Xavier Gloerfelt</i>	
Numerical and Experimental Investigation of the Effect of Rotation Speed Fluctuations on the Rotor Noise for Unmanned Aircraft Systems	3436
<i>Yuhong Li, Zhida Ma, Renhao Qu, Peng Zhou, Siyang Zhong, Xin Zhang</i>	
Acoustics of Side-By-Side Synchrophased Rotors.....	3447
<i>Neel Pandey, John A. Valdez, Wesley Beaman, Charles E. Tinney</i>	
Hover Performance and Acoustics of a 35% Scale Notional eVTOL Rotor.....	3466
<i>Charles E. Tinney, John A. Valdez</i>	
A Toroidal Upper Rotor for Performance Enhancement and Noise Reduction of Contra-Rotating System	3480
<i>Pengyu Li, Chaofan Liu, Yu Liu, Yannian Yang</i>	
Aeroacoustic and Aerodynamic Assessment of Propellers with Uneven Blade Spacing	3493
<i>Chingiz M. Arystanbekov, Vladimir V. Golubev, Basman Elhadidi</i>	

TURBOMACHINERY AND CORE NOISE III

Flight Effects on Turbofan Fan Tones	3505
<i>Eric Nesbitt, Ian Clark, Yueping Guo, Russell H. Thomas</i>	
The Rotating Rods - Annular Cascade Model for Emulating Fan Rotor-Stator Interaction Broadband Noise	3519
<i>Jianxin Lian, Hongmei Wang, Liangji Zhang, Weijie Chen, Weiyang Qiao</i>	
Turbulence Airfoil Interaction Noise Reduction by Leading-Edge Serration Under Different Inflow Conditions	3534
<i>Haonan Zhu, Changsheng Zhao, Guanqing Liu, Yu Liu</i>	

Turbofan Aft-Radiated Broadband Acoustic Flight Effects.....	3552
<i>Ian Clark, Eric Nesbitt, Russell H. Thomas, Yueping Guo</i>	
Aeroacoustic Investigation of Serrated Trailing Edge with Different Spanwise Position on Rotor	3564
<i>Ruibiao Gao, Weijie Chen, Kangshen Xiang, Jianxin Lian, Weiyang Qiao</i>	
Experimental Study on the Effect of Wavy Leading Edges on Linear Cascade	3578
<i>Yudi Xing, Hui Lei, Haorong Chen, Weijie Chen, Weiyang Qiao</i>	
Fan Noise Predictions of the NASA Source Diagnostic Test Using Unsteady Simulations with LAVA Part II – Tonal and Broadband Noise Assessment	3590
<i>Luis Santos Fernandes, Jeffrey A. Housman, Gerrit-Daniel Stich, Jared Duensing</i>	

URBAN AIR MOBILITY/UNMANNED AIR VEHICLE AND ELECTRIC AIRCRAFT GENERATION I

Acoustic Measurement of Manned Electrical Vertical Take-Off and Landing (e-VTOL) Aircraft.....	3618
<i>Franck Clero, Frédéric Mortain, Joran Le Nabat, Denis Weber, Thierry Cabannes, Matthieu Sineau</i>	
An Investigation of the Aeroacoustic Properties of a Ducted Contra-Rotating Rotors UAV	3631
<i>Zhiheng Zhao, Cheng Yang, Weikang Jiang</i>	
Propeller Source Noise Separation from Flight Test Measurements of the Joby Aviation Aircraft.....	3649
<i>Kyle A. Pascioni, Austin D. Thai, Jeremy J. Bain</i>	
Identification and Computation of Individual Propeller Acoustics of the Joby Aviation Aircraft	3663
<i>Austin D. Thai, Jeremy J. Bain, Kyle A. Pascioni</i>	
Noise Hemisphere Based on the Acoustic Flight Test of Electric Powered Unmanned Helicopter.....	3677
<i>Taehwan Cho, Seunghoon Lee, Seongyong Wei</i>	

VOLUME 6

Low-Noise Multi-Agent Intelligent Navigation for Unmanned Aircraft Systems.....	3692
<i>Qichen Tan, Yuhong Li, Hongsen Bao, Peng Zhou, Hong Kam Lo, Siyang Zhong, Xin Zhang</i>	
Acoustic and Psychoacoustic Characterisation of Unmanned Aircraft Systems as a Function of Vehicle Mass and Flight Procedure	3705
<i>Antonio J. Torija Martinez, Carlos A. Ramos-Romero, Nathan Green</i>	

ACOUSTIC/FLUID DYNAMICS INTERACTIONS V

Acoustic Performance of Co- And Counter-Rotating Synchronized Propellers	3718
<i>Burak B. Turhan, Hasan K. Jawahar, Abhishek Gautam, Djamel Rezgui, Mahdi Azarpeyvand</i>	
Numerical and Experimental Analysis of Synchronized Propellers for Noise Mitigation	3729
<i>Burak B. Turhan, Luis Fernando Lopes De Moraes Filho, Shaun Pullin, Beckett Y. Zhou, Hasan K. Jawahar, Abhishek Gautam, Djamel Rezgui, Mahdi Azarpeyvand</i>	
Analysis of the Instability of Two-Dimensional Modes in Gaps.....	3747
<i>Felipe O. Aguirre, Victor B. Victorino, Marlon S. Mathias, Marcello A. Medeiros</i>	

AIRFRAME/HIGH-LIFT NOISE V

Aeroacoustic Study of a Strut Braced Ultra High Aspect Ratio Wing.....	3758
<i>Yuan He, David Angland</i>	
Numerical Study of Flap Side-Edge Vortex Based on the Combination of Zonal Detached Eddy Simulation and Lattice-Boltzmann Method.....	3775
<i>Julien Husson, Marc Terracol, Sébastien Deck</i>	
Flow and Noise Generation of a High-Lift Wing with Sweep Angle in Closed Test Section: A Numerical Approach.....	3787
<i>Laurent Sanders, Thomas Le Garrec</i>	
Airframe Noise Simulation of an A320 in Landing Configuration	3807
<i>Stan Proskurov, Michael Mößner, Roland Ewert, Jan W. Delfs, Juergen Dierke, Michael Pott-Pollenske, Daniela Almoneit</i>	

COMPUTATIONAL AEROACOUSTICS V

On the Use of Acoustic Analogy and Scale-Resolving Turbulent Flow Computations for Noise Sources Identification.....	3833
<i>Gianluca Romani, Damiano Casalino</i>	
Aeroacoustics Simulations Using Kinetic-Energy and Entropy Preserving (KEEP) Schemes	3851
<i>Hiroyuki Asada, Seiya Sato, Naoki Miwa, Soshi Kawai</i>	
Application of the SMART Method to Higher-Dimensional Structured Multiblock Grid Singularities.....	3860
<i>Duane R. Hixon</i>	

DUCT ACOUSTICS: EXPERIMENTS II

Development of a Didactic Demonstrator for Aeroacoustic Evaluations of Ducts.....	3875
<i>Stefan Schoder, Jan Boysen, Dominik Mayrhofer, Florian Kraxberger, Patrick Heidegger, Andreas Wurzinger, Felix Czwielong, Paul Maurerlehner</i>	
Acoustic Liner Drag: Measurement Uncertainty Reduction and Application to Novel Perforate Geometries.....	3887
<i>Brian M. Howerton</i>	
Experimental Visualization of the Acoustic Field Inside a Lined Duct with Grazing Flow	3901
<i>Yo Murata, Koki Tanaka, Hirofumi Daiguji, Tatsuya Ishii, Hideshi Oinuma, Gai Kubo, Koji Okamoto, Masahito Akamine</i>	

DUCT ACOUSTICS: LINERS I

Influence of Source Type on Acoustic Liner Impedance in No Flow.....	3917
<i>Jordan R. Kreitzman, Michael G. Jones</i>	
Bypass Duct Acoustic Liner Design with and Without Bifurcation Effects	3941
<i>Douglas M. Nark, Michael G. Jones, Jordan R. Kreitzman, William Schuster</i>	

Labyrinth-Coiling Quarter Wavelength Tubes Embedded in Honeycomb Cells for Advanced Acoustic Liner Designs	3954
<i>Giuseppe Catapane, Luigi Maria Cardone, Giuseppe Petrone, Olivier Robin, Thomas Humbert, Kevin Verdière</i>	

The Effect of the Turbulent Shear Stress on the Acoustic Boundary Condition of Liners with Grazing Mean Flow	3966
<i>Dirk Ronneberger, Anita Schulz</i>	

JET AEROACOUSTICS: SUPERSONIC JETS

Source and Radiation Properties of an Installed GE F404 Engine: An Overview of Findings.....	3982
<i>Tyce Olaveson, Logan T. Mathews, Kent L. Gee, Hunter Pratt, Michèle Eggleston, Kristi Epps</i>	

Quadratic Gappy-POD Applied to the Acoustic Near-Field of High Mach Number Jets.....	3994
<i>Charles E. Tinney, Yingjun Zhao-Dubuc, John Valdez</i>	

Reduced-Order Model Prediction of Far-Field Mixing Noise from Internally-Notched Nozzles	4010
<i>Francisco J. De Souza, Jack Lawrence, Anderson Proenca</i>	

On a New Jet Noise Component from High-Performance Aircraft at Afterburner.....	4020
<i>Christopher K. Tam</i>	

JET AEROACOUSTICS: MACHINE LEARNING

Reduced Order Modelling of a Reynolds Number 10^6 Jet Flow Using Machine Learning Approaches	4038
<i>Amal Roy Murali, Mary Lidiya K. Kennedy, Vasily Gryazev, Umberto Armani, Annabel Markesteijn, Elnaz Naghibi, Vassili Toropov, Marc C. Jacob, Reinhard Hinkelmann, Sergey A. Karabasov</i>	

An Extensive Near-Field Noise Prediction of a Subsonic Jet Using Data-Driven Surrogate Model Based on Neural Networks	4063
<i>Stefano Meloni, Francesco Centracchio, Roberto Camussi, Umberto Lemma, Giorgio Palma, Christophe Bogey</i>	

Identifying Noise Source Regions in a Supersonic Jet Using Information Flux Methods	4073
<i>Chandan Vempati, Vivek Thazhathattil, Rishita Das, Santosh Hemchandra</i>	

PROPELLER, ROTORCRAFT AND V/STOL NOISE XI

Numerical Investigation of Aerodynamics and Acoustics in Dual-Propeller Tip-To-Tip Gap Distances	4091
<i>Mateus G. Lattari, Julio A. Cordioli, César J. Deschamps, Filipe D. Da Silva, Juan P. Salazar</i>	

Aeroacoustics of In-Flight Propeller-Wing in Pusher Configuration	4109
<i>Deepak C. Akiwate, Riul Jung, Chaitanya C. Paruchuri, Phillip Joseph, A. B. Parry, David Angland</i>	

Semi-Empirical Acoustic Rotor-Rotor and Rotor-Structure Interaction Noise Estimation for Novel Electric Aircraft Propulsion	4122
<i>Peter N. Sorensen, Patrick Laverty, Daniel R. Cuppoletti</i>	

Analytical Modeling of Contra-Rotating Propellers Informed by Unsteady RANS Inputs..... 4136
Michel Roger, Jack E. Barker, Alessandro Zarri, Julien Christophe, Christophe Schram

PROPELLER, ROTORCRAFT AND V/STOL NOISE XII

Tonal Noise Predictions of a Generic Open-Fan Based on a Hybrid URANS Approach..... 4153
Danny Lewis, Clement Perrin, Fabrice Falissard

Aerodynamics and Acoustics of Asymmetric Propellers with Uneven Blade Spacing 4174
Dima Usov, Daniel Koning, Timotheos Chronis, Antonio Filippone, Deepak Akiwate, Antonio J. Torija Martinez

Towards a Controlled Roughness for Improved Aerodynamic and Acoustic Performance of Propellers at Low Reynolds Number..... 4187
Yoann Beausse, Benjamin Cotte, Caroline Pascal

Accuracy of Tonal Noise Prediction of Propellers Via Numerical Simulations and Experimental Campaigns..... 4198
Lourenco Tercio Lima Pereira, Daniele Ragni, Gianluca Romani, Damiano Casalino

TURBOMACHINERY AND CORE NOISE IV

Aeroacoustic Optimization of an Axial Cooling Fan with Fundamental Observations 4213
Lorenzo M. Pii, Damiano Casalino, Gianluca Romani, Kartik Singal

Spacecraft Cabin Ventilation Fan Research at NASA 4230
Lisa D. Koch, David Stephens, Jonathan M. Goodman, Arman Mirhashemi, Rebecca Buerhle, Daniel L. Sutliff, Christopher S. Allen

Acoustic Post-Processing of CFD Calculations on the ECL5/CATANA Fan Stage Test Rig..... 4246
Pieter Sijtsma, Yuri El Kouch, Virginie Barbieux, Jacky Marjono

Experimental Validation of an Analytical Sound Transmission Model for Fan Stages 4259
Maximilian Behn, Juliane Pilgrim, Ulf Tapken

URBAN AIR MOBILITY/UNMANNED AIR VEHICLE AND ELECTRIC AIRCRAFT GENERATION II

Synthesis and Auralisations of Quadcopter Flyovers for Psychoacoustic Assessment..... 4281
Carlos A. Ramos-Romero, Marc Green, Antonio J. Torija Martinez

Initial Study on the Impact of Speed Fluctuations on the Psychoacoustic Characteristics of a Distributed Propulsion System with Ducted Fans 4291
Stephen Schade, Roberto Merino-Martinez, Patrick Ratei, Susanne Bartels, Robert Jaron, Antoine Moreau

Aeroacoustic Assessment of the Noise Radiated by a Maneuvering Drone in an Indoor Test Zone 4308
Riccardo Zamponi, Giacomo Gioli Torrione, Erica Gallo, Alessandro Zarri, Lorenzo Schillaci, Christophe Schram

Acoustic Measurements for the Moog S-250 Vehicle in Hover 4318
Brenda S. Henderson, Jordan Cluts, Alexander A. Svetgoff, Justin Jantzen, Jeff Bennett

WORKSHOP - HYBRID ANECHOIC WIND TUNNEL

- Laser-Induced Plasma Studies in the UTIAS Hybrid Anechoic Wind Tunnel 4332
Reuben W. Haklander, Jessica Eburn, Philippe Lavoie, Stephane Moreau, Oksana Stalnov

ACOUSTIC/FLUID DYNAMICS INTERACTIONS VI

- DMD-Aided Assessment and Control of the Aeroacoustic Environment in a Generic Weapon Bay
Cavity 4347
Satya Prakash, Aniruddha Sinha, Avijit Chatterjee
- Acoustic Cavity Resonances Driven by Shear Layer Instability 4362
Mattias Billson, Hans Mårtensson, Steffen Hammer, Jens Fridh
- Large-Eddy Simulations of a Rotor with Impedance Patches on Its Blades..... 4379
*Razvan Pretorian, Marc Montagnac, Santiago Montoya-Ospina, Romain Gojon, Michaël
Bauerheim*
- Experimental Study of Deep Cavity Noise Suppression by Surface Compliance 4403
Muhammad Rehan Naseer, Lin Li, Jiaju Zou, Randolph C. K. Leung, Yu Liu, Reza Maryami

VOLUME 7

- Influence of Edge Geometry on the Noise Generated by a Deep Cavity with a Turbulent Grazing
Flow..... 4418
*Tiphaine Arnould, Michaël Bauerheim, Xavier Carbonneau, Romain Gojon, Thomas Nodé-
Langlois*
- Aerodynamic Optimisation of Acoustic Liners 4438
Haris Shahzad, Stefan Hickel, Davide Modesti

AIRFRAME/HIGH-LIFT NOISE VI

- Numerical and Experimental Investigation of the Mitigation of Landing Gear Noise Using
Diamond Lattice Fairings 4449
*Shuai Li, Lars Davidson, Shia-Hui Peng, Alejandro Rubio Carpio, Daniele Ragni, Francesco
Avallone*
- Computational Study of Noise Characteristics from 30P30N Leading-Edge Slat and Krueger Flap..... 4466
*Mitsuhiro Murayama, Kazuomi Yamamoto, Yasushi Ito, Ryutaro Furuya, Meelan M.
Choudhari, David P. Lockard*
- Numerical and Analytical Investigations on Airfoil Noise Reduction with a Sweep Angle..... 4479
Dong Hun Kang, Seongkyu Lee
- Prediction of Surface Pressure Spectrum at the Aerofoil Trailing Edge Treated with Canopies 4496
*Phillip Joseph, Suresh Palani, Chaitanya C. Paruchuri, Annabel P. Markesteijn, Sergey A.
Karabasov, Tze Pei Chong*
- Aeroacoustic Simulations of a Wind Turbine: Validation with Field Tests, Including Trailing-Edge
Serrations..... 4527
Andre F. Ribeiro, Wouter C. Van Der Velden, Damiano Casalino, Guannan Wang

Trailing-Edge Bluntness Noise Attenuation Using Spanwise Varying Porosity.....	4538
<i>John Kershner, Chaoyang Jiang, Manuj Awasthi, Danielle Moreau, Con J. Doolan, Lorna J. Ayton, Thomas F. Geyer, Justin W. Jaworski</i>	

COMPUTATIONAL AEROACOUSTICS VI

Rod-Airfoil Wind Tunnel Testing, a Classic Revisited: Validation of Aeroacoustics Numerical Modelling in the Near and Far Field	4548
<i>Lars Erbig, Simone Landi, Jacques Cuenca, Claudio Colangeli, Raphael Hallez, Olivier Minck, Marijn Sanders</i>	
Large Eddy Simulations of an Ascending Space Launcher at Lift-Off.....	4563
<i>Giacomo Della Posta, Francesco Salvatore, Fulvio Stella, Agostino Neri, Matteo Bernardini</i>	
An Extension of the Truncated Ingard-Myers Impedance Boundary Condition for High Mach Number Grazing Flows	4576
<i>Fang Q. Hu, Douglas M. Nark</i>	
Anisotropy Modelling for the Wall-Pressure Spectrum Under a Turbulent Boundary Layer.....	4592
<i>Yendrew Yauwenas, Con J. Doolan, Paul Croaker, Graeme Lane</i>	
Analysis of Aeroacoustic Sources Using Large Eddy Simulation of an Open Fan Blade at Full Scale	4608
<i>Ravish Karve, Stephan Priebe, Eduardo Jourdan, Arash Mousavi, Suryapratim Chakrabarti, Luke D'Aquila, Junsok Yi, Mohammad Alhawwary, Varun Bharadwaj Ananthan, Kishore Ramakrishnan, Trevor H. Wood</i>	

DUCT ACOUSTICS: IMPEDANCE EDUCATION II

On the Comparison of Different Methods for Impedance Education Applied to a Numerical Database	4621
<i>Francesco Avallone, Angelo Paduano, Lucas M. Pereira, Lucas A. Bonomo, Julio A. Cordioli, Damiano Casalino, Davide Cerizza</i>	
Impedance Education Based on Machine Learning for Acoustic Liners with Flow	4638
<i>Mathieu Gaborit, Xiaozhou Huang, Thomas Humbert, Gwenael Gabard</i>	
The Effect of Changes in Downstream Acoustic Termination on the Nonlinear Acoustic Properties of Perforates	4650
<i>Hans Boden, Lin Du</i>	
NASA Investigation of Flow Direction Effects on Impedance Education for Acoustic Liners.....	4662
<i>Michael G. Jones, Douglas M. Nark, Brian M. Howerton</i>	

DUCT ACOUSTICS: LINERS II

Framework for Modal Based Assessment of Liner Structures	4675
<i>Karsten Knobloch, Larisa Grizewski, Hans-Fleming Kohlenberg, Maximilian Behn, Julia Genssler</i>	
Linear Aeroacoustics of Deep Cavities.....	4690
<i>Yves Auregan, Joachim Golliard</i>	

Investigation of Broadband Performance of Periodic Parallel-Element Liners with Multi-Layer Acoustic Septa.....	4701
<i>Yujie Wang, Xianghai Qiu, Lin Du, Xiaodong Jing, Xiaofeng Sun</i>	
IFAR Benchmark Challenge #4.....	4711
<i>Ralf Burgmayer, Hans-Fleming Kohlenberg, Karsten Knobloch</i>	
Extending Acoustic Liner Bandwidth with Simple Embedded Septa.....	4725
<i>Brian M. Howerton, Jordan R. Kreitzman, Chelsea Solano</i>	
Smart Acoustic Lining for UHBR Technologies Engine Part 1: Design of an Electroacoustic Liner and Experimental Characterization Under Flow in Rectangular Cross-Section Ducts.....	4738
<i>Emanuele De Bono, Manuel Collet, Kevin Billon, Edouard Salze, Hervé Lissek, Maxime Volery, Morvan Ouisse, Jacky Marjono</i>	
Smart Acoustic Lining for UHBR Technologies Engine Part 2: Acoustic Treatment at the Intake of a Scaled Turbofan Nacelle.....	4748
<i>Emanuele De Bono, Manuel Collet, Kevin Billon, Edouard Salze, Hervé Lissek, Maxime Volery, Morvan Ouisse, Jacky Marjono</i>	

JET AEROACOUSTICS: NOISE REDUCTION

Directional Jet Noise Reduction for Tactical Aircraft.....	4759
<i>Kyle Miller, Dimitri Papamoschou</i>	
Reducing Jet Noise from a Biconical Nozzle	4773
<i>Sandeep R. Murthy, Daniel Bodony</i>	
Jet-Noise Reduction by Streak-Generating Tabs: Coherent Structures in the Velocity Field	4788
<i>Filipe R. Amaral, Peter Jordan, André Cavalieri, Igor Maia</i>	
Acoustic Analysis of Noise Control of Rectangular Jet Using Micro-Jet Excitation	4799
<i>Michael Marques Goncalves, Vladimir V. Golubev, Anastasios S. Lyrantzis</i>	

JET AEROACOUSTICS: INSTALLED JETS

Jet-Flap Installation Noise of Pylon Mounted Jet Engine on 3D Wing	4816
<i>Christian Jente, Jérôme Huber, Florian Renard, Tristan Goffredi, Edoardo Paladini</i>	
Prediction of Far-Field Noise from Installed Corrugated Nozzles	4840
<i>Francisco J. De Souza, Jack Lawrence, Ricardo H. Cruz, Anderson Proenca</i>	
Jet-Edge Interaction Tones: Linear and Non-Linear Mechanisms.....	4850
<i>Michael Stavropoulos, Filipe R. Amaral, André Cavalieri, Lutz Lesshafft, Peter Jordan</i>	
High-Fidelity Flow and Noise Simulations of a Double-Stream Jet Installed in a T-Tail Configuration.....	4865
<i>Fulvio Sartor, Maxime Huet, Thomas Renaud, Fabien Gand</i>	
Noise Sources of Closely Installed Subsonic Jets	4882
<i>Zhong-Nan Wang, Brandon Harris, James Tyacke, Paul Tucker</i>	
Experimental Control of Jet Installation Noise.....	4891
<i>Diego Audiffred, Matteo Mancinelli, André Cavalieri, Eduardo Martini, Peter Jordan</i>	

Amplitude Modulation Mechanism of the Dual-Stream Hot Jet-Flap Interaction Tonal Noise	4903
<i>Baohong Bai, Xiaodong Li</i>	

PROPELLER, ROTORCRAFT AND V/STOL NOISE XIII

Application of Phase-Averaging to Propeller Aeroacoustics.....	4915
<i>Ismaeel Zaman, Michele Falsi, Bin Zang, Mahdi Azarpeyvand</i>	
Low Fidelity Multidisciplinary Methodology for Efficient and Quiet Propeller Design: Numerical Investigation and Experimental Validation.....	4929
<i>Gabriel Margalida, Tomas Sinnige, Kylie Knepper, Bambang Soemarwoto, Ruben Nahuis</i>	
Mutual Interaction Noise in Rotor-Beam Configuration	4939
<i>Emma Vella, Romain Gojon, Helene Parisot-Dupuis, Nicolas Doué, Thierry Jardin, Michel Roger</i>	
A Medium-Fidelity Aeroacoustic Assessment of the Distributed Electric Propulsion Wind Tunnel Model of the VENUS Project.....	4954
<i>Mattia Barbarino, Antonio Visingardi</i>	
Propeller Optimization for Tonal Noise Reduction Using Spherical Harmonics Expansion and Blade Element Theory.....	4971
<i>Felice Fruncillo, Paolo Luchini, Flavio Giannetti, Renato Tognaccini, Michele Massa</i>	
Psychoacoustic Evaluation of an Array of Distributed Propellers Under Synchrophasing Operation.....	4979
<i>Fernanda D. Monteiro, Roberto Merino-Martinez, Lourenco Tercio Lima Pereira</i>	

PROPELLER, ROTORCRAFT AND V/STOL NOISE XIV

Installation and Manufacturing Effects of Propeller Trailing Edge Serrations.....	4992
<i>Jorge Santamaria, Marlene Sanjose, Romain Gojon, Sylvain Belliot, Stephane Moreau</i>	
Comparative Assessment of Isolated Propeller Noise Test Rigs	5014
<i>Augusto B. Beck, Julio A. Cordioli, Lucas A. Bonomo, João Victor N. Fonseca, Leandro G. Simões, André M. Tourinho, Damiano Casalino, Daniele Ragni, Francesco Avallone</i>	
Assessment of Turbulence Modeling in Navier-Stokes Simulations for Grid-Generated Turbulence and Airfoil Interaction	5026
<i>Sparsh Sharma, Alexandre Suryadi, Michaela Herr</i>	
A Minimum Objective Function Trim Procedure for VTOL Boundary Layer Trailing Edge Broadband Noise Reduction.....	5039
<i>Giovanni Bernardini, Caterina Poggi, Massimo Gennaretti</i>	

TURBOMACHINERY AND CORE NOISE V

Advanced Measurement and Analysis Techniques for Aircraft Core Noise: Application on the BEARCAT Turboshaft Research Test Bench	5049
<i>Marc Dreux, Bruno Delescluse, Romain Leneveu, Pieter Sijtsma, Jean-Louis Champion-Réau, Jacky Marjono</i>	
Experimental Characterisation of Acoustic Liners Made of Oxide-Oxide Ceramic Matrix Composite.....	5067
<i>Thomas Humbert, Lara Flanagan</i>	

Combustion Noise Modelling Re-Examined for Thermally Perfect and Multi-Species Gas Flows.....	5077
<i>Yann Y. Gentil, Guillaume Daviller, Stephane Moreau</i>	
A Mode-Matching Model for Sound Radiation from Jet Exhausts with Liners	5096
<i>Gwenael Gabard, Ke Li</i>	
Coherent Output Power with Groups of Microphones	5107
<i>Pieter Sijtsma, Marc Dreux, Bruno Delescluse, Romain Leneveu, Jacky Marjono</i>	
Wave Transmission Losses in a High-Pressure Turbine Stage	5119
<i>Julian Winkler, Jeff M. Mendoza</i>	

URBAN AIR MOBILITY/UNMANNED AIR VEHICLE AND ELECTRIC AIRCRAFT GENERATION III

Characterizing Multicopter UAV Noise Emission Through Outdoor Fly-By Measurements with a Microphone Array	5137
<i>Gert Herold, Ennes Sarradj</i>	
High-Fidelity Simulations of Vertiport Ground Effects on eVTOL Rotor Noise	5147
<i>Michael Marques Goncalves, Vladimir V. Golubev, Anastasios S. Lyrantzis, Reda R. Mankbadi</i>	

VOLUME 8

A Preliminary Design Framework for Performance and Noise Assessment of Urban Air Mobility Vehicles	5162
<i>Lourenco Tercio Lima Pereira, Sen Wang, Daniele Ragni</i>	
Efficient Noise Footprint Computation for Urban Air Mobility Maneuvers in Vertiport Environments.....	5179
<i>Furkat Yunus, Carmine Varriale, Mirjam Snellen</i>	
Aeroacoustics of Small Contra-Rotating Co-Axial Rotors in Hover and Forward Flight	5196
<i>Karl-Stéphane Rossignol, Jianping Yin, Fabrizio De Gregorio, Antonio Visingardi, Giuseppe Ceglia, Mattia Barbarino, Francesco Petrosino</i>	

ACOUSTIC/FLUID DYNAMICS INTERACTIONS VII

Noise Reduction of a Circular Cylinder Through Varied Porous Coating Configurations	5222
<i>Reza Maryami, Yu Liu, Muhammad Rehan Naseer, Lei Sun</i>	
Experimental Study on Fluid-Structure-Acoustic Interaction of a Cylinder with Flexible Splitter Plates	5241
<i>Lin Li, Guanqing Liu, Jiaju Zou, Yu Liu</i>	
Experimental Investigation of the Influence of Leading and Trailing Edge Porous on Aerodynamic Noise.....	5261
<i>Philip C. Woodhead, Tze Pei Chong, Phillip Joseph, Chaitanya Paruchuri, Sergi Palleja Cabre, Thomas F. Geyer</i>	

ACOUSTIC/FLUID DYNAMICS INTERACTIONS VIII

Statistical Analysis in Transient Rotor Noise Strength.....	5276
<i>Wangqiao Chen, Siyang Zhong, Zhida Ma, Yuhong Li, Peng Zhou, Weishu He</i>	
Control of Cyclonic Separator Tonal Noise Through Exhaust Duct Design	5286
<i>Dhara Mallesh Pyla, Chaitanya C. Paruchuri, Phillip Joseph, Nick Wain, Alvaro Gil-Garcia</i>	
High-Frequency Aeroacoustic Source Mechanisms of a Structured Porous Coated Cylinder	5298
<i>Elias Arcondoulis, Riccardo Zamponi, Iris Alagoz, Francesco Avallone, Chaitanya Paruchuri</i>	
Experimental Low-Frequency Noise Characterization of an Octocopter Drone	5320
<i>Ramesh Raja Subramanyam, Rafael Castro Mota, Kevin Picker, Volker Wittstock, Stefan Jacob</i>	

ACOUSTIC/FLUID DYNAMICS INTERACTIONS IX

Similitude for Vibroacoustic Coupling Models with Geometric Distortion	5329
<i>Giada Cardellino, Christian Adams, Stefan Schoder, Francesco Franco, Giuseppe Petrone, Sergio De Rosa</i>	
On the Phase Relation in Aeroacoustic Feedback Loops.....	5346
<i>Romain Gojon, Michaël Bauerheim, Maxime Fiore, Stephane Moreau</i>	
Experimental Study on Effect of Wheelset Ground Clearance on Aerodynamic Noise of High-Speed Train Bogie	5364
<i>Fushan Shi, Tiantian Wang, Fangcheng Shi</i>	

AIRFRAME/HIGH-LIFT NOISE VII

Airfoil Noise Reduction Produced by Leading Edge Serrations	5373
<i>Angus O. Wills, Manuj Awasthi, Danielle Moreau, Charitha De Silva, Con J. Doolan</i>	
Noise Radiation and Dynamics of Slat Cove Vortices Revisited in Light of a Parametric LBM Study.....	5383
<i>Amal Roy Murali, Jerome Boudet, Florian Guiho, Marc C. Jacob, Michaël Bauerheim, Stephane Moreau</i>	
Computational Study on Noise from Natural Laminar Flow Infinite Wing with Krueger Flap and Comparison to Slat Noise.....	5401
<i>Mitsuhiro Murayama, Yasushi Ito, Ryutaro Furuya</i>	
Experimental and Numerical Investigation on Noise Directivity of the 30P30N Three-Element High-Lift Airfoil	5414
<i>Kazuomi Yamamoto, Hiroki Ura, Kentaro Tanaka, Mitsuhiro Murayama</i>	
Slat Track Noise and Flow Measurements in Noisy Aerodynamic Closed Section Windtunnel and Associated CFD/CAA Computations	5434
<i>Renaud Davy, Eric Manoha, Marc Terracol</i>	

ADVANCED TESTING TECHNIQUES: TEST FACILITIES

Experimental Study on the Reflection of Sound Waves at Different Incident Angles by Acoustic Metasurface in a Grazing Flow	5456
<i>Renhao Qu, Jingwen Guo, Yi Fang, Wei Yi, Wangqiao Chen, Peng Zhou, Xin Zhang</i>	
Numerical Exploration of S1MA Source Localization Improvements by Aeroacoustic Liners	5466
<i>Marlon Botte, Remi Roncen, Fabien Mery, Christophe Peyret</i>	
Experimental Investigation of the Influence of Aerodynamic Loading on the Transmission Loss Through Kevlar Membranes.....	5483
<i>Andreas Fischer, Oliver Lylloff, Anders Olsen, Mac Gaunaa, Christian Bak</i>	
Test Rig Design for Unsteady Surface Pressure Measurements in Complex Flows.....	5496
<i>Meike Jansen, Nan Hu, Karl-Stéphane Rossignol, Ernst Daniel, Spehr Carsten, Thomas Ahlefeldt</i>	
Direct Field Acoustic Testing of a Turboprop Aircraft Fuselage	5508
<i>Mattia Dal Borgo, Umberto Musella, Alberto Garcia De Miguel, Mariano Alvarez Blanco, Bart Peeters, Salvatore Nocerino, Biagio De Maio</i>	

COMPUTATIONAL AEROACOUSTICS VII

Efficient Implementation of a Flux Reconstruction Scheme for the Simulation of Linearized Flows on Graphics Processing Units.....	5518
<i>Javier Crespo , Óscar Bermejo, Juan Manuel Gallardo</i>	
A Comparative Study of Optimized and Unoptimized Finite-Difference and Runge-Kutta Schemes in 2D CAA Benchmarks	5531
<i>You Wei Ho, Edward James Brambley</i>	
Numerical Simulation of Acoustic Structure Interaction with Spectral Difference Method on Dynamically Deforming Meshes.....	5544
<i>Junhui Gao, Li Liu, Mingxia Yin, Jiahui Han</i>	
A High Order Discontinuous Galerkin Spectral Element Solver for the Lighthill's Wave Equation	5564
<i>Alberto Artoni, Paola F. Antonietti, Ilario Mazzieri, Paolo Schito, Nicola Parolini</i>	
A New Strategy Towards Stable and Accurate Boundary Closures for High-Order Finite Difference Schemes.....	5574
<i>Long Wu, Jae-Wook Kim</i>	

COMPUTATIONAL AEROACOUSTICS VIII

Computational Aeroacoustic Prediction of Tonal Noise for Low Reynolds Number Airfoils.....	5591
<i>Alison Zilstra, David A. Johnson</i>	
Large Eddy Simulation of Airfoil Tip Noise at Various Angles of Attack.....	5607
<i>Guang C. Deng, Satoshi Baba, Hadar Ben-Gida, Philippe Lavoie, Stephane Moreau</i>	
Direct Numerical Simulation of the Acoustic Response of a NACA-0012 Airfoil with an Elastic Serrated Trailing-Edge.....	5622
<i>Massimiliano Nardini, Richard D. Sandberg</i>	

Jet-Wing Interaction Noise from Scale-Resolving Simulations 5643
Ulf Michel, Daniel Lindblad, Maximilian Höchel, Florian Renard, Jérôme Huber

Mitigation of Truncation Effects in Spectral Ffowcs-Williams and Hawkings Analogy..... 5658
Damiano Casalino

DUCT ACOUSTICS: LINERS III

Evaluation of Nonlinear Impedance Models for Acoustic Liners Under the Normal Incident Sound
Wave..... 5674
*Gai Kubo, Tatsuya Ishii, Kenichiro Nagai, Hideshi Oinuma, Shunji Enomoto, Yo Murata,
Junichi Oki*

Acoustic Mode Decomposition in Rectangular Ducts with Sheared Flow..... 5692
Alexander N. Carr

Design and Test of Novel Aero Engine Inlet Liners at the AneCom AeroTest Facility – Part I,
Predictions..... 5713
Giuseppe Dilillo, Paul B. Murray, Nicola Gravagnone

Design and Test of Novel Aero Engine Inlet Liners at the AneCom AeroTest Facility – Part II,
Measurements..... 5734
Paul B. Murray, Giuseppe Dilillo, Nicola Gravagnone

Comparison of Inlet Broadband Acoustic Liner Predictions to Quiet Technology Demonstrator 3
Flight Data..... 5743
Jason June, Eric Nesbitt, Douglas M. Nark, Michael G. Jones

JET AEROACOUSTICS: IMPINGING JETS

Stability of Non-Ideally Expanded Jet Impinging on a Flat Plate 5757
Jérémie Gressier, Maxime Fiore, Romain Gojon

Feedback Loop Mechanism in Underexpanded Impinging Jets Using Entropy Based Instability
Model 5769
Manju Adhikary, Maxime Fiore, Romain Gojon

An Experimental Investigation of the Resonance Appearance in an Impinging Jet..... 5783
Matteo Mancinelli, Roberto Camussi, Vincent Jaunet

Mechanisms of Tone Generation in Impinging Supersonic Jets..... 5792
Daniel M. Edgington-Mitchell, Joel Weightman, Petrônio A. S. Nogueira

JET AEROACOUSTICS: NUMERICAL MODELING

Modelling Offset Dual-Stream Jet Noise Using an Acoustic Analogy and Input from Steady RANS..... 5812
Shabeeb N. P., Aniruddha Sinha

Noise Prediction of Multi-Stream Internally Mixed Jets with External and Internal Pligs Using
Large-Eddy Simulation 5825
Gerrit-Daniel Stich, Olivia G. Martin, Chase Ashby, Jeffrey A. Housman, Jared Duensing

A RANS-Based Acoustic Analogy Approach for Jet-Noise Assessment of Next-Generation Supersonic Aircraft.....	5869
<i>Mattia Barbarino, Francesco Petrosino, Grazia Piccirillo, Antimo Glorioso, Nicole Viola</i>	

VOLUME 9

PROPELLER, ROTORCRAFT AND V/STOL NOISE XV

Boundary Layer Ingestion Ducted Fan: Aeroacoustic and Psychoacoustic Insights	5890
<i>Feroz Ahmed, Carlos A. Ramos-Romero, Antonio J. Torija Martinez, Mahdi Azarpeyvand</i>	
On the Unsteady Fuselage Loading Induced by a Proximal Propeller	5900
<i>Ismaeel Zaman, Stefano Meloni, Michele Falsi, Bin Zang, Mahdi Azarpeyvand</i>	
Acoustic Characterisation of a Propeller Ingesting an Adverse Pressure Gradient Boundary Layer	5914
<i>Ismaeel Zaman, Feroz Ahmed, Bin Zang, Mahdi Azarpeyvand</i>	
A First Principle Based Approach for Prediction of Tonal Noise from Isolated and Installed Propeller	5927
<i>Jatin Manghnani, Vincent Domogalla, Roland Ewert, Lothar Bertsch, Jan W. Delfs</i>	
Numerical Characterization of the Aeroacoustics of Tandem Propellers in Hover	5960
<i>Luca Galimberti, Daniele Granata, Luca Abergò, Francesco A. Caccia, Alberto Savino, Alberto Guardone, Alex Zanotti, Matteo Parsani</i>	

PROPELLER, ROTORCRAFT AND V/STOL NOISE XVI

Low-Frequency Sound from Rotors Ingesting a Turbulent Wake from an Upstream Airfoil.....	5978
<i>Jason M. Anderson, Christopher Hickling, Colin Parker, Field Manar</i>	
A Preliminary Noise and Flow Field Study of a Propeller Tilted Negatively to a Free-Stream	6005
<i>Liam P. Hanson, Desmond Lim, Xiao Liu, Bin Zang, Mahdi Azarpeyvand</i>	
Reduction of Propeller-Strut Interaction Noise by Porosity	6024
<i>Luca Crawshaw, Amin Karimian, Chaitanya C. Paruchuri, A. B. Parry, Sergi Palleja-Cabre, Elias Arcondoulis</i>	
VENUS Project: Numerical and Experimental Investigation on the Aeroacoustics of Distributed Propulsion Configurations.....	6046
<i>Caterina Poggi, Elisa De Paola, Pier Luigi Vitagliano, Luana Georgiana Stoica, Alessandro Di Marco</i>	

TURBOMACHINERY AND CORE NOISE VI

Prediction of Inlet Tone Noise from Two-Stage Fans.....	6061
<i>Edmane Envia</i>	
Data-Driven Acceleration and Sensitivity Study of an Acoustic Cascade Response Model	6081
<i>Antonio Alguacil, Michaël Bauerheim, Stephane Moreau, Pierre Lavoie, François Bolduc- Teasdale</i>	
Flow and Acoustics Simulations of a Supersonic Engine Inlet	6104
<i>David Stephens, Alexander A. Svetgoff</i>	

Experimental Investigations of the Aeroacoustic Interactions of Fan Blade Skew, Leading Edge Serrations and Inflow Turbulence.....	6115
<i>Felix Czwielong, Christof Ocker, Lorenzo Tieghi, Giovanni Delibra, Valerio Barnabei, Stefan Schoder, Alessandro Corsini, Stefan Becker</i>	

ACOUSTIC/FLUID DYNAMICS INTERACTIONS IX

Wall-Pressure Fluctuations Induced by a Forward Step in a High-Reynolds-Number Turbulent Boundary Layer.....	6135
<i>Yi Liu, Di Zhou, Meng Wang</i>	
Wall-Pressure Spectra Under Turbulent Boundary Layers with Equilibrium Pressure Gradients.....	6148
<i>Saurabh Pargal, Junlin Yuan, Stephane Moreau</i>	

ACOUSTIC/FLUID DYNAMICS INTERACTIONS XI

Helmholtz Resonance of Pinhole-Mounted Sensors for Wall Pressure Fluctuations Measurements.....	6160
<i>Nan Hu, Karl-Stéphane Rossignol</i>	
Experimental Identification of Airfoil Stall Noise Sources in Static and Dynamic Conditions.....	6176
<i>Lisa Sicard, Malek Dakhli, Romain Monchaux, Benjamin Cotte</i>	
Characterization of the Far-Wake of a Wall-Mounted Obstacle Embedded in a Turbulent Boundary Layer.....	6188
<i>Humza Butt, Shreyas S. Chaware, Shishir Damani, Mate Szoke, Surabhi Srivastava, Todd Lowe, William J. Devenport</i>	
Manipulation of Mid- And High-Frequency Pressure Source by Streamwise Finlets.....	6205
<i>Zhihang Pan, Qingqing Ye</i>	

AIRFRAME/HIGH-LIFT NOISE VIII

Psychoacoustic Analysis of the Noise Emissions from the Airbus A320 Aircraft Family and Its Nose Landing Gear System.....	6218
<i>Roberto Merino-Martinez, Irina Besnea, Bieke Von Den Hoff, Mirjam Snellen</i>	
Air Curtains as Flow Control Low Noise Technologies for Landing Gear Noise Reduction.....	6234
<i>Gareth J. Bennett, Daniel Carroll, Michael Pott-Pollenske</i>	
Application of Semi-Empirical Models to Low-Noise Landing Gear Configurations.....	6249
<i>Paul Hanappier, Amine Ghouali, Hasan Jawahar, Xavier Gloerfelt</i>	

COMPUTATIONAL AEROACOUSTICS IX

Elasto-Acoustic Floquet-Bloch Problems Solved Via Discontinuous Galerkin Methods.....	6264
<i>Vincenzo Gulizzi</i>	
Noise Scattering Using a Regularized Boundary Element Method Coupled with the Ffowcs - Williams & Hawkings Method.....	6276
<i>Daniel Lindblad, Maximilian Höchel, Ulf Michel, Frank Thiele, Hao Xia</i>	

Withdrawn: Aerodynamic Noise of the High-Speed Maglev Train Considering the Contribution of the Quadrupole Noise Source 6297
Jiali Liu, Dawei Chen, Sansan Ding, Jian Du, Shuanbao Yao, Guibo Li, Junhao Song

Computational Aerodynamic and Aeroacoustic Analysis of Stalled Airfoil Sections 6298
Akshay Koodly Ravishankara, Huseyin Ozdemir, Michael Lawrence Abdulla Zaki, Beckett Y. Zhou, Kees Venner

COMPUTATIONAL AEROACOUSTICS V

Comparison of High-Fidelity Turbulence Modelling Approaches for Hybrid CAA Studies of Trailing Edge Noise 6312
Prakyath Pindi Nataraj, Franck Bertagnolio, Niels Sørensen, Andreas Fischer

DUCT ACOUSTICS: NOISE REDUCTION

Fundamental Limitations of Passive Acoustic Liners with Grazing Flow 6327
Yang Meng, Thomas Humbert, Vicente Romero-García, Jean-Philippe Groby, Gwenael Gabard

Reduction of Shrouded Propeller Noise with Over-Tip-Rotor Liners 6344
Sergi Palleja-Cabre, Ella Macey, Chaitanya C. Paruchuri, Phillip Joseph

Reduction of Acoustic Radiation Due to the Inclusion of a Duct 6358
Ben Baddour, John Smith

JET AEROACOUSTICS: FLIGHT EFFECTS

Learjet 25D Jet Noise Flyover Measurements: Comparisons with Scale-Model Data 6369
Brenda S. Henderson, Lennart S. Hultgren

Learjet 25D Jet-Noise Flyover Measurements: Uncertainty Analysis 6383
Lennart S. Hultgren, Brenda S. Henderson

Wind Tunnel Vs. Free Flying Aircraft: Comparison of UHBR Jet Installation Noise Using Zonal LES on Octree-Cartesian Grids 6393
Juergen Dierke, Michael Mößner, Roland Ewert, Jan W. Delfs

Effect of Flight on Turbulence Statistics and Noise Sources in a Round Turbulent Jet 6412
Stewart J. Leib, Brian Heberling, James E. Bridges

JET AEROACOUSTICS: MODELING II

Resolvent-Based Estimation of Wavepackets in Turbulent Jets 6438
Aaron Towne, Rutvij Bhagwat, Yuhao Zhou, Junoh Jung, Eduardo Martini, Peter Jordan, Diego Audiffred, Igor Maia, André Cavalieri

Nonlinear Interactions in Non-Resonant, Homogeneous Turbulent Jets 6459
Akhil Nekkanti, Ethan Pickering, Tim Colonius, Oliver T. Schmidt

Wavepackets and Streaks in Chevron Jets 6473
Petrônio A. Nogueira, Jayson Beekman, Joel Weightman, Daniel M. Edgington-Mitchell

Resolvent Analysis of Subsonic Jets: Resonance Mechanisms and Wave Reflections.....	6486
<i>Antoine Jouin, Christopher M. Douglas, Benjamin Cotte, Lutz Lesshafft, Peter Jordan</i>	

PROPELLER, ROTORCRAFT AND V/STOL NOISE XVII

Tandem-Rotor Noise in Low Advance Ratio Transitional Flight	6495
<i>Zilei Yi, Xiao Liu, Bin Zang, Mahdi Azarpeyvand</i>	
Predicting Tonal Noise of Full-Electric Propeller-Driven Aircraft in Outdoor Environments Using Low-Order Models	6511
<i>Furkat Yunus, Bieke Von Den Hoff, Mirjam Snellen</i>	
Experimental Identification of Noise Mechanisms Present in a Partially Buried BLI Ducted Fan	6524
<i>Feroz Ahmed, Ismaeel Zaman, Djamel Rezgui, Mahdi Azarpeyvand</i>	
Effect of Rotational Speed Mismatch on a Twin Propeller System: Aeroacoustics Study	6531
<i>Feroz Ahmed, Burak B. Turhan, Djamel Rezgui, Mahdi Azarpeyvand</i>	

PROPELLER, ROTORCRAFT AND V/STOL NOISE XVIII

Experimental Analysis of Synchrophasing Impact on Noise of Distributed Propeller Systems in Tractor Configuration	6540
<i>Fernanda D. Monteiro, Ramon Duivenvoorden, Daniele Ragni, Francesco Avallone, Tomas Sinnige</i>	
Turbulent Flow Impact on the Acoustic and Aerodynamic Performance of Overlapping Propellers	6550
<i>Burak B. Turhan, Hasan K. Jawahar, Luke Bowen, Djamel Rezgui, Mahdi Azarpeyvand</i>	
Numerical Investigation of Propeller Boundary Layer Ingestion Noise Using CABARET on Rotating Meshes	6563
<i>Hussain Ali Abid, Sergey A. Karabasov, Annabel P. Markesteijn, Igor Solntsev</i>	

TURBOMACHINERY AND CORE NOISE VII

Acoustic Energy Exchange Between Frequencies During Non-Linear Propagation of Shock Waves	6574
<i>Majd Daroukh, Cyril Polacsek, Thomas Le Garrec, Johan Thisse, Thomas Nodé-Langlois, Ricardo Blazquez Navarro</i>	
CFD Analysis of Buzz Saw Noise Employing Time-Domain Non-Linear Impedance Boundary Conditions	6588
<i>Stevie-Ray Janssen, Martin Laban, Johan Kok</i>	
Fan Buzz-Saw Noise Under Intake Flow Distortion: A Computational Study	6601
<i>Long Wu, Alexander G. Wilson</i>	

Author Index