

28th AIAA/CEAS Aeroacoustics Conference 14-17 June 2022, Southampton UK

About the Conference

The AIAA/CEAS Aeroacoustics Conference has established itself as the premier international forum for the field of aeroacoustics. It offers scientists and engineers from industry, government and universities an exceptional opportunity to exchange knowledge and results of current studies and to discuss directions for future research. Papers that address all aspects of the generation, propagation, and control of vehicle noise, as well as the effect of noise on structures and individuals are solicited.

The program's technical content will include theoretical, experimental, and numerical contributions that describe original research results and/or innovative design concepts including those related to recent advances in low-carbon aircraft architectures and urban air mobility vehicles. In addition, in-depth reviews and timely surveys will be considered. Topics identified for the conference are listed below. Papers in other related areas, including the application of aerospace noise suppression technologies in other industries, and non-aerospace research with potential application to the aerospace industry are encouraged.

Call for Papers and Announcement

AIAA/CEAS Aeroacoustics Best Paper Award

Conference papers of superb technical quality, originality, and scholarly accuracy will be considered, alongside aeroacoustics papers in the 2023 SciTech Forum, for the 2023 AIAA/CEAS Aeroacoustics Best Paper Award.

Student Paper Award

Undergraduate and graduate students are encouraged to submit papers to the Aeroacoustics Student Paper Competition by selecting "Student Paper Competition" presentation type when uploading abstracts. Student papers should report on thesis-related work conducted in collaboration with faculty advisors. The primary author must have been a student in May 2021 and must present the paper. The award will be based on the technical quality of the paper and the clarity of the presentation. The winning student will receive a monetary award and certificate.

Conference Topics

Interior Noise / Structural Acoustics and Metamaterials

Reduction of interior noise and vibration associated with aircraft, launch vehicles, automobiles and trains. Noise transmission through structures, vibro-acoustic testing and prediction methods. Acoustic metamaterials and mechanical metamaterials targeting noise reduction.

Jet Aeroacoustics

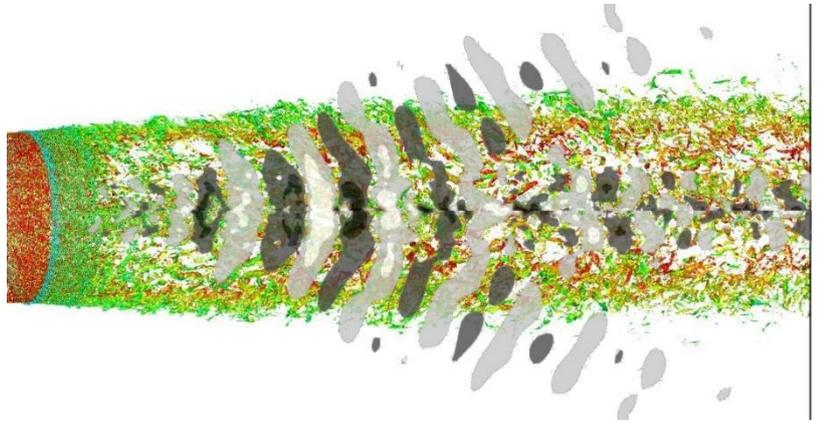
Aerodynamics and aeroacoustics of jets focusing on identifying and modeling noise production mechanisms; near-field noise; shock noise; turbulence prediction and characterization for subsonic and supersonic, circular, noncircular, and multi-stream jets including those associated with launch vehicles; and suppression methods for both subsonic and supersonic jet noise.

Propeller, Rotorcraft and V/STOL Noise

Conventional and advanced single and counter rotating propellers; tonal and broadband noise, propagation and ground reflection effects, fuselage boundary layer refraction and scattering, noise source control, effects of inflow distortions, and installation effects. Rotorcraft source studies, including rotor harmonic noise, high speed impulsive and blade/vortex interaction noise, blade/turbulence interaction noise, jet/surface interaction noise including both ground and aircraft surfaces. Component and system noise prediction and validation, ground and flight test measurements, and noise control/reduction strategies. Gearbox noise.

Turbomachinery and Core Noise

Generation, propagation and control of noise from fans, compressors and turbines; combustion noise; propagation and interaction with the mean flow field; transmission and reflection from blade and vane rows; control using active or passive



techniques; and measurement techniques for source identification.

Urban Air Mobility / Unmanned Air Vehicle and Electric Aircraft

Generation, propagation and control of noise from urban air mobility and unmanned air vehicles, including propulsor, airframe and electric motor noise. Operational noise, including in-flight noise, noise-based route selection, and research related to noise regulation.

Acoustic / Fluid Dynamics Interactions

Analysis, measurements and control of subsonic and supersonic flows, boundary layer flows, flow acoustic interactions and resonance, acoustic scattering and acoustic shielding. Active Control of noise, vibration and flows; development of associated sensors and actuators, and feedback and feed-forward control strategies.

Advanced Testing Techniques

Development and application of novel testing techniques, advanced diagnostic methods and test facilities. Topics of particular interest are detailed measurements of mean and turbulent flow phenomena that contribute to noise generation and/or affect the radiated sound; source localization including phased arrays; properties of sound-absorbing materials; interior-noise test facilities and comparison of model and full-scale testing.

Airframe / High-Lift Noise

Noise source mechanisms of flow/surface interaction as related to airframe acoustics. Measurement, analysis and prediction methods for wing, flap, slat, and landing gear noise. Noise reduction strategies including devices and methods of circulation and boundary layer control.

Community Noise, Sonic Boom and Metrics

Response of individuals and the community to aircraft noise. Virtual acoustic simulations. Noise assessment methodologies and metrics. Whole aircraft noise prediction, in-flight noise (including sonic boom). Airport noise prediction, including tools for land-use planning with respect to aircraft noise and noise monitoring methods. Noise abatement procedures.

Computational Aeroacoustics

Development of numerical techniques for aeroacoustics applications, including integral methods, adjoint and scattering methods, turbulence-resolving methods such as Large Eddy Simulation (LES) or Lattice Boltzmann Method (LBM), high order schemes and enabling methods such as boundary conditions and simulated turbulence generation. Applications of computational aeroacoustics in academic and industrial research.

Duct Acoustics

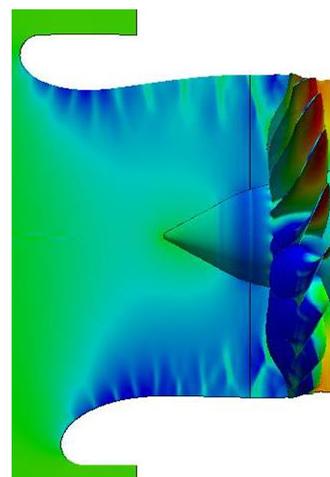
New and innovative methods to analyze, predict, and control the turbomachinery noise propagating through nacelle ducts. In-duct beamforming and source separation. Passive and active/adaptive acoustic liners.

General Acoustics

Theoretical, numerical, and experimental research involving all areas of physical acoustics and those involving noise associated to commercial systems.

Special Session on Hybrid Anechoic Wind Tunnels

Session Scope: The Hybrid Anechoic Tunnel Workshop is a forum that brings together researchers interested in hybrid anechoic aeroacoustic wind tunnels and their application. A major goal is to develop common test cases to cross validate and characterize hybrid anechoic wind tunnels as well as provide data on canonical test cases to the broader aeroacoustics community. The purpose of the special session is (a) for participants to present papers describing measurements on current common test cases (including NACA 63018, NACA 0012 and 30P30N airfoil configurations) or a configuration they would like to propose as a common test case, and (b) for participants to present papers describing quantitative and comparative characterizations, or methods for characterization, of Hybrid Anechoic Wind Tunnels using laser impulse calibration.



Important Dates

15 December 2021: Abstract submission system open

12 January 2022 (19:00 US Eastern, Midnight UK): Extended abstract due

23 February 2022: Notification to authors

17 May 2022 (19:00 US Eastern, Midnight UK): Final manuscript submitted on-line

14 to 17 June 2022: Conference dates

Abstract Instructions

An extended abstract of at least 1000 words, with key figures and extended references to existing publications is required. Authors must clearly identify in the abstract new or significant aspects of their work. Abstract reviewers will base their recommendations on acceptance or rejection on:

- Whether the abstracts meets the requirements described above
- The relevance of the work
- The originality of the work
- Contribution to the field: does it advance the current state of knowledge?
- Are significant results presented to ensure timely completion of the paper?

Abstracts will be due no later than 12 January 2022. Authors will be notified of paper acceptance by 23 February 2022. An Authors Kit, containing detailed instructions and guidelines for submitting papers to AIAA, will be made available to authors of accepted papers. Authors of accepted papers must provide a complete manuscript to AIAA online by 17 May 2022 for inclusion in online proceedings and for the right to present at the conference. It is the responsibility of those authors whose presentations or papers are accepted to ensure that a representative attends to present the paper.

Sponsor and/or employer approval of each paper is the responsibility of the author. Authors should determine the extent of approval necessary early in the paper presentation process to preclude paper withdrawals or late submission.

The abstracts submission system will be online and will open on 15th December (please visit www.aeroacoustics2022.org for details).

"No Paper, No Podium" and "No Podium, No Paper" Policies

If a written paper is not submitted by the final manuscript deadline, authors will not be permitted to present the paper at the conference. It is the responsibility of those authors whose papers or presentations are accepted to ensure that a representative attends the conference to present the paper in person (or online if the presenter is unable to attend in person due to COVID-related travel restrictions). If a paper is not presented at the conference, it will be withdrawn from the conference proceedings. These policies are intended to eliminate no-shows and to improve the quality of the conference for attendees.

Contact Information

Questions about abstracts should be referred to:

AIAA Technical Co-Chair: William J. Devenport / devenport@vt.edu

CEAS Technical Co-Chair: Phillip F. Joseph / pfi@soton.ac.uk

Administrative Chair: Alec Wilson / a.g.wilson@soton.ac.uk

Student Paper Chairs: Damiano Casalino / d.casalino@tudelft.nl (CEAS)

Cliff Brown / clifford.a.brown@nasa.gov (AIAA)

The conference is being organised by the Royal Aeronautical Society. For updates and announcements including the venue and booking information please visit www.aeroacoustics2022.org.

About Southampton

Southampton is the largest city in Hampshire and the original departure point for the Mayflower and the Titanic. Southampton is an example of England's maritime roots and offers a wealth of activities for visitors, including sailing on the Solent or a visit to the Sea City Museum and the Solent Sky Museum which depicts the history of aviation in the Solent area and tells the story of the legendary Spitfire designed in Southampton.



The city is host to a thriving port, which is not only the largest in the UK for automotive trade, but also welcomes the world's largest cruise ships docking and departing on a daily basis.

Southampton's cultural offerings include the magnificent award-winning City Art Gallery and Southampton Guildhall, as well as a superb choice of fine theatres, galleries and international events such as the annual Boat Show.

West Quay is a state of the art shopping facility with almost a hundred shops, whilst close by are three further excellent shopping centres as well as the traditional specialist shops making Southampton one of the top shopping destinations in the South of England. Southampton's exciting nightlife is renowned in the region with its historic pubs, modern bars and music venues.