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Vol. 52, No. 2 **June 2024**

ACOUSTICS NEWS AND REGULAR ITEMS

GENERAL SUBMISSIONS

ORIGINAL PAPERS

TECHNICAL NOTES

FROM THE PRESIDENT

I can't believe another 3 months has passed since my last message in Acoustics Australia. After a quiet start to the year, there now seems to be a lot of things happening.

First and foremost, this year's Australian Acoustical Society conference on the Gold Coast, aptly named 'Acoustics in the Sun', is coming up fast. Whilst abstract submissions officially closed on 31 May, at the time of writing there are still a few spots left. Don't miss out on the final opportunity to present your work at Australia's premier acoustics conference – get your abstracts in now.

For attendees, the conference will be a fantastic opportunity to learn, network and enjoy some Gold Coast Sun - not to mention ticking off a big portion of your CPD points for the year!

Plenary and keynote speakers will include Associate Professor Rebecca Dunlop on Hearing Tests in Baleen Whales, Professor Timothy Van Renterghem on Audio-visual Interactions in Environmental Noise Perception, Dr Irene van Kamp on Noise and Health in Children, and Professor Ben Cazzolato on Open-cycle Gas Turbines: Predicting and Controlling Far-field Noise.

Outside of the technical talks, we will have a large trade exhibition, and a golf day is planned for those who enjoy a bit of chasey with a little white ball (in my case mostly through the rough).

The conference runs from 6-8 November 2024 and discounted early bird registrations are open now. Register now and don't miss out – www.acoustics2024.org.au.

Travel grants are available on the main AAS website for students and eligible researchers from each state.

On that note, I'd like to remind members of the array of other education grants, research grants and prizes that the AAS offers. Applications for some of these close on 31 July each year. I encourage members to make the most of these opportunities if you have an eligible project in mind.

That's all for now.

Happy acoustic-ing!

Andrew Mitchell

FROM THE CHIEF EDITOR

Welcome to this bumper June 2024 issue of Acoustics Australia. We have 11 articles for you in this issue: 8 original papers and 3 technical notes. An interesting paper from a team at Curtin University reports on the analysis of eastern Indian Ocean pygmy blue whale songs recorded in Perth Canyon in 2017. The study successfully applies a frequency contour tracking algorithm to the blue whale calls, revealing that individual whales may have unique vocal signatures.

This issue's technical notes also highlight significant contributions from Australian authors. One technical note, by Renzo Tonin, explores the accuracy of combining statistical noise levels in wind farm guidelines, concluding that the current methods are conservative. Another from a team at Macquarie University investigates the acoustic accessibility of classrooms in an Australian University. The study shows that only 40% of the 166 rooms measured meet both noise level and reverberation time standards and discusses plans to enhance campus accessibility. Lastly, a Sydney-based team from Acoustic Studio and SLR Consulting Australia critique the application of DIN 4150-3 for above-ground structures in Australia, suggesting an alternative method that balances the needs of both asset owners and construction contractors.

Happy reading!

Danielle Moreau

ACOUSTICS AUSTRALIA 52(2), 2024 ABSTRACTS

The full papers for these abstracts can be found in the online version of Acoustics Australia.
Members of the Australian Acoustical Society should access via the member login of the AAS website.
Access for all others is via: - *http://link.springer. com/journal/40857*

GENERAL SUBMISSIONS

ORIGINAL PAPERS

Do Whales Sing to Their Own Tune? Comparing the Variability Within and Between Song Events of the Eastern Indian Ocean Pygmy Blue Whale

Capri D. Jolliffe[1], Robert D. McCauley[1] & Alexander N. Gavrilov[1]

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Acoustic data from the Perth Canyon, Western Australia, were collected for the 2017 northern migration allowing for detailed acoustic analysis of eastern Indian Ocean pygmy blue (EIOPB) whale songs within a migratory season to explore fine-scale variability in song production. An algorithm was used to follow the unit II signal in time, tracking the change in frequency over the duration of the signal and enabling a comparison of song unit production within and between singing bouts. The results of this analysis indicate that units from within the same song event have relatively consistent characteristics but vary between song events, suggesting it is possible that individual whales may have distinct vocal characteristics. The presence of breaks within a unit was identified as a significant level of variability in song production within the 2017 data set and was seen to increase throughout the season. It is hypothesised that unit breaks may play a role in intra-species communication as well as represent a novel variation to song production that increases song complexity and thus may increase individual fitness through sexual selection.

Influence of Glazing on Sound Quality in the Car: Validation of Auralizations Obtained from SEA Calculations

Valentin Miqueau[1,2], Etienne Parizet[1] & Sylvain Germes[2]

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2. Saint-Gobain Research Compiègne, 1st Marechal Joffre Street, 60150, Thourotte, France

This paper explores the possibility to use statistical energy analysis (SEA)-based computations to synthesize sounds that can be used in a subjective evaluation of the unpleasantness of exterior noises transmitted in the car compartment through the glazing. A medium family car (C-segment car) was placed in a reverberation room. A sound source was placed outside the car. The resulting noise was measured at the driver's position for nineteen different configurations of glazing. The transmission loss (TL) of each car window was computed using an in-house software and used in a SEA-based vibroacoustic synthesis model. The nineteen corresponding configurations were simulated. A listening test experiment was conducted to compare the signals synthesized from the measurements and from the simulations. The results showed a good agreement between the unpleasantness ratings of each glazing configuration. However, in the case of tempered glasses, a slight difference in the ratings was detected. Further analysis showed that this was due to an inaccurate prediction of the TL of the glazing, around its coincidence frequency. Additional measurements proved that this could be related to an underestimation of the damping. More precisely, because the intrinsic damping of a tempered glass is very low, the additional damping brought by the window seals must be taken into account. Further measurements were made to estimate the TL of a tempered glass mounted on a gasket. The use of these new values in the SEA calculation allowed for the correction of these difference in subjective ratings. The SEA computations can thus be used in the acoustic design process of cars.

Interior Noise Prediction of Metro Train in a Tunnel Caused by Wheel/Rail Rolling

Yunfei Zhang[1,2], Li Li[1,2] & Hongxiao Li[1,2]

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2. Shanghai Key Laboratory of Rail Infrastructure Durability and System Safety, Shanghai, 201804, China

Metro running causes wheel/rail rolling radiation noise and reflects multiple times between the tunnel wall and the car body. Reverberation in a tunnel increases the interior noise and reduces riding comfort. A statistical energy analysis (SEA) model for a metro train in a tunnel is proposed to predict interior noise and improve ride comfort. The model considers the acoustic excitation caused by wheel/rail rolling, the damping/coupling loss factors, reverberation time in the tunnel/coach, and the equivalent panels. The results show that the error between the simulation and the measured is 3–6 dB; the SEA model is available. The mechanical wave of symmetrical loading may cancel out on the plane of symmetry. At low frequencies, the difference between the internal and external noise is slight (10 dBA), the transmission is robust, and the sound insulation of the car body is weak. In contrast, at high frequencies, the difference is significant (25 dBA). The tunnel reverberation effect increases the sound pressure inside the car by 8–12 dBA than the open-line, and the reverberation will reduce the spatial distribution gradient of the interior noise. Applying noise control treatment on the tunnel's inner wall can reduce the noise by 5–10 dBA.

Multi-channel ANC System with Online Secondary Path Modeling for Turboprop Aircraft Cabin

Hao Shen[1], Qing Xue[2,3], Ningjuan Dong[2], Yixiao Chen[2] & Xing Shen[1,3]

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3. National Key Laboratory of Strength and Structural Integrity, Xi'an, 710065, Shaanxi, China

The engineering implementation of the multi-channel active noise control (MCANC) system for turboprop aircraft cabin is seriously hampered by its enormous computational complexity. This paper proposes the variable-P-sequential-partial-update filtered-x least mean square (VP-SPUFxLMS) algorithm, which achieves noise reduction performance comparable to that of the multi-channel FxLMS (MCFxLMS) algorithm while significantly reducing the computational complexity. Additionally, considering the time-varying nature of the secondary paths in practical applications, the Eriksson online secondary path modeling (OSPM) method is extended from single-channel to multi-channel, the problems that may be faced when the method is applied to MCANC systems are analyzed, and an improved alternative online secondary path modeling (AOSPM) method is proposed to address the above problems, which exhibits great online modeling capabilities without introducing excessive computational load. Simulation and experiment results validate the noise control performance of the proposed method, and the ANC experiment has achieved an average reduction of more than 15 dB in the sound pressure level (SPL) of the four channels, which fully demonstrates its broad engineering application prospects.

Acoustic Characterization of Hemadpanti-Style Hindu Temples: A Case Study of the Markanda and Mrikunda Temples

Apoorva A. Dandge[1] & Akshay P. Patil[1]

1. Department of Architecture and Planning, VNIT, Nagpur, Maharashtra, India

This article presents the acoustic characterization of two well-known Hemadpanti-style Indian Hindu temples in Maharashtra, India, built during the twelfth century. The studies of architectural acoustics in Indian Hindu temples are sparse. Therefore, characterizing the acoustic nature of such historical Hindu temples is vital. This study may provide insight into the role of architectural characteristics that support the desired sound field, ensuring that the music ritual, singing of devotional songs, and Vedic chanting are suitable in Hemadpanti-style Hindu temples. The research aimed to report and

investigate the acoustic behavior of the Hindu temples through in-situ measurements in an unoccupied condition. Virtual acoustic models were developed and validated using the in-situ measurements under the same conditions. Objective room acoustic indicators considered are reverberation time (T30), clarity of music (C80), and Speech Transmission Index (STI), which are later simulated and analyzed for two sound source positions in occupied conditions. The results report that the spatially and spectrally unoccupied averaged values for reverberation time (T30) and clarity of music (C80) of the Markanda temple are 0.98 s and 3.98 dB, and the Mrikunda temple (T30) and (C80) values are 0.73 s and 5.62 dB respectively. The values obtained for both temples are within the optimum range adopted for this study. The average subjective rating for speech intelligibility of the Markanda and the Mrikunda temples is "good". After analyzing indicators, the results emphasize the influence of architectural features on the acoustic characteristics of the Hemadpanti style of Hindu temples.

Assessing the Acoustic Noise in Intensive Care Units via Deep Learning Technique

Awwab Qasim Jumaah Althahab[1,2], Branislav Vuksanovic[1], Mohamed Al-Mosawi[1] & Hongjie Ma[1]

1. School of Energy and Electronic Engineering, Faculty of Technology, University of Portsmouth, Portsmouth, UK

2. Department of Electrical Engineering, College of Engineering, University of Babylon, Hillah, Iraq

Intensive care unit (ICU) noise is a critical and often overlooked issue, impacting patient recovery and healthcare staff well-being. Existing research primarily relies on costly sound level meters for monitoring noise levels, where the characteristics of noise sources cannot be determined and discriminated. This study employs deep neural networks to detect and classify ICU noise events, enhancing source identification. A cost-effective internet of things-based audio recording and monitoring system has been designed and deployed in three ICUs for data collection. The acoustic event classification system described in the paper integrates convolutional neural networks for event detection, followed by clustering to isolate noise sources. Results demonstrate precise classification, with speech identified as a major contributor in all ICUs. This model offers valuable insights for characterising acoustic sources in typical ICUs, which could be the first step towards tackling the problem of excessive noise in ICUs as well as a starting point for further research in this area.

Virtual Augmentation of the Beamforming Array Based on a Sub-cross-spectral Matrix Computation for Localizing Stationary Signal Noise Sources

R. Singh[1] & A. Mimani[1]

1. Department of Mechanical Engineering, Indian Institute of Technology Kanpur, Kanpur, Uttar Pradesh, 208 016, India

This paper presents a generalized algorithm called the sub-cross-spectral matrix (SCSM) beamforming technique for the virtual augmentation of an N-channel beamforming array based on sequential computation of the cross-spectral matrix (CSM) terms for localizing stationary signal sources. To this end, first, the diagonal sub-cross-spectral matrices (SCSMs) of the N-channel array pertaining to M different spatial locations were obtained. Next, the off-diagonal SCSMs were systematically computed by directly evaluating the cross-spectral terms between some microphones placed in the array at ith location $(1 \leq i \leq M)$ and the remaining microphones placed in the array at jth location$(j \neq i, 1 \leq j \leq M)$. As a proof of concept, the SCSM beamforming was used to virtually construct a 32-channel planar Underbrink spiral array by sequentially measuring data using $\binom{32}{2}$ microphone pairs. The resultant 2-D beamforming map of a loudspeaker source was found to be nearly identical to the counterpart result produced when data from 32-channel simultaneous measurements were used. The SCSM technique was then extended to increase the density and aperture of a planar array by constructing a virtual 64-channel planar array from 32-channel simultaneous measurements. For the former case, the source maps were found to be identical to the counterpart results obtained from the existing geometric mean and combined CSM algorithms. However, for the latter case, the SCSM beamforming delivered a noticeably improved focal-resolution along the direction in which there was a virtual increase in aperture. For localizing loudspeaker source(s) in a 3-D domain, the SCSM beamforming implemented using two orthogonal Underbrink arrays was shown to deliver a significantly improved resolution (focal lobe) and unambiguous localization because it considers the complete CSM unlike the multiplicative beamforming and combined CSM algorithms which do not account for the phase-information between the two orthogonal arrays.

Source Depth Discrimination Based on Interference Spectrum in Deep Water with an Incomplete Channel

Kang Zheng[1,2], Jixing Qin[1], Shuanglin Wu[1], Yuhan Liu[1] & Zhaohui Peng[1]

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2. College of Physical Sciences, University of Chinese Academy of Sciences, Beijing, 100049, China

A method to distinguish the surface source and underwater source based on two-dimensional Fourier transform of interference pattern in deep-water environment with an incomplete sound channel is presented in this paper. Considering the modal characteristics of incomplete channel, the normal mode can be divided into three categories: trapped mode, bottom interacting mode and surface interacting-bottom interacting mode. Then, the interference spectrum can be obtained by performing a two-dimensional Fourier transform on the interference pattern. Due to the correlation between the interference structure and the source depth, the types and positions of interference spectral peaks vary at different source depths. Based on this, subspaces can be defined for the interference

spectrum, and then the energy ratio of the different modal interference groups in the subspaces can be calculated for source depth discrimination. In this method, the identification of source depth is regarded as a binary classification problem, where the decision threshold is calculated from simulation results under a given false alarm probability. The source depth discrimination can be achieved through comparing the energy ratio with the given decision threshold. The effectiveness of the proposed method is verified using numerical simulations and experimental data..

TECHNICAL NOTES

Combining Statistical Noise Levels and Application to Wind Farm Guidelines

Renzo Tonin[1]

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It is stated in wind farm standards that logarithmic addition and subtraction of $L_{AF90,T}$ sound pressure levels is "not strictly mathematically correct". An analytical and experimental study reported in Tonin 2024 (a related article) examines the underlying accuracy of combining statistical noise levels as a general proposition, particularly the $L_{AF90,T}$ and the $L_{AF10,T}$. The objective of that study was to explore the accuracy of combining statistical noise levels and what might influence that accuracy. The objective of this study, as foreshadowed in Tonin 2024, is to apply the results to wind farms. It was concluded in Tonin 2024 that values of D_{90} (being the difference between the logarithmic sum and actual values of $L_{AF90,T}$) are negative in the range 0 to −3 dB (for the cases in the study), meaning that the logarithmic sum of $L_{AF90,T}$ for the ambient and source sound pressure level distributions is less than the actual value of $L_{AF90,T}$ for the combined distribution. As a result, in deriving the wind farm noise level (as a contribution), the actual value of $L_{AF90,T}$ will be less than that determined by logarithmic subtraction of the individual components. In respect of the question of the underlying accuracy of combining statistical noise levels for wind farms, it is concluded that the difference between the logarithmic addition of the $L_{AF90,T}$ and the true value is less than 1 dB (for the cases in the study). The results are applied herein to a typical wind farm concluding that the simple energy subtraction method adopted in wind farm guidelines is conservative even allowing for the hypothesis that the fluctuation strength of wind farm noise is not invariant but increases with distance. It is also concluded that if wind farm guidelines were to assess wind farm noise on the basis of $L_{Aeq,T}$ rather than $L_{AF90,T}$ then adding a value of 2.5 dB to the derived wind farm noise level $L_{AF90,T}$ as currently specified in the guidelines (i.e., with D_{90} = 0 dB) would be conservative even allowing for the hypothesis that the fluctuation strength of wind farm noise is not invariant but increases with distance.

Towards an Acoustically Accessible Campus: A Case Study of the Acoustic Conditions of an Australian University

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1. ECHO Laboratory, Department of Linguistics, Macquarie University Hearing, Macquarie University, Sydney, Australia

2. Media Communication Creative Arts Languages and Literature, Macquarie University, Sydney, Australia

University is an important stage of learning for students, so it is vital that higher education spaces are acoustically accessible to all and are places that promote equity and inclusion. The aim of this study was to measure the unoccupied noise levels and reverberation times of all of the classrooms in a typical Australian university to assess acoustic accessibility with a view to planning for a more accessible campus. A total of 166 classrooms were measured and categorised into good, ok, and poor classrooms according to the Macquarie University (MQU) Design Guidelines Review Performance Standards. Regarding unoccupied noise levels, 52% of classrooms were within the recommended < 35 dBA limit. Regarding reverberation times, 65% of classrooms were within the recommended 0.4–0.6 s limit. Finally, 40% of classrooms met both the noise level and reverberation time limit. The plans at the university to incorporate these findings to make the campus more acoustically accessible are discussed, as well as future research avenues so that all students and teachers can flourish.

The Increasing Application of DIN 4150-3 for the Assessment of Potential Damage to Buildings from Construction Vibration and its Implications in Australia

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2. SLR Consulting Australia Pty Ltd, North Sydney, NSW, Australia

The increasing application of DIN 4150-3 to above-ground structures such as commercial, residential and particularly heritage buildings in the preliminary planning stage of projects is problematic. DIN 4150-3 is often incorrectly interpreted when applied to Australian scenarios which has the potential for long-term consequences. Applying the DIN 4150-3 guide values for resonant vibration at the correct location (just below the roof) requires the consideration of potential amplification between the foundation and the roof level of the building, which does not appear to be common practice in Australia. A review of the literature found that roof vibration levels are typically 1.5 times higher than that at the foundation, but in practice can be up to four to six times higher, particularly in heritage structure applications. The correct application of DIN 4150-3 results in more stringent guide values at the foundation than those commonly applied in practice in Australia, the practical consequences of which are either an excessive number of pre-construction dilapidation surveys, or the restriction of vibration-intensive items of plant through increased buffer distances, which increases project costs and timelines. This paper proposes an alternative methodology to the application of DIN 4150-3 that, when complemented with the application of BS 7385-2, provides a sensible compromise for Australian scenarios between the competing requirements of asset owners and construction contractors that can be applied to all industrial, commercial and residential receivers, including those with "heritage" status.

AAS News

From the General Secretary

So far 2024 is panning out to be an interesting year! Membership applications continue to be submitted to the Society with individual membership numbers currently at 751. The AAS is proudly supported by 26 Sustaining members.

The AAS has always aimed to promote and advance the science and practice of acoustics in all its branches to the wider community and provide support to acousticians. Advancing the science of acoustics involves education, innovation and interaction. The AAS continues to support members in this manner with regular Technical Meetings, annual conferences and other acoustic centric events, a substantial resource library and affiliations that provide access to information provided by other international acoustics associations and bodies pertaining to the science of acoustics.

The AAS has also extended its assistance to acousticians via the introduction of the AAS CPD Program in July 2022. Continuing Professional Development is widely recognised as fundamental to the improvement of standards and skills for individuals and their industries. CPD has been instituted as a necessary component in many industries such as medicine, construction and education. Industry associations, as well as employers, see the benefits of more highly skilled and competent individuals via the implementation of CPD Programs. Education is not the learning of facts, but the training of the mind to think" – Albert Einstein.

There'll always be new challenges in the workplace, whether because legislation changes, consumer needs change, or because we understand more about the science of acoustics. CPD helps you boost your knowledge and skills for best practice and critical thinking.

If you haven't already checked out what resources are available to assist you in your ongoing educational journey, please take the time to visit www.acoustics.org.au and explore the site to find the acoustic resources you require to assist you.

Julie Sobolewski

QLD Division

The Queensland division held a technical meeting on Wednesday, 21 February. Robbie Cain from SiteHive was invited to present on "Application of new technologies and MEMS systems in managing noise and vibration impacts of construction project". This provided a comparison between traditional monitoring systems and new technologies, which is proactive and affordable with case studies. The attendance was high. More technical meetings are currently being planned.

Acoustics 2024 (6-8 November 2024) will be held at the Gold Coast Convention and Exhibition Centre. Looking forward to seeing you all.

https://www.acoustics2024.org.au/

Eric Huang

Vic Division

The Victorian Division has had a busy few months with two technical talks.

The first presentation was online on the 5th of March and was presented by Harvey Lau from Megasorber. It was titled 'Tackling the Strange Wind Noise on a Commercial Building' and centred around a mysterious noise that was reported in a commercial building. It was described as sounding like a huge convoy of trucks thundering past the office, especially worse on windy days. Specialist engineers, acoustic and wind engineers, were summoned to investigate the root cause of this noise. This case study presented the analysis of the noise, the results of the various tests and the successful practical resolution.

The second technical talk was in person on the 7th of May and was co-presented by Jordan Lacey from RMIT University and Lex Brown titled 'Sonic Gathering Space: its design and its acoustic assessment'. The Sonic Gathering Space (SGS) is an outdoor installation formed by a 6.5 metre circular seating area surrounded by plants and sounds from four Victorian national parks. It is a prototype biophilic soundscape design installation that was constructed in 2021, in a corner of the Alumni Courtyard in the RMIT University grounds in the Melbourne CBD. It was created by Jordan Lacey in collaboration with landscape architect Associate Professor Charles Anderson, also from RMIT. Lex Brown contributed to the project by preparing a survey on visitor's experience, and correlating the responses to sound level measurements. The presentation attracted more than 50 attendants and was followed by a social time at the Oxford Scholar hotel.

Rohan Barnes & Marc Buret

WA Division

Since the beginning of the year the WA Division committee has been planning for the 2025 AAS national conference to be held in WA. The committee has visited a few conference venues and obtained quotes and are close to booking a venue. If any WA AAS members would like to assist with the conference planning, please contact the WA secretary via e-mail at wa-secretary@acoustics.asn.au.

The WA committee is also busy planning this years State Symposium which will likely be held in October. WA members will receive e-mail correspondence regarding the State Symposium in due course.

Benjamin Farrell

TECH TALKS

A number of recorded Tech Talks are available for members to access on the AAS website.

Log in and click on the 'Resources' menu to access 'Videos'.

SA Division

The SA Division received two fantastic technical presentations over the last couple of months. One, a case study on the newly completed acoustically adaptable theatre 'Marnkutyi Parirna Theatre' in Gawler presented by Jenna MacDonald, and the second, a look at the application of audio spectrogram transformer machine learning model for audio tagging of construction activities presented by Benjamin Halkon. We thank both presenters for their fascinating talks, with a special shout out and thanks to Benjamin Halkon who received an almost record attendance for their presentation.

Nearing the end of this financial year, we also say farewell to a fellow member of the AAS, Peter Heinze, who will be enjoying a well-deserved retirement after more than 35 years in the industry. Graduating from the University of South Australia in 1983 with a degree in Mechanical Engineering, Peter worked as a senior consultant for 9 years before joining Marshall Day Acoustics where he has remained since. Over his years with the AAS Peter had served as Federal President, Vice President, Treasurer, and Secretary. From the SA Division and wider acoustic community in Adelaide, congratulations on your amazing professional journey Peter. We're all incredibly grateful for the mark you left on us.

Jenna MacDonald

NSW Division

With Matthew Harrison's two year term as chair coming to a close, the NSW Division recently updated its committee roles. Adrian Morris was appointed as chair and Matt will be continuing his work on the committee as vice chair. We are also grateful for Laura Keen and John Wassermann continuing in their respective roles as secretary and treasurer.

The Division is hoping to encourage more students to pursue a career in acoustics. Following on from the success of last year's Careers in Acoustics panel at UNSW Sydney, the Division is aiming to expand the format to a wider audience at more institutions, which are scheduled for later in the year. Additionally, the Division has recently extended its support of the Vibration Prize at Western Sydney University and will engage further with other universities to reward excellence in the study of acoustics.

In support of our existing members, the Division is currently organising tech talks for the remainder of the year. The next talk will be on construction noise predictions and their alignment with measurements. Members who wish to present a tech talk are encouraged to contact the committee, and ideas for panel discussions or forums are also welcome.

Finally, the Division is working on new initiatives as part of our plan to increase CPD opportunities. More will be announced in the coming months.

Adrian Morris

AAS PUBLICATIONS

If anyone is currently considering publishing a book on acoustics, we invite you to consider proposing that your book becomes one of the AAS series via Springer and discuss with Marion Burgess, AAS Publications at aaspublications@acoustics.asn.au

Open Access Articles in Acoustics Australia for Australia and NZ

Springer Nature and the Council of Australian University Librarians have signed a Transformative Agreement to cover the article processing charges for articles published in participating hybrid journals. This means authors from affiliated Australian and NZ institutions can publish their articles in Acoustics Australia open access with the fees covered in 2024.

Please contact your university research librarian for more information. You can learn more about publishing open access under the agreement here.

Acoustics News

Association of Australasian Acoustical Consultants

AAAC Guideline for Interpretation and Application of NZ Building Code Clause G6

The AAAC have recently published a guideline for the application of NZ Building Code Guideline G6. Clause G6 of the New Zealand Building Code (NZBC) was first published in 1992 and was most recently updated in 1995. The main clause consists of four paragraphs and uses sound insulation criteria defined in ASTM Standards (Sound Transmission Class and Impact Insulation Class) to provide objective performance requirements for separating elements between residential dwellings. There are a number of issues arising out of the somewhat brief wording of Clause G6 and the application of the ASTM Standards. Although there have been several legal Determinations clarifying the meaning and application of parts of G6, there are also a number of areas that remain ambiguous and open to interpretation. The objective of the AAAC Guideline is to outline the AAAC's position on how to interpret and apply the unclear parts of Clause G6 for consistent application in multi-residential buildings across New Zealand. The primary audience of the guideline is intended to be acoustical consultants, building designers, developers and local authorities.

Matthew Ottley

General Items

We encourage any readers who find an item that may be of interest to other readers to send the item to acousticsaustralia@acoustics.asn.au
In addition, we greatly appreciate the contribution of Bob Fitzell for recommending many of the articles for inclusion in this section.

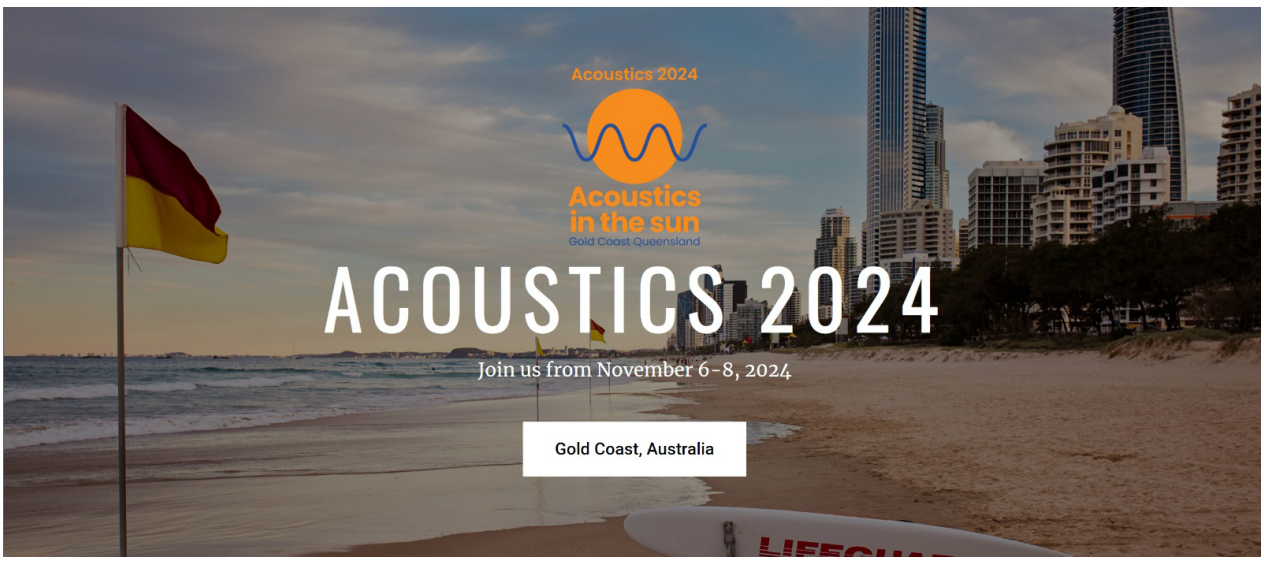
Australian Hearing Hub

The Australian Hearing Hub is an initiative of Macquarie University and the Australian government, it brings together the country's best hearing and allied health organisations and is conducted as part of the Educations Investment Fund.

The Australian Hearing hub produces a regular newsletter full of interesting news and information. You can find the latest copy here.

The way whales communicate is closer to human language than we realized

Sperm whales possess the biggest brain of any species and may support intelligent, rational behaviour. They're highly social, capable of making decisions as a group, and they exhibit complex foraging behaviour. A team of researchers based at MIT Computer Science and Artificial Intelligence Lab (CSAIL) working with Project CETI, a nonprofit focused on using AI to understand whales, have used statistical models to analyse whale codas. They report identifying a structure



to whale language that's similar to features of the complex vocalisations humans use. They report that their findings represent a tool future research could use to decipher not just the structure but the actual meaning of whale sounds Read the full article by Rhiannon Williams in the MIT Technology Review here.

Deep listening scholar captures the sound of the sea along NSW coastline

Dr Diana Chester, a sound studies scholar for the University of Sydney, uses specialised microphones in the ocean and deep underneath sand dunes to capture sounds of the sea and hopes the research will allow people to connect with the nature so we can better understand how it's changing. Read the full ABC news article written by Laurise Dickson here.

Dangerously quiet EVs will be forced to emit noise at low speeds under new Australian law

This article discusses the new Australian Design Rule (ADR) being introduced that states from November 2025, new electric, hybrid and hydrogen fuel cell cars, trucks and buses must be fitted with an Acoustic Vehicle Alerting System (AVAS), a safety alert or sound that is emitted when the vehicle is travelling at low speeds in car parks, intersections and driveways. Read the full article by Frank Chung on news.com.au here.

What Taylor Swift's secret musical weapon has to do with Aussie comedy trio Axis of Awesome

This ABC News article, written by Matt Neal, discusses the use of chord progressions in music, particularly the 'Axis Progression' - a run of four chords named after Aussie music-comedy trio Axis Of Awesome. This particular chord progression (and its variants) features in many hit songs by many different artists, including Taylor Swift, who uses the progression in 21 of her songs. Read the full article here.

Penola Riddoch Highway bypass still generating debate four years after opening

Four years after the controversial bypass around the township of Penola, in South Australia's Coonawarra region, was opened, there is continuing discussion around it. The bypass has improved the town's amenities - the main street is quieter as a result of less vehicle traffic and reduced trade for local businesses. See the full article, written by Eugene Boisvert from ABC News here

Is there such a thing as the perfect alarm tone? We think so (and this is what it might sound like)

This article in The Conversation, written by Stuart McFarlane and Adrian Dyer (from RMIT) discusses how certain alarm sounds can enhance our alertness on waking up. They discuss why waking up right is important, how the brain wakes up, whether sound frequency and tune are important and what can be done to improve your waking alarm. Read the full article here. The authors also reference a review they conducted on this topic titled – "Alarm Tones, Voice Warnings, and Musical Treatments: A Systematic Review of Auditory Countermeasures for Sleep Inertia in Abrupt and Casual Awakenings" this study can be found here.

FUTURE CONFERENCES

While all care is taken to present the most up to date information, Acoustics Australia cannot guarantee the accuracy of the listings below and recommends that you seek the latest details from the respective conference website.

Additional meetings may also be listed on the ICA calendar at: - https://www.icacommission.org/events/

ICSV30 - 30th International Congress and Exhibition on Sound and Vibration – Amsterdam, Netherlands

8 - 11 July 2024

The International Institute of Acoustics and Vibration (IIAV) and the Nederlands Akoestisch Genootschap/Dutch Acoustical Society (NAG) are pleased to invite scientists and engineers from all over the world to attend the 30th International Congress on Sound and Vibration (ICSV30) to be held in Amsterdam 8 - 11 July 2024.

http://icsv30.org/

Internoise 2024 – Nantes, France

25 - 29 August 2024

25-29 August 2024
inter.noise
NANTES FRANCE

The French Acoustical Society and the organising committee are pleased to host the 53rd International Congress and Exposition on Noise Control Engineering in Nantes, France, on 25-29 August 2024. The congress will be held in person and will favour rich scientific interaction and strong social links among experts in noise control engineering.

Nantes (France) is a fast-growing city on the French Atlantic coast. With its booming economy and thriving cultural scene, Nantes is one of the new up and coming European destinations. Known for its eclectic sights and architecture, as well as its quality of life recognised by the European Green Capital label, Nantes regularly comes first of the most liveable cities.

https://internoise2024.org/

ASNZ Acoustics 2024 - Christchurch, New Zealand

2 – 4 September 2024

ACOUSTICS 2024
THE ACOUSTICAL SOCIETY OF NEW ZEALAND CONFERENCE
Acoustics: Reflecting on the past, innovating for the future
Ōtautahi Christchurch | 2-4 September

The ASNZ will be holding their 2024 Conference at the Christchurch Town Hall in September.

https://www.acousticsnz2024.co.nz/

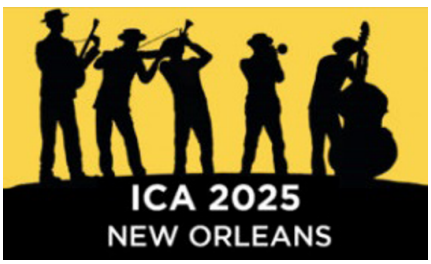
Acoustics 2024 – Gold Coast, Australia

6 - 8 November 2024

Acoustics 2024
Acoustics in the sun
Gold Coast Queensland

The Queensland Division of the Australian Acoustical Society invites all members of the Acoustics Community to attend Acoustics 2024 being held at Gold Coast Convention and Exhibition Centre on November 6-8, 2024.

https://www.acoustics2024.org.au/



ICA 2025 – New Orleans, USA

18 - 23 May 2025

The 25th International Congress on Acoustics will be held in New Orleans, Louisiana in 2025 jointly with the spring 2025 Meeting of the Acoustical Society of America. It is being held at New Orleans Marriott.

https://ica2025neworleans.org/

Internoise 2026 – Adelaide, Australia

9 - 12 August 2026

inter.noise
ADELAIDE SOUTH AUSTRALIA
9 - 12 AUGUST 2026

The 55th International Congress & Exposition on Noise Control Engineering is planned to be held at the Adelaide Convention Centre 9-12 August 2026, which will be hosted by the AAS. It will be an exciting event for the AAS community to take part in the congress and an opportunity to showcase Australian consulting, research and innovation to the world of Noise Control Engineering.

SUSTAINING MEMBERS

The following are Sustaining Members of the Australian Acoustical Society.
Full contact details are available from www.acoustics.org.au

Acoustic Blinds and Curtains

Acoustic Research Labs Pty Ltd

Acoustica

ACRAN

ACU-VIB Electronics

Adamsson Engineering P/L

Aerison Pty Ltd

AmberTech

Armstrong Ceiling Solutions (Australia) Pty Ltd

Association of Australasian Acoustical Consultants

Embelton

ETMC Technologies

Hewshott International

Hottinger Bruel & Kjaer Australia Pty Ltd

IAC Acoustics

Knauf

Lee Brothers Fencing Group

Mason Mercer

ModularWalls

megasorber Pty Ltd

NSW Environment Protection Authority

Regupol (Australia) Pty Ltd

Pyrotek Noise Control

SiteHive

The P.A. People Pty Ltd

Soundblock Solutions Pty Ltd

3M Australia

Vipac Engineers & Scientists Ltd

Vibration Solutions

DIARY

2024

8 - 11 July, Amsterdam, Netherlands
30th International Congress and Exhibition on Sound and Vibration (ICSV30)
http://icsv30.org/

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(INTER-NOISE 2023)
https://internoise2024.org/

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ASNZ Acoustics 2024
https://www.acousticsnz2024.co.nz/

6 - 8 November, Gold Coast, Australia
Acoustics 2024
https://www.acoustics2024.org.au/

2025

18 - 23 May, New Orleans, Louisiana
25th International Congress on Acoustics (ICA) joint with 188th Meeting of the Acoustical Society of America
https://ica2025neworleans.org/

2026

9 - 12 August, Adelaide, Australia
54th International Congress and Exposition on Noise Control Engineering
(INTER-NOISE 2026)