

TECHNICAL PROGRAM AND SPECIAL SESSIONS

TECHNICAL PROGRAM

Contributed papers are welcome in all branches of acoustics. The technical program will consist of lecture and poster sessions. Technical sessions will be scheduled Monday through Friday, 7–11 May.

Every effort will be made to schedule contributed abstracts in accordance with author and Organizing Committee preferences. However, authors should be prepared to accept assignment to poster sessions. Assignments will take into account: a) author preference, b) program balance, and c) Technical Committee instructions. Abstracts will be rejected if they do not comply with the instructions.

Special sessions described below are planned for the meeting. Authors of invited papers must indicate the title of the special session in which they have been invited to participate when the abstract is submitted. Authors of contributed papers have the option to request placement of their abstracts in these sessions. If no special session placement is requested, contributed papers will be scheduled in sessions with abstracts of similar technical content.

SPECIAL SESSIONS, ORGANIZERS, AND DESCRIPTIVE SENTENCES

ACOUSTICAL OCEANOGRAPHY (AO)

Ambient Noise Oceanography in Polar Regions: Noise Properties and Parameter Estimation
(Joint with Animal Bioacoustics, Underwater Acoustics)
Organized by: Oskar Glowacki, Grant Deane

Acoustics in Naturally Constrained Environments: Estuaries, Bays, Inlets, Fjords and Rivers
(Joint with Underwater Acoustics)
Organized by: Andone Lavery, Benjamin Reeder

Acoustic Seabed Characterization
(Joint with Underwater Acoustics)
Organized by: David Knobles, Preston Wilson

ANIMAL BIOACOUSTICS (AB)

History of Animal Bioacoustics
(Joint with ASA Committee on Standards)
Organized by: David Mellinger

Lessons on Auditory 'Perception' from Exploring Insect Hearing
Organized by: Norman Lee

Plant Bioacoustics
Organized by: Aaron Thode, Simon Freeman

ARCHITECTURAL ACOUSTICS (AA)

Acoustics in Classrooms and Other Educational Spaces
(Joint with: Noise, ASA Committee on Standards, Speech Communication)
Organized by: David Lubman, Kenneth Good

DESCRIPTIVE SENTENCES

Measurement and use of ambient noise in Polar regions: cryogenic sources of underwater noise, propagation effects impacting noise signals and the use of noise to study physical processes at the ice-ocean boundary, such as ice melting, calving, iceberg tracking, ice shelf breakup, to name a few

Observations and modeling of acoustic propagation and scattering characteristics of naturally occurring constrained environments such as estuaries, bays, inlets, fjords and rivers, including the environmental features and physical mechanisms that affect temporal, spatial and spectral acoustical properties

Acoustic characterization of the seabed including direct, inverse and statistical inference methods

Development of animal bioacoustics from antiquity to the present across many taxa (including birds, fishes, marine mammals, etc.) and many areas of study (including sound production, hearing, behavior, acoustic monitoring, and soundscapes)

Insect hearing has evolved independently many times, giving rise to the potential for a diversity of sensory solutions to common problems encountered by humans and other animals that rely on hearing. These sensory solutions may provide insights into fundamental auditory processes, neural mechanism, and inspire the development of sensor technology

Bioacoustics of sound production and reception by plants, how sound is used to study the function and health in plants, and passive acoustic detection of the sounds made by pests in plant products

Exploration of continued advancements in Classroom Acoustics, including a fresh look at other educational spaces such as those used for physical education and other purposes. From classrooms to the stadium, verbal instructional and learning bring unique challenges for a variety of space types

ARCHITECTURAL ACOUSTICS (AA) (cont)

Acoustics of Lobbies, Atria, Stairways, Corridors, Pre-Function and Similar Spaces
(Joint with ASA Committee on Standards)
Organized by: Logan Pippitt

AIA CEU Course Presenters Training Session
Organized by: K. Anthony Hoover, Bennett Brooks

Architectural Acoustics Experimental Methods in Laboratories
(Joint with Noise)
Organized by: Jin Yong Jeon, Ning Xiang

Assistive Listening Systems in Assembly Spaces
(Joint with Physical Acoustics, Speech Communication, ASA Committee on Standards, and Psychological and Physiological Acoustics)
Organized by: Damian Doria, Thomas Burns

Auditory Perception in Virtual, Mixed, and Augmented Environments
(Joint with Psychological and Physiological Acoustics, Speech Communication)
Organized by: Philip Robinson, G. Christopher Stecker

Interactions Between Acoustics and Architectural Design
Organized by: Ana M. Jaramillo, Adel Hinawi

BIOMEDICAL ACOUSTICS (BA)

Acoustic Imaging of Small Vessels and Low Speed Flow
Organized by: Mahdi Bayat

Induction Mechanisms for Bubble Nucleation
(Joint with Physical Acoustics)
Organized by: J. Brian Fowlkes

Transcranial Focused Ultrasound for Targeted Brain Therapies
Organized by: Emad S. Ebbini

Using Acoustic Wave Propagation to Estimate Quantitative Material Properties of Tissue
Organized by: Matthew Urban

EDUCATION IN ACOUSTICS (ED)

Developing and/or Using Interactive Simulations for Teaching Acoustics
Organized by: Andrew Piacsek, Daniel Russell, Peggy Nelson

Hands On for Middle School Students
Organized by: Peggy Nelson, Keeta Jones

Listen Up and Get Involved
(Joint with Women in Acoustics)
Organized by: Peggy Nelson

DESCRIPTIVE SENTENCES

Case studies, research and discussion of the need for good acoustics in these types of spaces

Architects must continue their education by taking courses in order to maintain their registration. TCAA offers a class to architects. Members of TCAA need to complete this training session in order to qualify as a presenter of the course

Laboratories are home to much of the research and development in architectural acoustics undertaken today. Researchers are invited to showcase their recent developments of advanced experimental methods, including, but not limited to, those in academic and independent laboratories

User requirement specifications for next generation assistive listening systems, building upon the presentations and panel discussion during Acoustics '17 Boston

Possibilities and challenges presented by recent advances in audio visual displays including methods for evaluating perception and techniques for creating compelling experiences

The intersection between architecture and acoustics should be used as an opportunity for great collaborations with other building sciences and design decisions

Motivated by recent advances in visualization of sub-millimeter vessels and monitoring low speed perfusion using long ensembles of ultrasound data, fundamental aspects of tissue

Methods to purposefully induce bubble nucleation in a variety of medical and industrial applications such as for ultrasound contrast imaging and therapy and fluid degassing and materials production

Transcranial focused ultrasound (tFUS) is being investigated in a range of therapies from neuromodulation to tumor ablation. Research on various aspects of monitoring and control of in vivo tFUS applications in small animals, nonhuman primates and human patients. This session will provide a forum to represent the latest results from leading groups

Approaches to the use of compressional, shear, and guided waves for quantitative evaluation of soft tissues and tissue mimicking materials

Using simulations in education

Hands on activities for Minneapolis area middle school students

Hands-on activities for Minneapolis area Girl Scouts

EDUCATION IN ACOUSTICS (ED) (cont)

Take Fives
(Joint with Speech Communication)
Organized by: Peggy Nelson

ENGINEERING ACOUSTICS (EA)

Advanced Transduction Technologies for Sonar Applications
(Joint with Signal Processing in Acoustics, Underwater Acoustics)
Organized by: Dehua Huang

Miniature Acoustic Transducers
(Joint with Physical Acoustics)
Organized by: Vahid Naderyan

INTERDISCIPLINARY (ID)

Acoustical Standards In Action: Realization, Application, and Evolution
(Joint with ASA Committee on Standards, Noise, Structural Acoustics and Vibration, Architectural Acoustics)
Organized by: Christopher J. Struck

MUSICAL ACOUSTICS (MU)

Acoustics of Choirs and Vocal Ensembles
Organized by: James P. Cottingham

Pitch Perception in Musical Context
(Joint with Psychological and Physiological Acoustics)
Organized by: Bobby Gibbs

Sound Effects and Perception
(Joint with Psychological and Physiological Acoustics, Signal Processing in Acoustics)
Organized by: Jonas Braasch

NOISE (NS)

Effects of Natural Soundscapes on Recreation Areas
(Joint with ASA Committee on Standards)
Organized by: David Braslau, Kurt Fristrup

Groundborne and Structureborne Noise Within Sensitive Spaces
(Joint with Architectural Acoustics, Structural Acoustics and Vibration, ASA Committee on Standards)
Organized by: James E. Phillips

Hearing Health Across a Lifespan: Hearing Screening from Cradle to Grave
(Joint with Psychological and Physiological Acoustics, Speech Communication)
Organized by: William J. Murphy, Alexander L. Francis

Hearing Protection: Impulse Peak Insertion Loss, Specialized Hearing Protection Devices, and Fit-Testing
(Joint with Psychological and Physiological Acoustics, ASA Committee on Standards)
Organized by: William J. Murphy, Elliott H. Berger, Cameron Fackler

DESCRIPTIVE SENTENCES

Presentation of your favorite acoustics teaching ideas, including short demonstrations, teaching devices, and videos to share with colleagues. No abstract required

Acoustic transduction materials characters, element engineering, array signal processing and system design for Sonar applications

Miniature acoustic transducers, including MEMS microphones, Balanced Armature speakers, and new transduction methods

Acoustical standards, their practical application and implementation

Exploration of acoustical considerations related to performance of choirs and smaller vocal ensembles

Research that furthers and challenges the current understanding of pitch perception within the ecological context of musical stimuli

Digital and analog effects in (popular) music productions and psychophysical experiments to evaluate these effects

Effects of natural soundscapes on quietude in recreational areas. Special emphasis will be given to National Parks and areas like the Boundary Waters Canoe Area and the Natural Wild and Scenic Rivers System

Analyzing, measuring, and controlling groundborne and structureborne noise within sensitive spaces from external sources

Advances in hearing screening for newborns, children, adolescents, occupational and aging adults. Methods for assessing the hearing using otoacoustic emissions, speech tests and advances in wireless or mobile testing technology will be featured

Performance assessment of hearing protection devices in impulsive noise, specialized protection choices for workers and the applications of hearing protection fit-testing technologies for the occupational and recreational user

NOISE (NS)

Novel Materials for Sound Absorption, Insulation, and Vibration Control
(Joint with Architectural Acoustics, Physical Acoustics, Structural Acoustics and Vibration)
Organized by: Yun Jing, Ning Xiang

Open Source Audio Processing Platforms
(Joint with Psychological and Physiological Acoustics, Signal Processing in Acoustics, Speech Communication, Musical Acoustics)
Organized by: Odile Clavier, William J. Murphy

PHYSICAL ACOUSTICS (PA)

Infrasound for Global Security
Organized by: Philip Blom

Novel Methods in Computational Acoustics
(Joint with Structural Acoustics and Vibration, Architectural Acoustics, Underwater Acoustics)
Organized by: Keith Wilson, Amanda Hanford

Sonic Boom
(Joint with Noise, ASA Committee on Standards)
Organized by: Alexandra Loubeau, Joel B. Lonzaga

Ultrasound and High Frequency Sound in Air in Public and Work Places: Applications, Devices, and Effects
(Joint with Biomedical Acoustics, Psychological and Physiological Acoustics, Public Relations)
Organized by: Timothy Leighton, Craig Dolder

PSYCHOLOGICAL AND PHYSIOLOGICAL ACOUSTICS (PP)

Acoustics Outreach: Planting Seeds for Future Clinical and Physiological Collaborations '18
(Joint with Speech Communication)
Organized by: Anna Diedesch, Elin Roverud

Consequences of Asymmetrical Hearing
Organized by: Matthew Goupell, Lina Reiss

Future Directions for Hearing Aids: Multi-Sensor, User-Informed and Environment-Aware
(Joint with Signal Processing in Acoustics)
Organized by: Martin McKinney, Tao Zhang

Honoring Neal Viemeister's Contributions to Psychoacoustics
Organized by: Peggy Nelson, Andrew Oxenham

Honoring the Contributions of David Kemp to the Discovery of Otoacoustic Emissions and their Utility for Assessing Hearing Function
(Joint with Animal Bioacoustics, Noise)
Organized by: Glenis R. Long, Bastian Epp

DESCRIPTIVE SENTENCES

New advances and novel phenomena in the exciting field of novel materials for sound absorption, insulation, and vibration control. The novel materials may include, but are not limited to acoustic/elastic metamaterials, phononic crystals, new micro-perforated absorbers, and aerogel

Development and use of open source hardware, software and algorithms for audio processing for acoustics and hearing researchers

Recent developments and research highlights in infrasound and atmospheric acoustics with emphasis on applications to explosion monitoring, nuclear forensics, and other topics related to global security and nuclear non-proliferation

Novel and unconventional methods, or combinations of multiple methods in new ways, to solve computational acoustics problems

All aspects of sonic boom noise, including noise generation, propagation through the atmosphere, interaction with buildings and terrain, and human response

Recent years have seen an increase in devices which project sound of 15-25 kHz into air in public places without the knowledge of the public. There are anecdotal reports of adverse effects in some humans, although very few scientific studies. Guidelines for exposure are inadequate, and standards for the measurement of such fields need review

Presentations by students and post-docs from neighbouring fields (clinicians and physiologists/neuroscientists) intended to facilitate future engagement of young researchers in these fields in ASA

Consequences of asymmetrical hearing using behavioral, physiological, and electrophysiological methodologies, and clinical implications

Incorporation of sensors (including EEG, EOG, and accelerometers) into hearing aids and research including auditory attention decoding, multi-modal speech enhancement, eye-gaze tracking, self-fitting/adjustments, individualization and auditory ecology

Neal Viemeister's contributions to psychoacoustics on the occasion of his retirement

Will honor David Kemp and his discovery of otoacoustic emissions (sounds generated by the inner ear). Will feature researchers who have worked with or been influenced by David Kemp to highlight his contributions to otoacoustic emissions and cochlear biophysics

PSYCHOLOGICAL AND PHYSIOLOGICAL ACOUSTICS (PP) (continued)

Phase Locking and Rate Limits in Electric Hearing
(Joint with Speech Communication and Signal Processing in
Acoustics)
Organized by: Mathias Dietz

Physiology Meets Perception
Organized by: Sarah Verhulst, Antje Ihlefeld

SIGNAL PROCESSING IN ACOUSTICS (SP)

Acoustics of Virtual and Augmented Reality
(Joint with Psychological and Physiological Acoustics, Architectural
Acoustics, Noise)
Organized by: Buye Xu, Jens Meyer

Continuous Active Acoustics
(Joint with Underwater Acoustics)
Organized by: Zachary J. Waters

Co-Prime Arrays and Other Sparse Arrays
(Joint with Underwater Acoustics)
Organized by: R. Lee Culver, Kainam T. Wong

Reconfigurable and Conformal Array Processing, Design, and
Applications
(Joint with Underwater Acoustics, Physical Acoustics, Engineering
Acoustics)
Organized by: Ryan L. Harne

Signal Processing for Complex Environments
(Joint with Underwater Acoustics, Architectural Acoustics)
Organized by: Sandra Collier, Kainam T. Wong

Time Reversal Acoustics
(Joint with Underwater Acoustics, Physical Acoustics, Noise)
Organized by: Brian E. Anderson

SPEECH COMMUNICATION (SC)

Adapting Methods and Models for Vocal Production Across Human
and Non-Human Primate Species
(Joint with Animal Bioacoustics, Psychological and Physiological
Acoustics)
Organized by: Benjamin Munson, Michael L. Wilson, Mary E.
Beckman

Session in Memory of James J. Jenkins
Organized by: Kanae Nishi, Linda Polka, Terry Gottfried

South Asian Languages
Organized by: Kelly Berkson, Sameer ud Dowla Kahn

DESCRIPTIVE SENTENCES

Cochlear implant users are limited in interaural time difference and rate pitch below 400 pulses per second, despite higher phase locking rates observed in isolated auditory nerve fibers with acoustic stimulation. This session will bring together physiologists, psychoacousticians, and modelers to shed light on where and why temporal coding is lost

Recent research combining physiological (e.g., neural correlates, OAEs) and behavioral approaches in the same species with a focus on auditory coding mechanisms, including measures of speech intelligibility and attention, as well as audiometry and the steering of auditory prostheses

Signal processing methods for recording, analyzing and reproducing real world acoustic scenes for applications of virtual and augmented reality

Recent advances in high duty cycle active acoustics including sonar configurations and signal processing methodologies accounting for diverse environmental issues

Design, implementation, deployment and application of co-prime and other sparse arrays

Means to control arrays and their physical or virtual topologies for wave field guidance; including signal processing techniques for conformal arrays, design strategies for reconfigurable or deployable arrays, linear and nonlinear acoustic aspects of reconfigurable/conformal arrays, and applications of reconfigurable/conformal arrays

Signal processing techniques to overcome the effects of complex environments and to accurately characterize these environments

Research, development and applications of time reversal acoustics in communications, source localization and high energy focusing

Reviews methods and models for analyzing the production of socially significant vocalizations in primates, with particular focus on comparing and applying methods across human and non-human species

A tribute to James J. Jenkins who is remembered as an extraordinary colleague and mentor in the ASA speech communication community

South Asian languages (SAL) test the limits of current phonetic theory due to their complex array of features, pervasive multilingualism, and sparse descriptions. We solicit research in all SAL areas, including but not limited to prosody, phonation type, tone, & their interactions; breathy voiced segments; degrees of retroflexion & its perception

STRUCTURAL ACOUSTICS AND VIBRATION (SA)

Acoustic Metamaterials
(Joint with Physical Acoustics, Engineering Acoustics)
Organized by: Christina J. Naify, Alexy Titovich

Improving Education in Structural Acoustics and Vibration
(Joint with Education in Acoustics)
Organized by: Brian E. Anderson, Scott Sommerfeldt

Model Reduction for Structural Acoustics and Vibration
(Joint with Signal Processing in Acoustics, Noise)
Organized by: Kuangcheng Wu

Noise and Vibration in Rotating Machinery
(Joint Noise, Engineering Acoustics, and ASA Committee on Standards)
Organized by: Robert M. Koch

UNDERWATER ACOUSTICS (UW)

High Performance Computing Applications to Underwater Acoustics
(Joint with Signal Processing in Acoustics, Physical Acoustics)
Organized by: Ying-Tsong Lin, Megan S. Ballard

Target Scattering in Underwater Acoustics: Imaging, Spectral Domain, and Other Representations
Organized by: Daniel Plotnick, Timothy Marston

DESCRIPTIVE SENTENCES

Focus on recent advances in the study concerning acoustic metamaterials and phononic crystals which have witnessed a growing interest in basic research and potential engineering applications

Presentations on demonstrations, laboratory experiments in courses, educational tools, and outreach in the area of structural acoustics and vibration aimed at any level of educational instruction

The computational time and resources for processing big data, generated from test data or numerical analyses, can be overwhelming in structural Acoustics and Vibration. This special session invites research and idea that uses analytic and/or numerical approaches to reduce the computational time needed for large numerical models or test data

Experimental, analytical, and/or computational investigations into the sources of unwanted noise and vibration in rotating machinery possibly also including discussion of potential solution approaches and remedies

The practice of utilizing high performance computing clusters to solve large problems in underwater acoustics

How certain representations, such as the imaging or spectral domains, allow for different scattering characteristics to be leveraged in order to determine a target's size, shape, orientation, or make up

OTHER TECHNICAL EVENTS AND INFORMATION

EXHIBITION

An instrument and equipment exhibition will be located near the registration area and meeting rooms and will open on Monday, 7 May, with an evening reception with lite snacks and a complimentary drink. Exhibition hours are Monday, 7 May, 5:30 p.m. to 7:00 p.m., Tuesday, 8 May, 9:00 a.m. to 5:00 p.m., and Wednesday, 9 May, 9:00 a.m. to 12:00 noon.

The Exhibition will include computer-based instrumentation, scientific books, sound level meters, sound intensity systems, signal processing systems, devices for noise control and acoustical materials, active noise control systems, and other exhibits on acoustics.

Contact the Exhibition Manager for information about participating in the exhibit: Robert Finnegan, Advertising and Exhibits Division, AIP Publishing, LLC, 1305 Walt Whitman Road, Suite 300, Melville, NY 11747-4300, Tel: 516-576-2433; Fax: 516-576-2481; E-mail: rfinnegan@aip.org.

TECHNICAL TOUR

A tour of the recently completed U.S. Bank Stadium will be held during the week. The multi-purpose stadium and home to the Minnesota Vikings is owned and operated by the Minnesota Sports Facilities Authority. The 66,200 seat stadium is located in the heart of Minneapolis, Minnesota. With 137,000 square feet on the stadium floor and six club spaces throughout the building, this state-of-the-art facility will host prominent national and international programming including the Minnesota Vikings, concerts, family shows, college and high school sporting events, conventions, trade/consumer shows, and corporate or private meetings and other community events. U.S. Bank Stadium opened on July 22, 2016 and