NOISE-CON 2022

June 13-15
Lexington, KY

Program Guide

Theme: Soundscape Design

INCE USA

www.inceusa.org/noisecon22

TABLE OF CONTENTS

NOISE-CON 2022 June 13-15 Lexington, KY

WELCOME LETTER FROM PRESIDENT

On behalf of INCE-USA leadership, Board of Directors, and staff, I want to welcome you to the City of Lexington, the Bluegrass State of Kentucky and our annual conference, NOISE-CON 2022.

This is our first in-person conference since August 2019, where we last met in sunny San Diego. I hope everyone will enjoy this year's meeting, and all that our hosts at the University of Kentucky have to offer.

We have an outstanding program of technical papers, keynote speakers, exhibitors, and associated social events. These events include our first, in-person, INCE-USA Annual General Membership (AGM) meeting at a NOISE-CON. Our last two AGM meetings were held online. I hope all INCE-USA members will attend to learn about our activities over the past year and things to come. Please also consider attending (as applicable): the Student Breakfast (Monday at 7:00 am), the Board Certification Information Session Breakfast (Tuesday at 7:00 am), and the Women in Noise Control Engineering lunch (Tuesday at 12:00). We also have a fun social planned for Tuesday night at the Shaker Village. I hope to see many of you there, and enjoy some fine Kentucky bourbon together. This event would not be possible without our sponsors and exhibitors. During your free time please visit the Expo Hall, and in particular the Monday night Welcome Reception from 5:30 to 7:30 pm.

Finally, I would like to thank our conference General Chair, Dr. David Herrin from the University of Kentucky and the Technical Chairs David Copley, Patricia Davies, and Yangfan Lui for their tireless work putting the NC22 program together. I would also like to recognize our management company Virtual, Inc. and their events team: Casey Lane, Jeanette Dallas, Carol Fusaro, and Regina Young. Finally, thanks to the INCE account team of Caitlin McAuslin and John Lessard.

Stay Healthy and Safe,

Michael Bahtiarian, INCE Bd. Cert.
INCE-USA President

WELCOME LETTER FROM THE ORGANIZING COMMITTEE

It is with great honor and pleasure that we welcome you on behalf of the Institute of Noise Control Engineering USA (INCE-USA) to NOISE-CON 2022.

We are excited to host the conference at the University of Kentucky in Lexington. The meeting is being held in the new Gatton Student Center. The center is spacious and easy to navigate. Session rooms are close to each other. The campus is just a few minutes' walk from downtown. This will be the first INCE-USA in-person conference in 3 years, and so we look forward to engaging with friends, colleagues, and teachers once again.

We have over 100 papers and over 40 exhibitors. Sessions run the gamut from application areas like building acoustics, unmanned aerial system noise, and vehicle noise to basic science sessions in areas like signal processing, artificial intelligence, and simulation. Exhibitors represent a wide range of industries related to noise control. We will also have receptions and coffee breaks in the exhibit area.

Lexington is in the heart of the Bluegrass Region. We would encourage you to enjoy the restaurants and shops in downtown. Moreover, enjoy the numerous restaurants and distilleries just outside of Lexington in Versailles, Frankfort, and Lawrenceburg. In addition, Lexington is known as the horse capital of the world and is encircled by horse farms and mansions on all sides. Driving in almost any direction will lead through some of the most beautiful countryside in the USA. On Tuesday night, we hope you can join us for a reception at the Shaker Village of Pleasant Hill. The village is located in one of the most pastoral settings in the state.

We would especially like to thank all the contributors for coming. We are grateful to the session organizers and session chairs. We were overwhelmed by the number of excellent papers and know that we are already assured of a successful event thanks to you.

We hope that you thoroughly enjoy NOISE-CON 2022 and your time spent in Kentucky.

David Herrin
General Chair

David Copley, Patricia Davies, and Yangfan Liu
Technical Chairs

THANK YOU TO OUR SPONSORS!

PREMIER

Shaker Village Dinner

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SILVER

Proceedings USB

DASSAULT SYSTEMES

Coffee Breaks

GORDON®
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Attendee Bag

LARSON DAVIS
A PCB DIVISION

Student Breakfast

NCAC
NATIONAL COUNCIL of ACOUSTICAL CONSULTANTS

Women in Noise Control Engineering Lunch

PAC International
World Leader in Noise Control Solutions

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CONTRIBUTOR

BRD Noise and Vibration Control, Inc. | HUSH CORE®

THANK YOU TO OUR COMMITTEE:

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David Herrin – University of Kentucky

Technical Chairs

David Copley – Caterpillar Inc.
Patricia Davies – Purdue University
Yangfan Liu – Purdue University

Proceedings Editor

Gordon Ebbitt – Ebbitt Acoustical Consulting
Yutong "Tony" Xue – Midea Corporate Research Center

Accompanying Persons Program

Andy and Brita Seybert

Exposition Manager

Regina Young and Eileen Kilroy – Virtual, Inc.

Conference Secretariats

Casey Lane, Jeanette Dallas, and Caitlin McAuslin – Virtual, Inc.

Student Volunteers

Matt Smither, University of Kentucky
Jared Schmal, University of Kentucky
Srinu Ippili, University of Kentucky
David Neihguk, University of Kentucky
Seth Donkin, University of Kentucky
Xin Yan, University of Kentucky
Jarret Stiles, University of Kentucky

EMERGENCY INFORMATION

Venue:

University of Kentucky Gatton Student Center
160 Avenue Of Champions
Lexington, KY 40508

Hospital:

Lexington VA Hospital Medical Center
1101 Veterans Drive
Lexington, KY 40502
(859) 233-4511

Urgent Care Facility:

Concentra Urgent Care
1055 Dove Run Road
Lexington, KY 40502
(859) 269-4668

Pharmacy:

Kroger Pharmacy
704 Euclid Avenue
Lexington, KY 40502
(859) 687-3270

INCE-USA LEADERSHIP

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Business Office Administrator – Caitlin McAuslin

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Reston, VA 20191
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ibo@inceusa.org

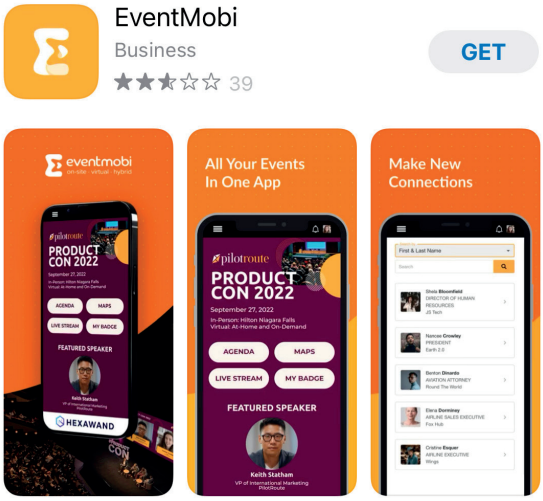
INCE-USA was founded in 1971 to promote noise control engineering. INCE-USA sponsors a NOISE-CON conference in the USA. Board Certification in noise control engineering is offered by INCE-USA. The Noise Control Engineering Journal (NCEJ) is published by INCE-USA. All of the past INCE conference papers, a total of over 23,000 papers, are now online and available free to INCE-USA members free of charge. With funding provided by the INCE Foundation, INCE-USA sponsors awards and grants to students and young professionals in noise control engineering.
www.inceusa.org

MOBILE APP

Download the NOISE-CON 2022 Mobile App. You will find the schedule, exhibit information, Wi-Fi instructions, list of speakers, floor plans, and more!

How to Download the Mobile App:

1. Visit the app store on your mobile device.
2. Download the EventMobi app.
3. Enter the event code: **Noise-Con2022**
4. Click Launch App!
5. Type in the email address that you used when registering for the conference.



WI-FI INFORMATION

UK-Guest provides guest access to the Internet for visitors to the UK Campus. Self-register for a guest account by connecting to the UK-Guest network. Your access will be good for 5 days & you may use your guest access on up to 5 devices. For detailed instructions, visit www.uky.edu/wifihelp

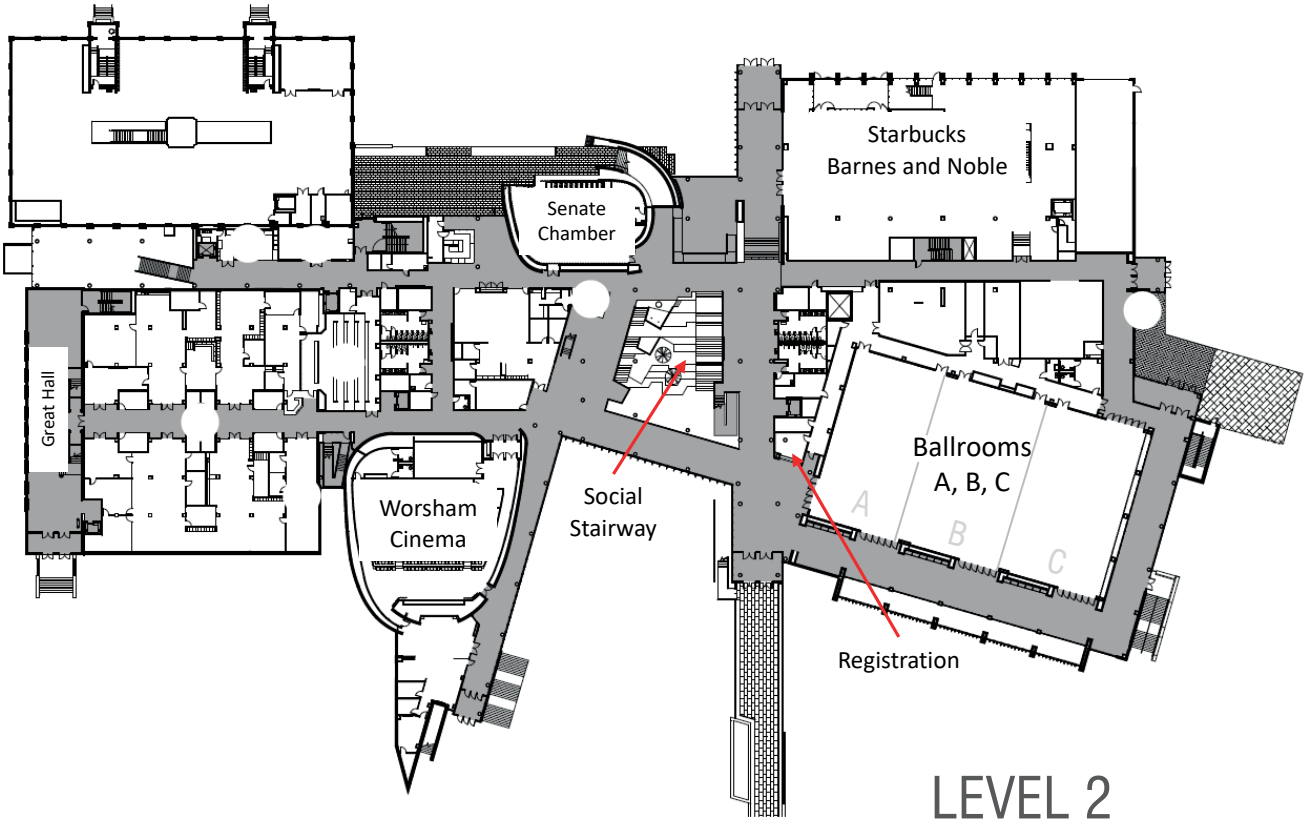
Connect Your Computer (MAC/PC) to UK-Guest

1. Open your list of available WiFi networks, click on UK-Guest.
2. First-time user? Click I Don't Have a Guest Account. Already have credentials? Skip to Step 6
3. Complete the form & click Register. Note: Phone number format is 1xxxxxxxxxx
4. Check your email or phone texts for the delivered credentials.
5. Click Sign On to bring up the UK-Guest login page.
6. Enter the guest username & password you received. Click Sign On.
7. Click Agree to the acceptable use policy.
8. You will then be connected to UK-Guest.

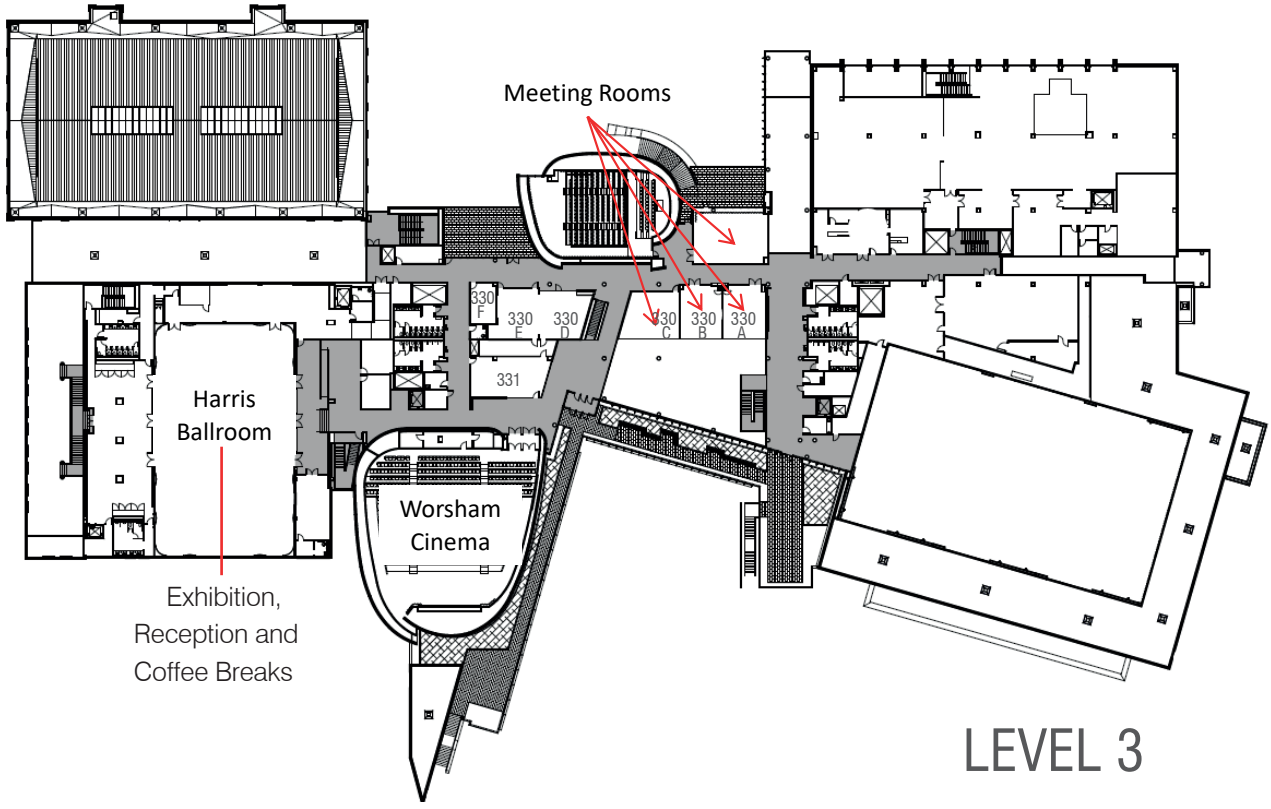
Connect Your Phone (iPhone/Android) to UK-Guest

1. Open your list of available WiFi networks, click on UK-Guest.
2. First-time user? Tap I Don't Have a Guest Account. Already have credentials? Skip to Step 6
   Note: Some Samsung devices will pop up a message asking to access photos, media & files. You can select "Deny" for this message. This is particular to Samsung devices & is not required.
3. Complete the form & tap Register. Note: Phone number format is 1xxxxxxxxxx
4. Check your email or phone texts for the delivered credentials.
5. Tap Sign On to bring up the UK-Guest login page.
6. Enter the guest username & password you received. Tap Sign On.
7. Tap Agree to the acceptable use policy.
8. You will then be connected to UK-Guest.

UKY GATTON STUDENT CENTER FLOOR PLANS



LEVEL 2



LEVEL 3

SUNDAY, JUNE 12

INCE Board Certification Exam

INCE Professional Exam – INCE Board Certification

8:00am – 5:00pm | GSC L3 Room 330AB

Proctored

The INCE Professional Examination is an eight-hour, examination covering the principles and practice of noise control engineering. The examination has a one-hour lunch break. The exam is intended to evaluate the practical knowledge of an individual which has been gained from an engineering education and approximately five years of practical experience in noise control engineering. It is not an academic examination. The exam covers the principles and practice of noise control engineering. This includes the application of fundamental acoustics, mechanical dynamics and the psycho-physiological properties of the ear to noise control programs. Specialized areas include instrumentation and measurements, hearing conservation, noise problems in buildings, in transportation systems, in the community and in industry.

Special Sessions

INCE Fundamentals Exam Preparation Course and Optional Exam

10:00am – 3:00pm Prep Course

4:00pm – 6:00pm Optional Exam | GSC L3 Room 331

The INCE Fundamentals Exam may be used in partial fulfillment of the requirements for INCE Membership. A review session will be conducted from 10:00am – 3:00pm to prepare for the exam which will be conducted in-person and online. The exam will then only be offered online beginning at 4:00pm.

Practical Aspects of Muffler Design

8:00am – 4:00pm | GSC L3 Room 330D

Instructor: Tamer Elnady

This course provides a brief overview of the low frequency behavior of mufflers including a description of the two-port theory. The course covers both the simulation of muffler system acoustics as well as the measurement of muffler 2-port data using the two-source location technique. The main focus is on exhaust mufflers for IC-engines but most of the information given is applicable to any pipe or duct system. In addition, the course will introduce 3D FEM analysis coupled to two-port modeling to extend the frequency range for larger mufflers. Two-port models can also be used to analyze duct networks in the high frequency range based on acoustic power flow; e.g. HVAC ducts. This is also treated in the course together with two-port models for analyzing pressure drop in duct systems. The course comprises lectures and hands-on software examples where all attendants will have the opportunity to actively participate in both the measurements and simulations.

Practical Aspects of Acoustical Enclosure Design

8:00am – 12:00pm | GSC L3 Room 330E

Instructor: Daniel J. Kato

Objectives: To answer key questions in the design of acoustical enclosures:

1. How does sound go through a wall or panel?
2. How does sound go through holes and leaks?
3. How is sound absorbed or blocked?
4. How does sound propagate along ducts?
5. How does sound go through some structural components?
6. What is the overall performance?

The Course: Attendees will learn the important design parameters related to the propagation of airborne sound through panels, ducts and holes as well as the propagation of structure-borne sound through solid components. They will also learn about the characteristics of materials that provide acoustical absorption, structural damping and additional mass.

EVENT INFORMATION

Location Code:
Gatton Student Center - GSC
Levels 1, 2 and 3 - L1, L2 and L3
See Maps on Page 9

Monday, June 13

Student Breakfast
Sponsored by National Council of Acoustical Consultants (NCAC)
7:00am – 8:00am
GSC L1 Cats Den

Plenary Lecture
8:00am – 9:00am
GSC L2 Worsham Cinema

Coffee Break
Sponsored by Gordon, Inc.
9:00am – 9:30am
GSC L2 Worsham Cinema

Vendor Exposition Opening
1:00pm – 7:30pm
GSC L3 Exhibit Hall – Harris Ballroom

Coffee Break
Sponsored by Gordon, Inc.
3:00pm – 3:30pm
GSC L3 Exhibit Hall – Harris Ballroom

Welcome Reception
5:30pm – 7:30pm
GSC L3 Exhibit Hall – Harris Ballroom

Tuesday June 14

INCE Board Certification Breakfast
7:00am – 8:00am
GSC L3 Room 330AB

Plenary Lecture
8:00am – 9:00am
GSC L2 Worsham Cinema

INCE – USA General Meeting
9:00am – 10:00am
GSC L2 Worsham Cinema

Coffee Break
Sponsored by Gordon, Inc.
10:00am – 10:30am
3:00pm – 3:30pm
GSC L3 Exhibit Hall – Harris Ballroom

Women in Noise Control Engineering Lunch
Sponsored by PAC International, LLC
12:00pm – 1:00pm
GSC L3 Room 330AB

Plenary Lecture
3:30pm – 4:30pm
GSC L2 Worsham Cinema

Wednesday, June 15

Closing Ceremony & INCE Awards
8:00am – 9:00am
GSC L2 Worsham Cinema

Coffee Break
Sponsored by Gordon, Inc.
9:00am – 9:30am
GSC L2 Worsham Cinema

Registration Hours | GSC L2

Sunday, June 12
2:00pm – 6:00pm

Monday, June 13
7:00am – 5:30pm

Tuesday, June 14
7:00am – 5:30pm

Wednesday, June 15
7:00am – 5:00pm

Exhibit Hours | GSC L3 Harris Ballroom

Monday, June 13
Exposition Open: 1:00pm – 5:30pm
Welcome Reception: 5:30pm – 7:30pm

Tuesday, June 14
Exposition Open: 8:00am – 3:30pm

SPECIAL EVENTS

Monday, June 13

Student Breakfast

7:00am – 8:00am | GSC L1 Cats Den

This is a chance to meet with professional noise control engineers to discuss career choices, learn more about the companies or organizations they work for (or own), and understand what they are looking for in new employees.

Sponsored by: NCAC National Council of Acoustical Consultants

Accompanying Persons Program

8:30 am | Hyatt Regency Lexington Lobby (401 W High St)

Locals Andy and Brita Seybert will take you on a 6-hour guided tour. In the morning, we will visit the renowned Claiborne Farm (home of many notable horses) and then we will visit the Three Boys Farm Distillery in the afternoon. Lunch is included at the well-known Kentucky Castle and the trip will begin and end at the Hyatt Regency Lexington Hotel.

Welcome Reception in the Expo

5:30pm – 7:30pm | GSC L3 Exhibit Hall – Harris Ballroom

Tuesday, June 14

INCE Board Certification Breakfast

7:00am – 8:00am | GSC L3 Room 330AB

Plan to attend this breakfast meeting if you are interested in becoming INCE Board Certified. Recent board-certified members will be in attendance for networking and to provide all firsthand knowledge about the process and advantages of becoming board certified. The INCE VP of Board Certification will give a short presentation on the application process including a brief description of the full day exam that must be passed in order to become board certified.

Women in Noise Control Engineering Lunch

12:00pm – 1:00pm | GSC L3 Room 330AB

Women NOISE-CON 2022 attendees, students and professionals are welcome to attend. While the demographics in engineering is slowing changing for the better, the number of women in noise control engineering is much lower than we desire. This is a chance to get together with other women working in noise control engineering or related fields, enjoy lunch and chat about challenges and opportunities.

Sponsored by: PAC International

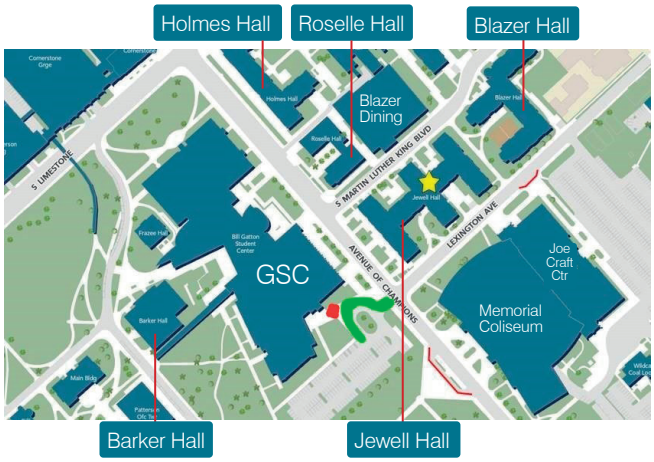
Shaker Village Dinner

6:30pm – 8:30pm | Offsite

The offsite reception will be held at the Shaker Village of Pleasant Hill at one of their venues called The Meadow View Barn. The Meadow View Barn is a restored, open-air tobacco barn with stunning views of the rolling Shaker Village countryside. The ticket price includes food, drinks, and transportation to and from the venue.

Please meet at the designated area listed at the time indicated below for departure to the venue.

Bus Pickup Times:



Hilton Lexington Downtown Hotel, 5:00pm – 5:07pm

- Meet directly out front of the hotel entrance
- 3-minute drive to next stop

Lexington Marriott City Center & Residence Inn Lexington City Center, 5:10pm – 5:17pm

- Meet directly out front of the hotel entrance.
- 5-minute drive to next stop

Gatton Student Center loop loading & unloading area in the visitor lot, 5:23pm – 5:30pm

- Meet outside of the student center near the bus loading loop (red dot shown in the picture above).
- About a 45-minute drive

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Wednesday, June 15

Technical Advisory Board (TAB) Luncheon

12:30pm – 1:30pm | GSC L3 Room 330AB
(Invitation Only)

Paul Donavan & Steve Sorenson

Technical Activity Committee Chairs should attend this working lunch to help organize the Noise-Con 2023 program session. Jim Thompson will share his plan for the conference.

SPECIAL EVENTS

Technical Activity Committee Meetings

Committee	Room	Day	Time
Active Noise Control	GSC L2 Grand Ballroom B	Wednesday	11:30am – 12:30pm 1:30pm – 4:00pm
Aeroacoustic Noise	GSC L2 Grand Ballroom A	Wednesday	11:30am – 12:30pm 1:30pm – 4:00pm
Building Acoustics	GSC L2 Senate Chamber	Tuesday	4:30pm – 5:30pm
Community Noise	GSC L2 Grand Ballroom C	Wednesday	11:30am – 12:30pm 1:30pm – 4:00pm
Experimental Techniques and Instrumentation	GSC L2 Grand Ballroom B	Wednesday	11:30am – 12:30pm 1:30pm – 4:00pm
Industrial Noise	GSC L2 Grand Ballroom A	Wednesday	11:30am – 12:30pm 1:30pm – 4:00pm
Passive Noise Control	GSC L2 Grand Ballroom A	Wednesday	11:30am – 12:30pm 1:30pm – 4:00pm
Information Technology Equipment Noise (ECMA)	GSC L3 Room 331	Wednesday Thursday	12:00pm – 6:00pm 8:00am – 5:00pm
Motor Vehicle Noise	GSC L2 Grand Ballroom C	Wednesday	11:30am – 12:30pm 1:30pm – 4:00pm
Perception and Effects of Noise	GSC L2 Senate Chamber	Wednesday	11:30am – 12:30pm 1:30pm – 4:00pm
Prediction and Modeling Techniques	GSC L2 Grand Ballroom B	Wednesday	11:30am – 12:30pm 1:30pm – 4:00pm
Product Noise Emissions	GSC L2 Senate Chamber	Wednesday	11:30am – 12:30pm 1:30pm – 4:00pm
Sources and Propagation	GSC L2 Senate Chamber	Wednesday	11:30am – 12:30pm 1:30pm – 4:00pm
Structural Acoustics	GSC L2 Grand Ballroom B	Wednesday	11:30am – 12:30pm 1:30pm – 4:00pm
Transportation Noise	GSC L2 Grand Ballroom C	Wednesday	11:30am – 12:30pm 1:30pm – 4:00pm
Wind Turbine Noise	GSC L2 Grand Ballroom A	Wednesday	11:30am – 12:30pm 1:30pm – 4:00pm

MONDAY, JUNE 13 - SCHEDULE-AT-A-GLANCE

7:00am – 8:00am	**Student Breakfast** *Sponsored by National Council of Acoustical Consultants (NCAC)* GSC L1 Cats Den	
8:00am – 9:00am	**Opening Plenary** GSC L2 Worsham Cinema	
9:00am – 9:30am	**Coffee Break** *Sponsored by Gordon, Inc.* GSC L3 Exhibit Hall – Harris Ballroom	
Morning Technical Sessions		
9:30am – 11:30am	• **Aircraft Noise** GSC L2 Grand Ballroom A • **Airborne and Structureborne Noise and Vibration in Buildings** GSC L2 Grand Ballroom B	• **Signal Processing, Measurements, Sound Reproduction, Diagnostics for Noise and Vibration Engineering** GSC L2 Grand Ballroom C • **Classic Papers** GSC L2 Senate Chamber
11:30am – 1:00pm	**Lunch on Your Own**	
Midday Technical Sessions		
1:00pm – 3:00pm	• **Unmanned Aerial Systems** GSC L2 Grand Ballroom A • **Architectural Noise & Vibration Control** GSC L2 Grand Ballroom B	• **Simulation, General Modeling and Model Validation** GSC L2 Grand Ballroom C • **Student Paper Competition - Part 1** GSC L2 Senate Chamber • **Renewable Energy and Infrastructure** GSC L2 Worsham Cinema
3:00pm – 3:30pm	**Coffee Break** *Sponsored by Gordon, Inc.*	
Afternoon Technical Sessions		
3:30pm – 5:30pm	• **Unmanned Aerial Systems** GSC L2 Grand Ballroom A • **Architectural Noise & Vibration Control** GSC L2 Grand Ballroom B	• **Simulation, General Modeling and Model Validation** GSC L2 Grand Ballroom C • **Student Paper Competition - Part 1** GSC L2 Senate Chamber • **Railroad and Road Transportation Noise** GSC L2 Worsham Cinema
5:30pm – 7:30pm	**Welcome Reception** GSC L3 Exhibit Hall – Harris Ballroom	

MONDAY, JUNE 13

Student Breakfast

Sponsored by National Council of Acoustical Consultants (NCAC)
7:00AM – 8:00AM
GSC L1 Cats Den

OPENING SESSION / MONDAY PLENARY

Session Chair: Patricia Davies,
Room: GSC L2 Worsham Cinema

8:00 AM – 9:00AM 13-June-2022
Community acceptance of novel aircraft
Mary Ellen Eagan, HMMH

Coffee Break

Sponsored by Gordon, Inc.
9:00AM – 9:30AM
GSC L2 Worsham Cinema

TECHNICAL SESSIONS

Aircraft Noise
Session Chairs: Conner Campbell, Bhisham Sharma, Pascale Neple
Room: GSC L2 Grand Ballroom A

9:30 AM 13-June-2022
Experimental investigations on the acoustical performance of open-celled metal foams under grazing flow
Mary Drouin, Spirit AeroSystems; Bhisham Sharma, Wichita State University

9:50 AM 13-June-2022
Design, development, and validation of acoustic insulation packages for business and VIP aircraft
Fredrick Vance, Aearo Technologies LLC, a 3M company; Jared Young, Aearo Technologies LLC, a 3M company

10:10 AM 13-June-2022
Modeling acoustic impedance and atmospheric absorption around airports using high-fidelity weather data
Emma Shaw, Penn State Graduate Program in Acoustics; Victor Sparrow, Penn State Graduate Program in Acoustics

10:30 AM 13-June-2022
Hydraulic source ripple and source impedance in 3D acoustic FEM model
Xin Hua, Eaton Corporation; Pratik Patel, Eaton Corporation; Zachary Tuyls, Eaton Corporation

10:50 AM 13-June-2022
Evaluation of nighttime helicopter noise in an urban neighborhood
AnnMarie Hirsh, Babich Acoustics; Jeffrey Babich, Babich Acoustics

11:10 AM 13-June-2022
Navy aircraft sound monitoring study
Micah Downing, Blue Ridge Research and Consulting, LLC; Jonathan Gillis, Blue Ridge Research and Consulting, LLC; Ben Manning, Blue Ridge Research and Consulting, LLC; Josh Mellon, Blue Ridge Research and Consulting, LLC; Matthew Calton, Blue Ridge Research and Consulting, LLC

Airborne and Structureborne Noise and Vibration in Buildings
Session Chairs: Matt Golden, Ethan Brush
Room: GSC L2 Grand Ballroom B

9:30 AM 13-June-2022
Auralizing comparable structural vibration measurements to inform design decisions
John Strong, Threshold Acoustics; Christopher Springthorpe, Threshold Acoustics

9:50 AM 13-June-2022
Challenges testing high transmission-loss walls in a laboratory
Elliott Dick, North Orbit Acoustic Laboratories; Benjamin Shafer, PABCO Building Products; David Berg, North Orbit Acoustic Laboratories

10:10 AM 13-June-2022

The application of frequency response function methods along with heavy/hard force pulse data in the mitigation of fitness activities

Ethan Brush, Acentech Inc.; Matthew Golden, Pliteq Inc.

10:30 AM 13-June-2022

Effects on repeatability and shape of the force pulse due to shape, height, mass, and angle of heavy/hard weight drops

Matthew Golden, Pliteq; Paul Gartenburg, Pliteq; Faiz Musafere, Pliteq; Jordan Strybos, Intertek

10:50 AM 13-June-2022

Horizontal impact sound transmission measurements

Jeffrey Fullerton, Intertek; Alexander Maurer, Intertek

11:10 AM 13-June-2022

Quantitative comparisons of resilient channel designs in walls and ceilings

Wayland Dong, Veneklasen Associates; John LoVerde, Veneklasen Associates

Signal Processing, Measurements, Sound Reproduction, Diagnostics for Noise and Vibration Engineering

Session Chairs: Yangfan Liu, Yongjie Zhuang

Room: GSC L2 Grand Ballroom C

9:30 AM 13-June-2022

A multi-stage filter for separating speech from background noise

Curtis Garner, Brigham Young University; Jonathan Blotter, Brigham Young University; Scott Sommerfeldt, Brigham Young University; Tyler Sanders, Brigham Young University

9:50 AM 13-June-2022

An improved two-stage dereverberation method based on bayesian estimation of a speech source

Arun Prakash Singh, Indian Institute of Technology Kanpur; Nachiketa Tiwari, Indian Institute of Technology Kanpur

10:10 AM 13-June-2022

Advancing support for cause-and-effect models by estimating the kurtosis statistic using fractional-octave-band filters

Edward Zechmann, NIOSH

10:30 AM 13-June-2022

Acoustical impacts on hard disk drive dynamics

Charles Oppenheimer, Oppenheimer Consulting LLC; Chris Peterson, Dell Inc.

10:50 AM 13-June-2022

Large-scale anechoic characterization of small caliber firearm impulse noise

Steven Campbell, Ball Aerospace; Alan Wall, Air Force Research Laboratory; Corey Taylor, Owens Corning; Frank Mobley, Air Force Research Laboratory; Reese Rasband, Ball Aerospace

11:10 AM 13-June-2022

Warmstarting the constrained optimal filter design problem for active noise control systems in conic formulation

Yongjie Zhuang, Purdue University; Zhuang Mo, Purdue University; Yangfan Liu, Purdue University

Classic Papers

Session Chairs: Patricia Davies, Gordon Ebbitt

Room: GSC L2 Senate Chamber

9:30 AM 13-June-2022

Overview of Ffowcs Williams, J. E. and Hawkings, D. L.'s 1969 paper on Sound Generation by Turbulence and Surfaces in Arbitrary Motion

Yidan Cui, Purdue University

9:50 AM 13-June-2022

Overview of Paul Sabine's 1931 paper on A Critical Study of the Precision of Measurement of Absorption Coefficients by Reverberation Methods

Samuel Underwood, Durham School of Architectural Engineering and Construction, University of Nebraska-Lincoln

10:10 AM 13-June-2022

Overview of Jerome E. Manning and Gideon Maidanik's 1964 paper on radiation properties of cylindrical shells

Dazhuang He, Ray W. Herrick Laboratories, School of Mechanical Engineering, Purdue University

10:30 AM 13-June-2022

Overview of Hunt, F.V., Beranek, L.L. and Maa, D.Y.'s 1939 paper on Analysis of Sound Decay in Rectangular Rooms

Jinghe Yu, Purdue University

10:50 AM 13-June-2022

Overview of Jerome E. Manning's 1994 paper on Formulation of SEA parameters using mobility functions

David Neihguk, University of Kentucky

Lunch on Your Own

11:30AM – 1:00PM

Exposition Open

1:00PM – 7:30PM

Exhibit Hall - Harris Ballroom

TECHNICAL SESSIONS

Unmanned Aerial systems

Session Chairs: Siddhartha Krishnamurthy, Jacob Poling

Room: GSC L2 Grand Ballroom A

1:00 PM 13-June-2022

Validation of acoustic directivity patterns from static and dynamic flight measurements

Frank Mobley, USAF, Airman Systems Directorate; Steven Campbell, Ball Aerospace Inc.

1:20 PM 13-June-2022

Change of community noise and noise impact with changes in air-taxi fleet compostitions over a longer period of time

Michael Bauer, Munich Aeroacoustics

1:40 PM 13-June-2022

Preliminary evaluation of transportation noise masking of UAV Noise

Judith Rochat, Cross-Spectrum Acoustics; Herbert Singleton, Cross-Spectrum Acoustics; Keith Yoerg, Cross-Spectrum Acoustics

2:00 PM 13-June-2022

Feasibility study for remote psychoacoustic testing of human response to urban air mobility vehicle noise

Siddhartha Krishnamurthy, NASA; Stephen Rizzi, NASA

2:20 PM 13-June-2022

Noise metrics of the time-varying acoustic far-field of rotors

Woutijn Baars, Delft University of Technology; Edoardo Grande, Delft University of Technology; Daniele Ragni, Delft University of Technology

3:30 PM 13-June-2022

Acoustic measurement practices for UAS and UAM

David Josephson, Josephson Engineering, Inc.

3:50 PM 13-June-2022

Measurement and characterization of multirotor unmanned aerial system noise

Eric Greenwood, The Pennsylvania State University; N. Blaise Konzel, The Pennsylvania State University

Architectural Noise & Vibration Control

Session Chairs: Jeanette Hesedahl, Kevin Herreman

Room: GSC L2 Grand Ballroom B

1:00 PM 13-June-2022

A different method of partition wall isolation

Kevin Herreman, Owens Corning; Corey Taylor, Owens Corning

1:20 PM 13-June-2022

High-performance steel-framed wall and floor/ceiling assemblies

Mike Raley, PAC International; Benjamin Shafer, QuietRock

1:40 PM 13-June-2022

Alternative to resilient channel

Kevin Herreman, Owens Corning; Corey Taylor, Owens Corning

2:00 PM 13-June-2022

Hybrid experimental-numerical methodology for assessment of the building isolation performance

Hamid Masoumi, CDM Stravitec; Bradlay Hunt, CDM Stravitec

3:30 PM 13-June-2022

Evaluation and optimization of acoustics of a multipurpose room to improve speech intelligibility

Peter Oyekola, Tennessee Technological University; William Rogers, Tennessee Technological University; James Fedorka, Tennessee Technological University; Nathaniel Colemon, Tennessee Technological University; Nathan Woodard, Tennessee Technological University; Mehedi Al-Barkat, Tennessee Technological University; Mohan Rao, Tennessee Technological University

3:50 PM 13-June-2022

Case study: Compilation of doorwall designs for speech privacy

William Rosentel, TEECOM; Peter Holst, TEECOM

4:10 PM 13-June-2022

Investigation of an alternative force input method for impact sound rating

Edwin Yazbec, Michigan Technological University; Matt Specht, Michigan Technological University; Dylan Kiefer, Michigan Technological University; Ryan Harrington, Michigan Technological University; Jacob Marchi, Michigan Technological University; Sunit Girdhar, Michigan Technological University; Dr. James DeClerk, Michigan Technological University; Dr. Andrew Barnard, Penn State University

Simulation, General Modeling and Model Validation

Session Chairs: Tim Wu, Chad Musser, Luca Alimonti

Room: GSC L2 Grand Ballroom C

1:00 PM 13-June-2022

A novel multi-gradient direction FxLMS algorithm with output constraint for active noise control

Yabing Cheng, Jilin University; Pingyu Ge, Jilin University; Shuming Chen, Jilin University; Chao Li, Jilin University; Yao Jiang, Jilin University

1:20 PM 13-June-2022

Testing listeners' ability to localize virtual sources using sparse loudspeaker arrays and comparison with spherical-head model predictions

Nathaniel Wells, Brigham Young University - Department of Physics & Astronomy; Tyler Sanders, Brigham Young University - Department of Mathematics; Scott Sommerfeldt, Brigham Young University - Department of Physics & Astronomy; Blotter Jonathan, Brigham Young University - Department of Mechanical Engineering

1:40 PM 13-June-2022

Numerical modeling of noise and vibration due to discharge in hermetic compressors

Dazhuang He, Ray W. Herrick Laboratories, School of Mechanical Engineering, Purdue University; Yangfan Liu, Ray W. Herrick Laboratories, School of Mechanical Engineering, Purdue University; Davide Ziviani, Ray W. Herrick Laboratories, School of Mechanical Engineering, Purdue University

2:00 PM 13-June-2022

Efficient simulations for the democratization of duct transmission loss analysis

Karim Hamiche, Siemens Digital Industries Software; Aamir Marvi, Ford Motor Company

2:20 PM 13-June-2022

Noise propagation and attenuation in L-shape duct with flow

Masaaki Mori, CYBERNET SYSTEMS CO., LTD.

2:40 PM 13-June-2022

Validation studies of a homogenized ribbed-panel model in an SEA context

Abderrazak Mejdi, ESI GROUP; Luca Alimonti, ESI GROUP; Chad Musser, ESI GROUP

3:30 PM 13-June-2022

Electric machine noise and vibration prediction and validation through test

Keyu Chen, BorgWarner; Marcus Hartwig, BorgWarner; Shahram Amoozegar, BorgWarner

3:50 PM 13-June-2022

Highlights of aeroacoustic tests of a metal spacecraft cabin ventilation fan prototype

David Stephens, NASA GRC; Jonathan Goodman, NASA GRC; Rebecca Buehrle, NASA GRC; Arman Mirhashemi, NASA GRC; Lisa Koch, NASA GRC; Tony Shook, NASA GRC; Daniel Sutliff, NASA GRC; Christopher Allen, NASA JSC; Christopher Matty, NASA JSC

Student Paper Competition - Part 1

Session Chairs: Andrew Barnard, Steve Sorenson, Jim Thompson, Keyu Chen, David Herrin, Mike Bahtiarian

Room: GSC L2 Senate Chamber

1:00 PM 13-June-2022

The application of tuned mass dampers to the Tire Pavement Test Apparatus to minimize the impact of rig resonance

Kyosung Choo, Purdue University; Won Hong Choi, Purdue University; J. Stuart Bolton, Purdue University; Matthew Black, Ford Motor Company; Sangbeom Woo, Purdue University

1:20 PM 13-June-2022

Surrogate modeling of open-celled metal foam sound absorbers with stepwise property gradients

Manish Mahajan, Wichita State University; Amulya Lomte, Wichita State University; William Johnston, Wichita State University; Bhisham Sharma, Wichita State University

1:40 PM 13-June-2022

Constructing a physics-guided machine learning neural network to predict tonal noise emitted by a propeller

Arthur Wiedemann, Virginia Polytechnic Institute and State University; Christopher Fuller, Virginia Polytechnic Institute and State University; Kyle Pascioni, National Aeronautics and Space Administration

2:00 PM 13-June-2022

A study of noise reduction in McCrone Micronizing Mill using sound enclosure treatment

Gavin Dies, Tennessee Technological University; Mohan Rao, Tennessee Technological University

2:20 PM 13-June-2022

Evaluation and optimization of acoustics of a multipurpose room to improve speech intelligibility

Peter Oyekola, Tennessee Technological University; William Rogers, Tennessee Technological University; James Fedorka, Tennessee Technological University; Nathaniel Colemon, Tennessee Technological University; Nathan Woodard, Tennessee Technological University; Mehedi Al-Barkat, Tennessee Technological University; Mohan Rao, Tennessee Technological University

2:40 PM 13-June-2022

Investigation of an alternative force input method for impact sound rating

Edwin Yazbec, Michigan Technological University; Matt Specht, Michigan Technological University; Dylan Kiefer, Michigan Technological University; Ryan Harrington, Michigan Technological University; Jacob Marchi, Michigan Technological University; Sunit Girdhar, Michigan Technological University; Dr. James DeClerk, Michigan Technological University; Dr. Andrew Barnard, Penn State University

3:30 PM 13-June-2022

Predicting and visualizing duct borne noise with building information modeling software

Samuel Underwood, Durham School of Architectural Engineering and Construction, University of Nebraska-Lincoln; Lily Wang, Durham School of Architectural Engineering and Construction, University of Nebraska-Lincoln

3:50 PM 13-June-2022

A simple four-pole solution with FEM/BEM validation to estimate the effectiveness of compact resonators in large silencers

H. Zhou, University of Kentucky; T. W. Wu, University of Kentucky; P. Wang, University of Kentucky; J. P. Engel, University of Kentucky

4:10 PM 13-June-2022

Modeling the acoustic behavior of stepwise gradient porous structures

Amulya Lomte, Bhisham Sharma, Department of Mechanical Engineering, Wichita State University

4:30 PM 13-June-2022

Prediction of flow properties of granular porous materials for acoustic applications

Bharath Kenchappa, Department of Mechanical Engineering, North Carolina A&T State University, Kunigal Shivakumar, Department of Mechanical Engineering, North Carolina A&T State University

Renewable Energy and Infrastructure

Session Chairs: Rob O'Neal, Mark Bastasch, Ken Kaliski

Room: GSC L2 Worsham Cinema

1:00 PM 13-June-2022

Battery energy storage system facility implementation noise control and sound abatement considerations

Mark Storm, Dudek; Jonathan Leech, Dudek

1:20 PM 13-June-2022

Sound emissions in solar and battery energy storage projects

Kenneth Kaliski, RSG; Robert O'Neal, Epsilon Associates; Mark Bastasch, Jacobs Engineering

1:40 PM 13-June-2022

Standardizing wind turbine sound predictions

Mark Bastasch, Jacobs

2:00 PM 13-June-2022

A proposed method for measuring noise from wind farms for the purpose of determining compliance with applicable limits and the comparison of results to ISO 9613-2 predictions

Justin Bowers, Hankard Environmental; Michael Hankard, Hankard Environmental; Jeff Cerjan, Hankard Environmental

2:20 PM 13-June-2022

Verification of sound modeling results for a wind energy project

Robert O'Neal, Epsilon Associates, Inc.; Mark Bastasch, Jacobs; Clint Cyr, Epsilon Associates, Inc.

2:40 PM 13-June-2022

Computational investigation into the effect of material properties on aeroacoustics based damage detection from wind turbine blades

Caleb Traylor, University of Massachusetts Lowell; Murat Inalpolat, University of Massachusetts Lowell

Railroad and Road Transportation Noise

Session Chairs: Herb Singleton, Dana Lodico

Room: GSC L2 Worsham Cinema

3:30 PM 13-June-2022

Wayside noise measurements of diesel multiple unit rail vehicles in revenue service

David Towers, Cross-Spectrum Acoustics Inc.

3:50 PM 13-June-2022

Dynamic mechanical analysis of rubber based products in under ballast mat rail applications

Colin Bradley, Pliteq Inc.; Josh Havin, Pliteq Inc.; Faiz Musafere, Pliteq Inc.

4:10 PM 13-June-2022

Design-build case study project neon NDOT

Scott Noel, Harris Miller Miller & Hanson Inc.; Jessica Goza-Tyner, Nevada Department of Transportation

4:30 PM 13-June-2022

Measurements of train vibration impacts on vibration sensitive facilities

Blong Xiong, Colin Gordon Associates

4:50 PM 13-June-2022

A possible mitigation measures for urbanized residential care homes for elderly (RCHE) – acoustic window with natural ventilation

Man Sum Lam, Allied Environmental Consultants Limited; May Hang Grace Kwok, Allied Environmental Consultants Limited; Siu Ming Cheung, Allied Environmental Consultants Limited; Joanne Wai Yin Ng, Allied Environmental Consultants Limited; Wing Yee Tang, Allied Environmental Consultants Limited

Coffee Break

Sponsored by Gordon, Inc.
3:00PM – 3:30PM
GSC L3 Exhibit Hall – Harris Ballroom

Welcome Reception

5:30PM – 7:30PM
GSC L3 Exhibit Hall – Harris Ballroom

TUESDAY, JUNE 14 - SCHEDULE-AT-A-GLANCE

7:00am – 8:00am	**Board Certification Breakfast** GSC L3 Room 330AB	
8:00am – 9:00am	**Plenary** GSC L2 Worsham Cinema	
9:00am – 10:00am	**INCE General Meeting** GSC L2 Worsham Cinema	
10:00am – 10:30am	**Coffee Break** *Sponsored by Gordon, Inc.* GSC L3 Exhibit Hall – Harris Ballroom	
Morning Technical Sessions		
10:30am – 12:00pm	• **Artificial Intelligence in Acoustics** GSC L2 Grand Ballroom A • **Measurements and Standards** GSC L2 Grand Ballroom B	• **Vibro-Acoustics and Structure-Borne Noise** GSC L2 Grand Ballroom C • **Student Paper Competition - Part 2** GSC L2 Senate Chamber • **Mufflers and Silencers** GSC L2 Worsham Cinema
12:00pm – 1:00pm	**Light Hors D'oeuvres** GSC L2 Exhibit Hall – Harris Ballroom	
12:00pm – 1:00pm	**Women in Noise Control Engineering Lunch** *Sponsored by PAC International, LLC* GSC L3 Room 330AB	
Midday Technical Session		
1:00pm – 3:00pm	• **Vehicle Noise and Vibration** GSC L2 Grand Ballroom A • **HVAC and Building System Noise and Vibration Control** GSC L2 Grand Ballroom B	• **Environmental Noise** GSC L2 Grand Ballroom C • **Student Paper Competition - Part 2** GSC L2 Senate Chamber • **Alternate mitigation to reduce highway traffic noise** **Construction noise and vibration** GSC L2 Worsham Cinema
3:00pm – 3:30pm	**Coffee Break** *Sponsored by Gordon, Inc.* GSC L3 Exhibit Hall – Harris Ballroom	
3:30pm – 4:30pm	**Plenary** GSC L2 Worsham Cinema	
4:30pm – 5:30pm	**Career Forum** GSC L3 Room 330AB	
6:30pm – 8:30pm	**Shaker Village Dinner (ticketed event)** *Sponsored by CDM Stravitec* Offsite	

TUESDAY, JUNE 14

Board Certification Breakfast

7:00AM – 8:00AM
GSC L3 Room 330AB

Exposition Open

8:00AM – 3:30PM
GSC L3 Exhibit Hall – Harris Ballroom

TUESDAY MORNING PLENARY

Session Chair: Jeff Fullerton
Room: GSC L2 Worsham Cinema

8:00 AM – 9:00AM

Surprises in acoustics and psychoacoustics
Eric Heller, Harvard University

INCE General Meeting

9:00 AM – 10:00 AM
GSC L2 Worsham Cinema

Coffee Break

Sponsored by Gordon, Inc.
10:00 AM – 10:30 AM
GSC L3 Exhibit Hall - Harris Ballroom

TECHNICAL SESSIONS

Artificial Intelligence in Acoustics

Session Chairs: Bhisham Sharma, Conner Campbell

Room: GSC L2 Grand Ballroom A

10:30 AM 14-June-2022

Speedup of FTMM (finite-size transfer matrix method) calculations through machine learning techniques
Tom Burns, Soundcoat

10:50 AM 14-June-2022

Surrogate modeling of open-celled metal foam sound absorbers with stepwise property gradients
Manish Mahajan, Wichita State University; Amulya Lomte, Wichita State University; William Johnston, Wichita State University; Bhisham Sharma, Wichita State University

11:10 AM 14-June-2022

Constructing a physics-guided machine learning neural network to predict tonal noise emitted by a propeller
Arthur Wiedemann, Virginia Polytechnic Institute and State University; Christopher Fuller, Virginia Polytechnic Institute and State University; Kyle Pascioni, National Aeronautics and Space Administration

Measurements and Standards

Session Chairs: Seth Bard, David Nelson

Room: GSC L2 Grand Ballroom B

10:30 AM 14-June-2022

Review of concepts relating to measurement quality
Elliott Dick, North Orbit Acoustic Laboratories

10:50 AM 14-June-2022

Applying Lean Construction principles to noise mitigation design
Laura Fennema, Parklane Mechanical Acoustics

11:10 AM 14-June-2022

An angle-error model for enveloping surface sound power measurements
Seth Bard, IBM

Vibro-Acoustics and Structure-Borne Noise

Session Chairs: Kristin Cody, Victor Sparrow

Room: GSC L2 Grand Ballroom C

10:30 AM 14-June-2022

Finding damping loss factor using circle-fit method on Nyquist diagrams.
Ricardo De Alba Alvarez, Blachford Acoustics Group; Malcolm Kelly, Blachford Acoustics Group; Colin Hale, Blachford Acoustics Group; Pete Marinelli, Blachford Acoustics Group

10:50 AM 14-June-2022

Studying footfall vibration criteria in a changing market and the effects on structural design
Caitlin Ormsbee, Cerami & Associates

11:10 AM 14-June-2022

Application of stockbridge type tuned mass damper on the chillers for mitigating the Tonal structure- borne noise in Hotel Guest Room under the Chiller Plant Room
Neo Cheung, AECOM; Jackel Law, AECOM; Yu Tin Tang, AECOM

Student Paper Competition - Part 2

Session Chairs: Andrew Barnard, Steve Sorenson, Jim Thompson, Keyu Chen, David Herrin, Mike Bahtiarian

Room: GSC L2 Senate Chamber

10:30 AM 14-June-2022

Modeling acoustic impedance and atmospheric absorption around airports using high-fidelity weather data

Emma Shaw, Penn State Graduate Program in Acoustics; Victor Sparrow, Penn State Graduate Program in Acoustics

10:50 AM 14-June-2022

Numerical modeling of noise and vibration due to discharge in hermetic compressors

Dazhuang He, Ray W. Herrick Laboratories, School of Mechanical Engineering, Purdue University; Yangfan Liu, Ray W. Herrick Laboratories, School of Mechanical Engineering, Purdue University; Davide Ziviani, Ray W. Herrick Laboratories, School of Mechanical Engineering, Purdue University

11:10 AM 14-June-2022

Testing listeners' ability to localize virtual sources using sparse loudspeaker arrays and comparison with spherical-head model predictions

Nathaniel Wells, Brigham Young University - Department of Physics & Astronomy; Tyler Sanders, Brigham Young University - Department of Mathematics; Scott Sommerfeldt, Brigham Young University - Department of Physics & Astronomy; Blotter Jonathan, Brigham Young University - Department of Mechanical Engineering

1:00 PM 14-June-2022

Computational investigation into the effect of material properties on aeroacoustics based damage detection from wind turbine blades

Caleb Traylor, University of Massachusetts Lowell; Murat Inalpolat, University of Massachusetts Lowell

1:20 PM 14-June-2022

Simulation of perforations using distance-based linearized Navier-Stokes-Fourier

Xin Yan, University of Kentucky; David Herrin, University of Kentucky; Nikhil Ghaisas, Hexagon

1:40 PM 14-June-2022

A finite difference approach for predicting acoustic behavior of the poro-elastic particle stacks

Zhuang Mo, Ray W. Herrick Laboratories, Purdue University; Guochenhao Song, Ray W. Herrick Laboratories, Purdue University; J. Stuart Bolton, Ray W. Herrick Laboratories, Purdue University

Mufflers and Silencers

Session Chairs: Tamer Elnady, David Herrin

Room: GSC L2 Worsham Cinema

10:30 AM 14-June-2022

Investigation of mid-frequency prediction using combined pressure acoustics and power-based methods

Mina Nashed, Ain Shams University; Tamer Elnady, Ain Shams University; Mats Åbom, Royal Institute of Technology

10:50 AM 14-June-2022

An experimental study of flow-induced noise from perforated pipes

Seth Donkin, University of Kentucky; David Herrin, University of Kentucky

11:10 AM 14-June-2022

Simulation of perforations using distance-based linearized navier-stokes-fourier

Xin Yan, University of Kentucky; David Herrin, University of Kentucky; Nikhil Ghaisas, Hexagon

Light Hors D'oeuvres

12:00pm – 1:00pm

GSC L3 Exhibit Hall - Harris Ballroom

Women in Noise Control Engineering Lunch

Sponsored by PAC International, LLC

12:00PM – 1:00PM

GSC L3 Room 330AB

TECHNICAL SESSIONS

Vehicle Noise and Vibration

Session Chairs: Jonathan Chen, Keyu Chen

Room: GSC L2 Grand Ballroom A

1:00 PM 14-June-2022

Automotive OEM acoustics - the ideal application for carbon neutral solutions

Richard Brouckaert, Cascade Engineering

1:20 PM 14-June-2022

Auralization of road noise CAE simulation results for interactive sound quality evaluations

Rabah Hadjit, HBK; Fredrik Sjogren, Hexagon; Athanasios Poulos, Hexagon; Cyril de Walque, Hexagon

1:40 PM 14-June-2022

Quantification of the noise control benefit realized by installing an aerodynamic fairing to a passenger vehicle

Dan Hemme, BAi, LLC

2:00 PM 14-June-2022

Dynamic force measurement to assess NVH performance of electric motors

Song He, General Motors Company; William Omell, General Motors Company; Michael Gandham, General Motors Company

2:20 PM 14-June-2022

Tire test stand measurements for blocked forces identification and tire noise auralization

Rabah Hadjit, HBK; Bret Engels, HBK; Markus Brandstetter, Hexagon; Athanasios Poulos, Hexagon

2:40 PM 14-June-2022

The application of tuned mass dampers to the Tire Pavement Test Apparatus to minimize the impact of rig resonance

Kyosung Choo, Purdue University; Won Hong Choi, Purdue University; J. Stuart Bolton, Purdue University; Matthew Black, Ford Motor Company; Sangbeom Woo, Purdue University

HVAC and Building System Noise and Vibration Control

Session Chairs: Jeff Fullerton, Dan LaForgia

Room: GSC L2 Grand Ballroom B

1:00 PM 14-June-2022

Case study of office noise and vibration annoyance due to building water pumps for HVAC equipment

Richard Ruhala, Kennesaw State University; Laura Ruhala, Kennesaw State University

1:20 PM 14-June-2022

Breakout from HVAC ductwork

Jerry Lilly, JGL Acoustics, Inc.

1:40 PM 14-June-2022

Predicting and visualizing duct borne noise with building information modeling software

Samuel Underwood, Durham School of Architectural Engineering and Construction, University of Nebraska-Lincoln; Lily Wang, Durham School of Architectural Engineering and Construction, University of Nebraska-Lincoln

2:00 PM 14-June-2022

Scaled down measurement of HVAC duct insertion loss and comparison to simulation

Caoyang Li, University of Kentucky; David Herrin, University of Kentucky

2:20 PM 14-June-2022

A simple four-pole solution with FEM/BEM validation to estimate the effectiveness of compact resonators in large silencers

H. Zhou, University of Kentucky; T. W. Wu, University of Kentucky; P. Wang, University of Kentucky; J. P. Engel, University of Kentucky

2:40 PM 14-June-2022

Outdoor unit split fan noise prediction using a hybrid lighthill analogy method

Ali Nikparto, Carrier Corporation; Alexis Talbot, Hexagon; Asad Sardar, Carrier Corporation; Clement Roy, Hexagon

Environmental Noise

Session Chairs: Mark Storm, Karl Peterman

Room: Grand Ballroom C

1:00 PM 14-June-2022

Cryptocurrency mining noise: The cost of progress?

Erich Thalheimer, WSP USA, Inc.

1:20 PM 14-June-2022

Novel approach to noise mitigation: a case study demonstrating a collaborative approach between noise consultant and noise solution supplier for economical and practical implementation

Jagannath Rajasekaran, Parklane Solutions Inc

1:40 PM 14-June-2022

Rooftop acoustic barrier design without the need for roof penetrations

Michael Bolduc, Parklane Mechanical Acoustics; Jagannath Rajasekaran, Parklane Mechanical Acoustics

2:00 PM 14-June-2022

Controling noise from tunnel ventilation fans

Karl Peterman, Vibro-Acoustics; Dan LaForgia, Vibro-Acoustics

2:20 PM 14-June-2022

Revitalising soundscape of 'holy cross' sacred grove - baradi, goa: acoustic environment's affective and metaphysical heritage

Menino Allan S.M. Peter Tavares, Research Head, Conservation Acousics and Revitalising Soundscapes

2:40 PM 14-June-2022

Establishing the appropriate maximum sound pressure levels in absence of a noise ordinance for a residential community near an indoor firing range.

Mark Bartus II, Babich Acoustics LLC; Jeffrey Babich, Babich Acoustics LLC

3:00 PM 14-June-2022

Underwater shipping noise impacts to marine life: a global issue

Michael Bahtiarian, Acentech

Alternate mitigation to reduce highway traffic noise

Session Chairs: Paul Burge, Karel Kubick

Room: GSC L2 Worsham Cinema

1:00 PM 14-June-2022

Traffic noise reduction attributed to roadside vegetation: Ohio case study

Ben Sperry, Ohio University; Elizabeth Myers, Ohio University; Sarah Maracz, Ohio University; Judy Rochat, Cross-Spectrum Acoustics; Karel Cubick, ms consultants

1:20 PM 14-June-2022

Acoustically soft ground as a highway traffic noise reduction strategy

Judith Rochat, Cross-Spectrum Acoustics; Karel Cubick, ms consultants

1:40 PM 14-June-2022

Solid safety barriers as a highway traffic noise reduction strategy

Karel Cubick, ms consultants, inc.; Judith Rochat, Cross-Spectrum Acoustics, Inc.

Construction noise and vibration

Session Chairs: Paul Burge, Karel Kubick

Room: GSC L2 Worsham Cinema

2:00 PM 14-June-2022

Noise mitigation strategies for vacuum excavators

Keith Yoerg, Cross-Spectrum Acoustics; Shannon McKenna, Cross-Spectrum Acoustics

2:20 PM 14-June-2022

Managing construction vibrations near sensitive facilities

Ethan Brush, Acentech Inc.; Marc Newmark, Acentech Inc.

2:40 PM 14-June-2022

Using updated roadway construction noise model acoustical noise data for simplified construction noise predictions.

Paul Burge, AECOM; Roger Wayson, AECOM; Cole Martin, AECOM

Coffee Break

Sponsored by Gordon, Inc.

3:00PM – 3:30PM

GSC L3 Exhibit Hall – Harris Ballroom

TUESDAY AFTERNOON PLENARY

Session Chair: David Copley

Room: GSC L2 Worsham Cinema

3:30 PM – 4:30 PM

Measuring sound with mobile apps: challenges and opportunities

Benjamin Faber, Faber Acoustical, LLC

Career Forum

4:30pm – 5:30pm

GSC L3 Room 330AB

Shaker Village Dinner (ticketed event)

Sponsored by CDM Stravitec

6:30pm – 8:30pm

Offsite

WEDNESDAY, JUNE 15 - SCHEDULE-AT-A-GLANCE

8:00am – 9:00am	**Closing Ceremony & Awards** GSC L2 Worsham Cinema
9:00am – 9:30am	**Coffee Break** GSC L2 Worsham Cinema

Morning Technical Sessions

9:30am – 11:30am	• **Industrial Noise** GSC L2 Grand Ballroom A • **Case Studies in Building Acoustics** GSC L2 Grand Ballroom B	• **Acoustic Materials and Passive Noise Control Systems** GSC L2 Grand Ballroom C
9:30am – 11:30am	**Exhibitor Sessions** GSC L2 Senate Chamber	
11:30am – 12:30pm	**Technical Activity Committee Meetings**	
12:00pm – 6:00pm	**IT Technical Committee Meeting** GSC L3 Room 331	
12:30pm – 1:30pm	**TAB Luncheon** GSC L3 Room 330AB	
1:30am – 4:00pm	**Technical Activity Committee Meetings**	

WEDNESDAY, JUNE 15

Closing Ceremony & Awards

8:00am – 9:00am
GSC L2 Worsham Cinema

Coffee Break

9:00am – 9:30am
GSC L2 Worsham Cinema

TECHNICAL SESSIONS

Industrial Noise

Session Chairs: David Herrin, Tamer Elnady

Room: GSC L2 Grand Ballroom A

9:30 AM 15-June-2022

Panel contribution analysis combined with scale modeling for assessing equipment noise

D. W. Herrin, University of Kentucky; Gong Cheng, University of Kentucky

9:50 AM 15-June-2022

Mitigation assessment of complex noise sources – an acoustical camera approach

Samuel Pendyala, WSP USA, Inc.; Jacob Poling, WSP USA, Inc.

10:10 AM 15-June-2022

Case study: power facility noise measurement surveys before and after new equipment installation

Mike Greene, Dudek; Connor Burke, Dudek

10:30 AM 15-June-2022

A study of noise reduction in McCrone Micronizing Mill using sound enclosure treatment

Gavin Dies, Student; Mohan Rao, Professor

10:50 AM 15-June-2022

Sound level measurement accessories

Corey Fuzak, Solar Turbines Incorporated

11:10 AM 15-June-2022

Determination and utilization of blocked forces

David Herrin, University of Kentucky; Keyu Chen, University of Kentucky

Case Studies in Building Acoustics

Session Chairs: Cristina Myar, Mandy Kachur

Room: GSC L2 Grand Ballroom B

9:30 AM 15-June-2022

The boom in life science development and its impacts on community noise

Marc Wallace, Tech Environmental, Inc.; Matthew Riegert, Tech Environmental, Inc.; Patricia Rosa, Tech Environmental, Inc.

9:50 AM 15-June-2022

A case study in building HVAC systems noise control for the air-conditioning retrofit of a historic theatre

Nathan Sevener, Soundscape Engineering

10:10 AM 15-June-2022

Coordination issues for concrete floating floors; San Francisco Conservatory of Music Bowes Center, case study

Cristina Miyar, Acousthetics; Anthony Shou, Kirkegaard

10:30 AM 15-June-2022

Compilation of restaurant acoustics data logged in Omaha, Nebraska

Samuel Underwood, Durham School of Architectural Engineering and Construction, University of Nebraska – Lincoln; Lily Wang, Durham School of Architectural Engineering and Construction, University of Nebraska – Lincoln

10:50 AM 15-June-2022

Case study- modeling restaurant noise in a 4-story atrium with adjacent offices

Rachel Parlock, NV5

11:10 AM 15-June-2022

Rainfall noise simulation and mitigation

David Nelson, Nelson Acoustics

Acoustic Materials and Passive Noise Control Systems

Session Chairs: J. Stuart Bolton, Gordon Ebbitt

Room: GSC L2 Grand Ballroom C

9:30 AM 15-June-2022

Progress on developing a new SAE damping standard for the ground vehicle industry

Pranab Saha, Kolano and Saha Engineers, Inc.

9:50 AM 15-June-2022

Acoustic and structural damping properties of fibrogranular composites made of jute and crumb rubber

Amiya Mohanty, Indian Institute of Technology Kharagpur; Raja Kumar, Indian Institute of Technology Kharagpur

10:10 AM 15-June-2022

Additive manufacturing of ceramic porous structures for acoustical applications

David Nevarez-Saenz, Wichita State University; Ted Adler, Wichita State University; Wei Wei, Wichita State University; Bhisham Sharma, Wichita State University

10:30 AM 15-June-2022

Prediction of flow properties of granular porous materials for acoustic applications

Bharath Kenchappa, Department of Mechanical Engineering, North Carolina A&T State University, Greensboro, North Carolina 27411, United States; Kunigal Shivakumar, Department of Mechanical Engineering, North Carolina A&T State University, Greensboro, North Carolina 27411, United States

10:50 AM 15-June-2022

A finite difference approach for predicting acoustic behavior of the poro-elastic particle stacks

Zhuang Mo, Ray W. Herrick Laboratories, Purdue University; Guochenhao Song, Ray W. Herrick Laboratories, Purdue University; J. Stuart Bolton, Ray W. Herrick Laboratories, Purdue University

11:10 AM 15-June-2022

Modeling the acoustic behavior of stepwise gradient porous structures

Amulya Lomte, Bhisham Sharma, Wichita State University

Exhibitor and Sponsor Session

Session Chairs: David Copley, Jared Schmal, and Seth Donkin

GSC L2 Senate Chamber

9:30 AM

Noise Barriers for Buildings

Patrick Harkin/Alec Gergely, Durisol

9:40 AM

Simcenter Sound Camera

Pete Schaldenbrand, Siemens Digital Industries Software

9:50 AM

Automated sound monitors for environmental professionals

Paul McDonald, Sonitus System

10:00 AM

Sound Quality engineering process

Rabah Hadjit, HBK

10:10 AM

Vibration Testing Tips

Greg McCart/Ken Cox, PCB

10:20 AM

Yale Schwarzman Commons, Reduced RT from 3.2 to 1.7 seconds!

Daniel Robinson, Navy Island, Inc.

10:30 AM

Renovation project of the Louisville (Colorado) Recreation and Senior Center

Justin Reidling, Ecore

10:40 AM

Scantek overview

Ed Okorn, Scantek, Inc

10:50 AM

VA-One overview

Chad Musser, ESI Group

11:00 AM

Aesthetic Designs in Metal Combined with Acoustic Performance

Chess Hutchings and Rob Rombaugh, Gordon Inc.

11:10 AM

All-in-one Noise Monitoring Station

Luke Allen, OHD

11:20 AM

Elastomer and spring isolation bearing systems

Brad Hunt, CDM Stravitec

Technical Activity Committee Meetings

11:30am – 12:30pm
GSC L2 Senate Chamber

- Perception and Effects of Noise
- Product Noise Emissions
- Sources and Propagation

Technical Activity Committee Meetings

11:30am – 12:30pm
GSC L2 Grand Ballroom A

- Aeroacoustic Noise
- Industrial Noise
- Passive Noise Control
- Wind Turbine Noise

Technical Activity Committee Meetings

11:30am – 12:30pm
GSC L2 Grand Ballroom B

- Active Noise Control
- Experimental Techniques and Instrumentation
- Prediction and Modeling Techniques
- Structural Acoustics

Technical Activity Committee Meetings

11:30am – 12:30pm
GSC L2 Grand Ballroom C

- Community Noise
- Motor Vehicle Noise
- Transportation Noise

IT Technical Committee Meeting

12:00pm – 6:00pm
GSC L3 Room 331

TAB Luncheon

12:30pm – 1:30pm
GSC L3 Room 330AB

Technical Activity Committee Meetings

1:30pm – 4:00pm
GSC L2 Senate Chamber

- Perception and Effects of Noise
- Product Noise Emissions
- Sources and Propagation

Technical Activity Committee Meetings

1:30pm – 4:00pm
GSC Grand Ballroom A

- Aeroacoustic Noise
- Industrial Noise
- Passive Noise Control
- Wind Turbine Noise

Technical Activity Committee Meetings

1:30pm – 4:00pm
GSC Grand Ballroom B

- Active Noise Control
- Experimental Techniques and Instrumentation
- Prediction and Modeling Techniques
- Structural Acoustics

Technical Activity Committee Meetings

1:30pm – 4:00pm
GSC Grand Ballroom C

- Community Noise
- Motor Vehicle Noise
- Transportation Noise

THURSDAY, JUNE 16

IT Technical Committee Meeting

8:00AM – 5:00PM
GSC L3 Room 331

EXHIBIT BOOTH FLOOR PLAN & HOURS

Exposition Schedule:

- Monday, June 13, 2022
- Monday, June 13, 2022 – Expo open after lunch, 1pm to 7:30pm ET (includes afternoon break and Welcome Reception)
- Tuesday, June 14, 2022 – Expo open 8am to 3:30pm ET
- Tuesday, June 14, 2022 – Expo Closes

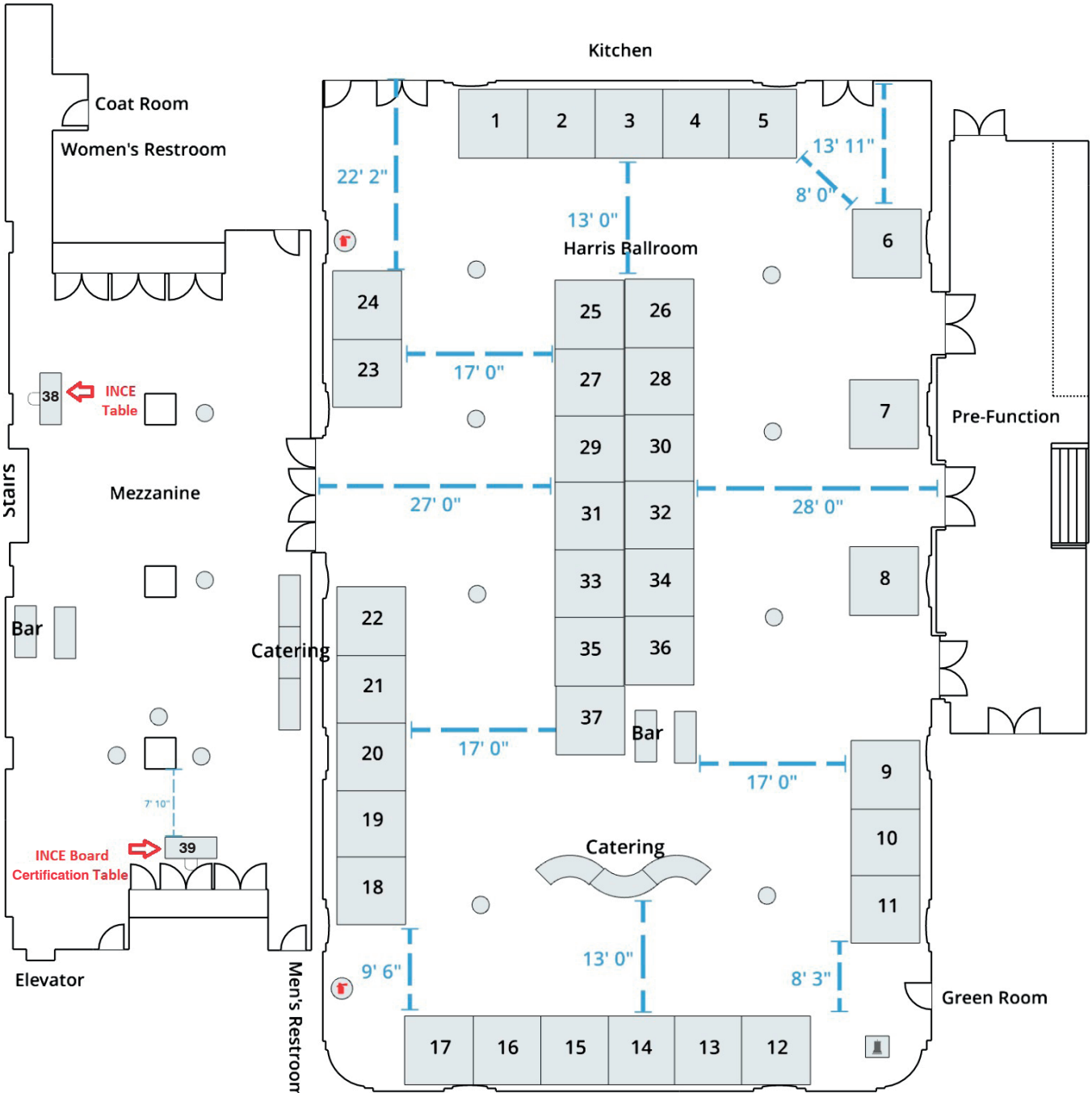

EXHIBIT BOOTH ASSIGNMENTS

Booth	Company Name
7	Acoustiblok Inc.
37	AIL Sound Walls
30	BASWA acoustic N.A.
4	BRD Noise and Vibration Control, Inc.
22	CDM Stravitec
17	Damping Technologies, Inc
29	Dassault Systemes
24	DeweSoft
15	Durisol
34	Eckel Noise Control Technologies
32	Ecore
8	ESI GROUP
23	ETS-Lindgren Inc.
6	Hottinger Bruel & Kjaer
13	IAC Acoustics
39	INCE Board Certification
38	INCE-USA
18	Jamison Door Company
21	Kinetics Noise Control

Booth	Company Name
31	Larson Davis
14	Marino/Ware
16	MBI Products Company, Inc.
12	Mason Industries
3	Mull-It-Over Products
36	Navy Island, Inc.
2	Noise Barriers
9	NTi Audio
26	OHD
19	Overly Door Company
33	PAC International, LLC.
20	PCB Piezotronics
25	Pyrok, Inc
35	Scantek, Inc.
11	Siemens Digital Industries Software
28	Sigicom Inc.
10	Sonitus Systems
27	Sound Fighter® Systems
1	Sound Inspectors
5	Sound Seal

MARK YOUR CALENDAR FOR THESE INCE EVENTS

Building Acoustics – Sound Isolation Webinar

Wednesday, July 27

Presented by Felicia Doggett from Metropolitan Acoustics and Ben Davenny from Acentech

NOISE-CON 2023

May 15-18, 2023

Grand Rapids, MI

A Joint Conference with SAE and TRB

NOTES

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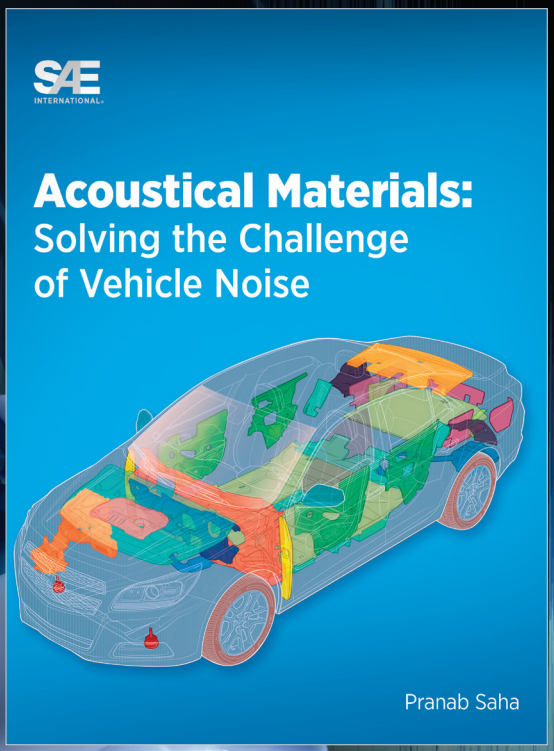

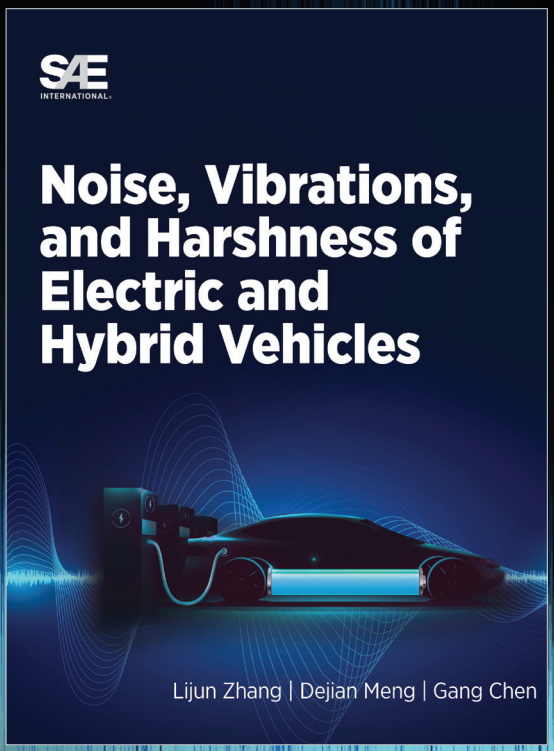

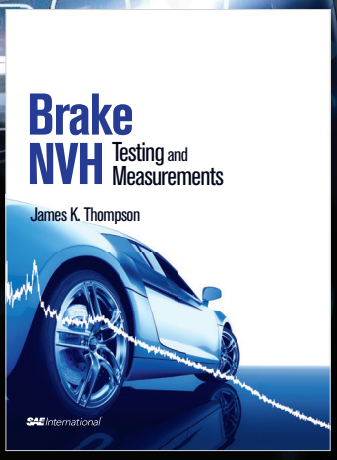

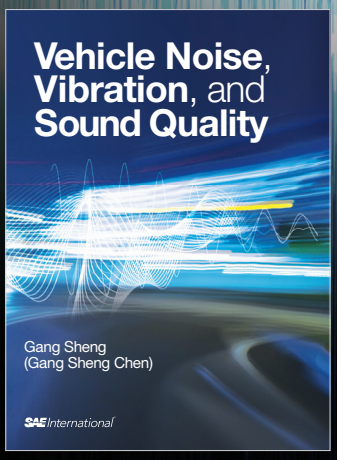

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