



## NOISE-CON 2020 – Plenary, Technical Sessions , & Events

Papers are listed by Day, First or Second Session, Track,  
and Order of Presentation

All times are Eastern Standard Time

### MONDAY – NOVEMBER 16, 2020

#### Opening Ceremony & Plenary Session

11:00 AM      **Oral Only**      *The Acoustic Experience in Restaurants*  
Dr. Lily Wang, University of Nebraska – Lincoln

#### Building Acoustics - Case Studies 1

Chairpersons: Greg Coudriet, Chris Springthorpe  
Track: 1

13:00      **NC20\_526.pdf**      *An Integrated Approach To The Sound Isolation Of A Fitness Center*  
Richard A. Kolano, Kolano & Saha Engineers, Inc.; Jeremy Bielecki, Kolano & Saha  
Engineers, Inc.

13:20      **NC20\_621.pdf**      *Fitness Activities Noise Impact In High Rise Buildings*  
Walid Tikriti, Acoustonica, LLC

13:40      **NC20\_375.pdf**      *Case Studies In Fitness Center Noise And Vibration With Adjacent  
Residential Or Commercial Space*  
Jonathan Brothers, Eilar Associates, Inc.; Amy Hool, Eilar Associates, Inc.; Mo Ouwenga,  
Eilar Associates, Inc.; Rachael Cowell, Eilar Associates, Inc.

14:00      **NC20\_309.pdf**      *Conversion And Compliance*  
Tung-Chen Chung, Environmental Science Associates



## Highway Noise

Chairpersons: Paul Donovan, Dana Lodico

Track: 2

- 13:00      **NC20\_507.pdf** *Noise Modeling Of Short Safety Barriers Using Realistic Vehicle Source Height Distributions*  
Dana Lodico, Illingworth & Rodkin, Inc.
- 13:20      **NC20\_551.pdf** *Public Involvement Tools For Visualizing And Hearing Transportation Noise*  
Scott Noel, Harris Miller Miller & Hanson Inc.; Eric Cox, Harris Miller Miller & Hanson, Inc.; Justin Divens, Harris Miller Miller & Hanson, Inc.
- 13:40      **NC20\_585.pdf** *Consideration Of Photovoltaic Systems As An Alternative Approach To Meeting Regulatory Requirements For Noise Abatement Measures*  
Ivan Racic, Arizona Department of Transportation; Angela Newton, Newton Environmental Consulting LLC; Joe D'Onofrio, Jacobs Engineering Group
- 14:00      **NC20\_549.pdf** *Nchrp 791 - Structure-Borne Noise Case Study I-205*  
Scott Noel, Harris Miller Miller & Hanson Inc.; Christopher Menge, Harris Miller Miller & Hanson Inc.; Christopher Bajdek, Harris Miller Miller & Hanson Inc.; Daniel Burgin, Oregon Department of Transportation

## Education and Student Classic Paper Competition 1

Chairpersons: Andrew Barnard, Patricia Davies, David Herrin

Track: 3

- 13:00      **NC20\_378.pdf** *Leveraging Abet Accreditation To Promote Inclusion Of Noise Control Engineering Concepts In Engineering Programs*  
Lily Wang, University of Nebraska - Lincoln; Bryan Beamer, National Institute for Occupational Safety and Health
- 13:20      **Oral Only**      *Overview Of Lyon, R.H.'S 1971 Paper On Analysis Of Sound-Structure Interaction By Theory And Experiment*  
Srinivasa-Rao Ippili, University of Kentucky



- 13:40      **Oral Only**      *Overview Of Lyon'S 1963 Jasa Paper On Noise Reduction Of Rectangular Enclosures With One Flexible Wall*  
Guochenhao Song, Ray W. Herrick Laboratories, School of Mechanical Engineering, Purdue University.
- 14:00      **Oral Only**      *Overview Of Richard H. Lyon'S 1971 Paper On Analysis Of Sound-Structure Interaction By Theory And Experiment*  
Dazhuang He, Purdue University

## **Beamforming, Holography, and Active Noise Control**

**Chairpersons: J. Stuart Bolton, Yangfan Liu**

**Track: 4**

- 13:00      **NC20\_622.pdf**      *Improved Wideband Holography Algorithm For Rotating Sound Source Localization*  
Jianxiong Feng, Purdue University; Weonchan Sung, Purdue University; Yangfan Liu, Purdue University; Kai Ming Li, Purdue University
- 13:20      **NC20\_611.pdf**      *Application Of A Virtual Rotating Array For Near-Field Localization Of Rotating Sound Sources*  
Jianxiong Feng, Purdue University; Yangfan Liu, Purdue University; Kai Ming Li, Purdue University
- 13:40      **NC20\_592.pdf**      *Retrofit Of A Conventional Beamforming Array With A Rotating Sensor Arm For Multireference, Continuous-Scan Beamforming*  
Abe Lee, ATA Engineering Inc.; Parthiv Shah, ATA Engineering Inc.; Andrew White, ATA Engineering Inc.; Richard Reddington, ATA Engineering Inc.
- 14:00      **NC20\_425.pdf**      *Singular Vector Filtering Method For Disturbance Enhancement Mitigation In Active Noise Control Systems*  
Yongjie Zhuang, Ray W. Herrick Laboratories, School of Mechanical Engineering, Purdue University; Yangfan Liu, Ray W. Herrick Laboratories, School of Mechanical Engineering, Purdue University; Xuchen Wang, The Chinese University of Hong Kong



## Building Acoustics - Case Studies 2

Chairpersons: Melinda Miller, Roderick Mackenzie

Track: 1

15:00 **NC20\_438.pdf** *Case Study: Floating Jack-Up Slabs For Multi-Story Cinema In Manhattan*  
Bradlay Hunt, CDM Systems Inc.; Florian Sassmannshausen, CDM Systems Inc.; Hyun Hong, Metropolitan Acoustics; Robert Tanen, Metropolitan Acoustics

15:20 **NC20\_556.pdf** *Flanking Sound Transmission Via Conjoined Fenestration In Buildings*  
Jim Borzym, Borzym Acoustics LLC

15:40 **NC20\_620.pdf** *Pool Equipment Mechanical Noise Impact*  
Walid Tikriti, Acoustonica

## Tire/Pavement Noise

Chairpersons: Kiran Patil, Peng Wang

Track: 2

15:00 **NC20\_317.pdf** *Low Noise Poroelastic Road Pavements Base On Modified Asphalt Binder*  
Jerzy Ejsmont, Gdansk University of Technology, Mechanical Faculty; Wladyslaw Gardziejczyk, Bialystok University of Technology, Faculty of Civil Engineering and Environmental Sciences; Beata Swieczko-Zurek, Gdansk University of Technology, Mechanical Faculty

15:20 **NC20\_344.pdf** *Tone Characteristics Of Tire-Pavement Interaction Noise Due To Pavement Distress*  
Tan Li, Maxxis International - USA; Lucas Spies, Virginia Tech; Ricardo Burdisso, Virginia Tech; Corina Sandu, Virginia Tech

15:40 **NC20\_440.pdf** *An Artificial Neural Network-Based Tool For Prediction Of Tire-Pavement Interaction Noise*  
Lucas Spies, Virginia Tech; Tan Li, Maxxis International - USA; Ricardo Burdisso, Virginia Tech; Corina Sandu, Virginia Tech; Sterling McBride, Virginia Tech

16:00 **NC20\_642.pdf** *The Effectiveness Of Quieter Pavement In Reducing Traffic Noise In The Presence Of Other Noise Abatement Features*  
Paul Donavan, Illingworth & Rodkin, Inc; Dana Lodico, Illingworth & Rodkin, Inc



## Student Classic Paper Competition 2

Chairpersons: Andrew Barnard, Patricia Davies, David Herrin

Track: 3

- 15:00      **Oral Only**      *Overview Of M. G. Prasad'S 1983 Paper On Acoustical Studies On Louver-Type Orifices*  
Xin Yan, University of Kentucky
- 15:20      **Oral Only**      *Overview Of Challa, V.R., Prasad, M.G., Shi, Y., And Fisher, F.T.'S 2008 Paper On A Vibration Energy Harvesting Device With Bidirectional Resonance Frequency Tenability*  
Yongjie Zhuang, Ray W. Herrick Laboratories, School of Mechanical Engineering, Purdue University
- 15:40      **Oral Only**      *Overview Of Prasad'S 1987 Paper On A Four Load Method For Evaluation Of Acoustical Source Impedance In A Duct*  
Seth Donkin, University of Kentucky
- 16:00      **Oral Only**      *Overview Of Ver, I. L. 1974 Paper On Measurement Of Dynamic Stiffness And Loss Factor Of Elastic Mounts As A Function Of Frequency And Static Load*  
Caoyang Li, University of Kentucky

## Modeling 1

Chairpersons: Chad Musser

Track: 4

- 15:00      **NC20\_347.pdf**      *Analytical Modeling Of A Resilient Particle Impact Damper On A Simply Supported Plate*  
Kamil Kocak, Georgia Institute of Technology; Kenneth Cunefare, Georgia Institute of Technology
- 15:20      **NC20\_565.pdf**      *Sea Model Of Coupled Structures By Means Of Periodic Finite Element Models Of The Subsystems*  
Luca Alimonti, ESI US R&D; Andrea Parrinello, ESI group
- 15:40      **NC20\_560.pdf**      *Noise Control Treatments Modeling By Means Of A Generalized Transfer Matrix Method*  
Andrea Parrinello, ESI group; Luca Alimonti, ESI US R&D; Nouredine Atalla, Université de Sherbrooke

**Career Development Forum – 17:00**



**TUESDAY – NOVEMBER 17, 2020**

**INCE-General Meeting & Board Certification Information Meeting –  
11:00AM**

**Chairpersons: Mike Bahtiarian and Paul Burge**

**Building Acoustics - Codes, Standards and Guidelines 1**

**Chairpersons: Jeanette Hesedahl, Ted Pyper**

**Track: 1**

- 13:00      **NC20\_442.pdf** *An Overview Of The Draft Astm Heavy/Hard Object Field Impact Test Standard*  
Mike Raley, Ecore International
- 13:20      **NC20\_489.pdf** *Reconsidering The '8-Db Rule' In Astm Impact And Airborne Ratings*  
Wayland Dong, Veneklasen Associates; John LoVerde, Veneklasen Associates; Samantha Rawlings, Veneklasen Associates
- 13:40      **NC20\_635.pdf** *Variation In Single Number Ratings Due To Tapping Machine Location*  
Sunit Girdhar, Veneklasen Associates; John LoVerde, Veneklasen Associates Inc;  
Wayland Dong, Veneklasen Associated Inc

**Tire Noise - Vehicle Interior**

**Chairpersons: Paul Donavan, Tan Li**

**Track: 2**

- 13:00      **NC20\_583.pdf** *Road Induced Interior Noise: Use Of Otpa To Determine Tire Contribution And Vehicle Sensitivity*  
Laurent Capron, Mueller-BBM; Guillaume Demaziere, Michelin
- 13:20      **NC20\_386.pdf** *Prediction Of Split In Fundamental Air-Cavity Mode Of Loaded Tires Based On Experimental Observations And Computational Simulations*  
Won Hong Choi, Purdue University; J. Stuart Bolton, Purdue University
- 13:40      **NC20\_280.pdf** *Pavement Texture Analysis And Correlation With Tire Noise*  
Tan Li, Maxxis International - USA



## Community/Industrial Noise 1

Chairpersons: Jacob Poling, Clinton Cyr

Track: 3

- 13:00 **NC20\_470.pdf** *Noise Assessment And Control For Transit Tunnel Emergency Ventilation Systems*  
Jacob Poling, WSP USA; Erich Thalheimer, WSP USA
- 13:20 **NC20\_444.pdf** *Noise Survey And Predictive Noise Modeling Of An Industrial Facility*  
Pulkit Agarwal, Jacobs Technology Inc; Scott Best, Jacobs Technology Inc
- 13:40 **NC20\_521.pdf** *Impact Pile Driving Noise Propagation*  
Laurie Morrill, SLR International Corporation; David Jones, SLR International Corporation; Dylan Blackwell, SLR International Corporation
- 13:40 **NC20\_416.pdf** *Power Plant Noise Control: Ordinances, Modeling, Construction, Monitoring, and Startup*  
Arno Bommer, CSTI acoustics; Adam Young, CSTI acoustics

## Modeling 2

Chairpersons: Chad Musser

Track: 4

- 13:00 **NC20\_616.pdf** *Prediction And Verification Of Sound Diffraction Effects Using Ray Tracing.*  
Ricardo de Alba Alvarez, ESI NA; Erik Kocher, Great Lakes Sound and Vibration; Jeff VanKarsen, Great Lakes Sound and Vibration; Abderrazak Mejdj, ESI Group
- 13:20 **NC20\_566.pdf** *Modeling Launch Vehicle Liftoff Acoustics With Ray Tracing*  
Abderrazak Mejdj, ESI NORTH AMERICA; Bryce Gardner, ESI NORTH AMERICA; Clemen Harasewycz, ESI NORTH AMERICA
- 13:40 **NC20\_454.pdf** *Prediction Of Exterior Noise Propagation From Powertrain And Exhaust Locations In A Combine Harvester.*  
Ricardo de Alba Alvarez, ESI NA; Bin Lou, CNH Industrial; Panos Tamamidis, CNH Industrial; Abderrazak Mejdj, ESI R&D



## Building Acoustics - Codes, Standards and Guidelines 2

Chairpersons: Greg Coudriet, Jeff Fullerton

Track: 1

- 15:00      **NC20\_505.pdf** *Duct Liner Specification Improvement*  
Kevin Herreman, Owens Corning; David Burd, Owens Corning
- 15:20      **NC20\_555.pdf** *Casing Radiated Treatment On Air Terminal Units Based On Ashrae-130 Test Procedures*  
Kris Kollevoll, BRD Noise and Vibration Control, Inc.; Dan Burley, BRD Noise and Vibration Control; Brandon Wallace, BRD Noise and Vibration Control, Inc.
- 15:40      **NC20\_441.pdf** *Discussion Of Building Codes And Measurement Accuracy In Architectural Acoustics, Transmission Loss Measurements*  
Stephen Rittmueller, Masonite International

## Vehicle Aerodynamic Noise

Chairpersons: Gordon Ebbitt, Daniel Carr

Track: 2

- 15:00      **NC20\_531.pdf** *Improving Underbody Wind Noise Transmission Of Electric Vehicles Using Simulation*  
Robert Powell, Dassault Systemes Simulia Corp.; Philippe Moron, Dassault Systemes; Sivapalan Senthoooran, Dassault Systemes Simulia Corp.
- 15:20      **NC20\_548.pdf** *A Computational Approach To Assess Design Impact On Wind Noise For Heavy Trucks*  
Sivapalan Senthoooran, Dassault Systemes; Mohamed Desouky, Dassault Systemes; Robert Powell, Dassault Systemes
- 15:40      **NC20\_353.pdf** *An Investigation Of People'S Responses To Automobile Wind Noise With Gusts*  
Daniel Carr, Ray W. Herrick Laboratories, Purdue University; Patricia Davies, Ray W. Herrick Laboratories, Purdue University



## Community/Industrial Noise 2

Chairpersons: James Barnes, Clinton Cyr

Track: 3

- 15:00 **NC20\_406.pdf** *Combined Heat And Power Project - A Community Noise Case Study*  
Clinton Cyr, Epsilon Associates, Inc.
- 15:20 **NC20\_571.pdf** *Sampling Of Tonal Noise Issues In Communities*  
James Barnes, Acentech; Jack Briskie, Acentech
- 15:40 **NC20\_356.pdf** *Electrical Substation Noise Control*  
Michael Conaway, Ostergaard Acoustical Associates; Joseph Keefe, Ostergaard Acoustical Associates
- 16:00 **NC20\_430.pdf** *Comparison Of Community Noise Management Methods Between Shanghai City And New York City*  
Jiping Zhang, Zhejiang Research and Design Institute of Ecological Environment; Zheming Wang, Zhejiang Research and Design Institute of Ecological Environment; Peng Chen, Zhejiang Research and Design Institute of Ecological Environment; Mingzhu Xu, Zhejiang Research and Design Institute of Ecological Environment; Jiarong Sun, Zhejiang Research and Design Institute of Ecological Environment; Hong Zhu, Zhejiang Research and Design Institute of Ecological Environment

## Passive Noise Control - Damping and Decoupling

Chairpersons: Pranab Saha, Yutong Xue

Track: 4

- 15:00 **NC20\_315.pdf** *Application Of Passive Solutions To Micro Vibration Mitigation In Space Applications*  
Daryoush Allaei, ShockTech; Tony Demerville, SMAC
- 15:20 **NC20\_633.pdf** *Application Of Cld For Reduction Of Structure-Borne Noise In Electronic Enclosures*  
James Rall, ShockTech; Daryoush Allaei, ShockTech
- 15:40 **NC20\_320.pdf** *Acoustic Patch Panels Addressing Structure Borne Issues In Vehicles*  
Pranab Saha, Kolano and Saha Engineers, Inc.; Sagar Patil, Kolano and Saha Engineers, Inc.; Antonio Figueroa, Shiloh Industries; Michael Telenko Jr., Shiloh Industries



NC20\_518.pdf *Characterization of GFR Polyamide 66 Materials for NVH Applications*  
Edward Green, HBK Sound and Vibration Engineering Services; Tariq Oweimreen,  
Ascend Performance Materials

## INCE-USA Professional Awards – 17:00

**WEDNESDAY – NOVEMBER 18, 2020**

## Plenary Session

11:00 Oral Only *Hand Dryer Noise*  
Nora Keegan

### Building Acoustics - Unique Applications

Chairpersons: Melinda Miller, Chris Springthorpe

Track: 1

13:00 NC20\_561.pdf *Wind-Induced Noise In High-Rise Residential Buildings*  
Peter Allen, ABD Engineering & Design

13:20 NC20\_562.pdf *Data Acquisition And The Iot (Internet Of Things) Movement: A Use Case For Investigating Post Construction Noise Anomalies*  
Jeanette Hesedahl, CENSEO AV+Acoustics; Joe Hagedorn, CENSEO AV+Acoustics; Todd Beiler, CENSEO AV+Acoustics; Chris Ono, CENSEO AV+Acoustics

13:40 NC20\_287.pdf *Mass Timber Acoustics Design: A Solved Challenge?*  
Ricky McLain, WoodWorks - Wood Products Council

14:00 NC20\_452.pdf *Open Office Acoustics In Mass Timber Construction*  
Valerie Smith, Salter; Ethan Salter, Salter

### Acoustic Vehicle Alerting Sounds (AVAS)

Chairpersons: Steve Sorenson, Gordon Ebbitt

Track: 2

13:00 NC20\_594.pdf *Engineering Process For The Development, Validation And Homologation Of The Acoustic Vehicle Alerting System For Electric Vehicles*  
Rabah Hadjit, Bruel & Kjaer

13:20 NC20\_546.pdf *Effects Of The Avas Regulation On The Noise Emission Of Battery Electric Vehicles*  
Dejan Arsic, Mueller-BBM; Greg Niedermaier, Muller-BBM VAS; Florian Bock, Audi



13:40

**NC20\_591.pdf** *Influence Of Secondary Tasks On Detection Of Acoustic Vehicle Alert Systems*

Katsuya Yamauchi, Faculty of Design, Kyushu University; Marie Masuda, Graduate School of Design, Kyushu University

## **Community/Industrial Noise 3**

**Chairpersons: Michael Greene, Mark Storm**

**Track: 3**

13:00

**NC20\_341.pdf** *Why Environmental Noise Should Be Treated As A Pollutant*  
Corey Kinart, HGC Engineering

13:20

**NC20\_366.pdf** *Warehouse/Distribution Center Noise: A Growing Concern*  
Mike Greene, Dudek

13:40

**NC20\_418.pdf** *Assessing Noise Sources In An Urban Environment*  
Samuel Pendyala, WSP USA Inc.; Kana Ganesh, WSP Canada Inc.

14:00

**NC20\_491.pdf** *Not-So-Quiet Natural Nighttime Noise*  
Mark Storm, Dudek; Connor Burke, Dudek; Michael Carr, Dudek

## **Passive Noise Control - New Generation Materials 1**

**Chairpersons: J. Stuart Bolton, Yutong Xue**

**Track: 4**

13:00

**NC20\_615.pdf** *Acoustic Properties Of Open-Celled Metal Foams With A Step-Wise Pore Size Gradients*

Amulya Lomte, Wichita State University; Bhisham Sharma, Wichita State University; Jake Puppo, ERG Materials and Aerospace Corp; Denver Schaffarzick, ERG Materials and Aerospace Corp

13:20

**NC20\_302.pdf** *Low Frequency Absorption Enhancement By Modification Of Poro-Elastic Layered Sound Package*

Yutong Xue, Purdue University; J. Stuart Bolton, Purdue University



A Virtual Event

13:40

**NC20\_420.pdf *Design And 3D Printing Of Aerogel-Based Ultra-Lightweight Sound Absorbers***

Amrutha Dasyam, Wichita State University; Bhisham Sharma, Wichita State University; Guang Yang, Kansas State University; Dong Lin, Kansas State University; Shuting Lei, Kansas State University

14:00

**NC20\_576.pdf *Design Of Acoustic Metacusters For Sound Control***

Feruzha Amirkulova, San Jose State University; Peter Lai, San Jose State University; Mawuto Attiogbe, San José State University

## **Building Acoustics - HVAC Noise and Vibration**

**Chairpersons: Jeanette Hesedahl, Jeff Fullerton**

**Track: 1**

15:00

**NC20\_480.pdf *Sound Power Measurements Using Sound Intensity For Hvac Applications***

Rajavel Balaguru, Acoustics Engineer; Paul Bauch, Johnson Controls Inc; Roger Howard, Johnson Controls Inc; Curtis Eichelberger, Eichelberger Acoustics LLC

15:20

**NC20\_609.pdf *Noise Generated By Stiffening Rods In A Flat Oval Hvac Duct***

Jerry Lilly, JGL Acoustics, Inc.

15:40

**NC20\_559.pdf *Case History: Testing Of Acoustical Curtain Enclosures Per Ahri-585 Used With Water Cooled Rotary Screw Chillers***

Kris Kollevoll, BRD Noise and Vibration Control, Inc.; Dan Burley, BRD Noise and Vibration Control; Brandon Wallace, BRD Noise and Vibration Control, Inc.

16:00

**NC20\_405.pdf *Surge Frequency In Steel Coil Springs Used For Building Acoustics***

Matthew Golden, Pliteq; Faiz Musafere, Pliteq



## Automotive NVH

Chairpersons: Rabah Hadjit, Farokh Kavarana

Track: 2

- 15:00 **NC20\_473.pdf** *Instrumentation Requirements For Using Multiple Coherence To Enhance Vehicle Sound Detection During Electric Vehicle Minimum Noise Testing*  
Jennifer Bastiaan, Kettering University; Edward Green, Bruel & Kjaer North America; Manuj Dindgur, Kettering University; Scott Hunt, Bruel & Kjaer North America
- 15:20 **NC20\_328.pdf** *Prediction Of Nvh Performance For Electric Vehicle Drivetrain Based On Multiphysics Simulation*  
Gil Jun Lee, ANSYS, Inc.; Henry Zhang, ANSYS, Inc.; Heunghyeok Yim, Virtual Motion; Wangoo Kim, Virtual Motion
- 15:40 **NC20\_459.pdf** *Comprehensive Automotive Active Sound Design*  
Scott MacDonald, Siemens Digital Industries Software; Ricardo Sales, Siemens Digital Industries Software; Jeroen Lanslots, Siemens Digital Industries Software; Markus Bodden, neosonic automotive audio design; Torsten Belschner, neosonic automotive audio design
- 16:00 **NC20\_486.pdf** *Hood Flutter Measurement & Perception*  
Todd Freeman, Bruel & Kjaer; Bret Engels, Bruel & Kjaer; Tyler Rupp, Honda R&D Americas, Inc.

## Renewable Energy Source Noise

Chairpersons: Ken Kaliski, Rob O'Neal

Track: 3

- 15:00 **NC20\_477.pdf** *Wind Farm Environmental Noise And Vibration Impact Analyses: Background Sound, Project Construction, And Assessment Of Operational Ground-Borne Vibration*  
Ethan Brush, Acentech
- 15:20 **NC20\_532.pdf** *An Overview Of Sound From Commercial Photovoltaic Facilities*  
Kenneth Kaliski, RSG; Eddie Duncan, RSG; Isaac Old, RSG
- 15:40 **NC20\_535.pdf** *Noise Evaluations Of Solar Energy Facilities*  
Michael Bahtiarian, Acentech



## Passive Noise Control - New Generation Materials 2

Chairpersons: J. Stuart Bolton, Xiaoshi Su

Track: 4

- 15:00      **NC20\_574.pdf** *Experimental Acoustic Characterization Of Silica Nanoparticle-Impregnated Kevlar Fabric*  
Oluwafemi Akinmolayan, Oklahoma State University; James Manimala, Oklahoma State University
- 15:20      **NC20\_572.pdf** *Influence Of Sample Thickness, Spacing And Membrane Interaction On The Acoustic Performance Of Carbon Graphite Foams*  
Alexander Svetgoff, Oklahoma State University; James Manimala, Oklahoma State University
- 15:40      **NC20\_393.pdf** *Fractional Calculus Models For Simulating The Reflection Of Sound Waves In Ducts With Acoustic Black Hole Terminations*  
John Hollkamp, Purdue University; Fabio Semperlotti, Purdue University
- 16:00      **NC20\_515.pdf** *Achieving Efficient Mode Coalescence In Metasurface-Lined Acoustic Waveguides*  
Matt Kelsten, Department of Mechanical and Aerospace Engineering, Rutgers University; Andrew Norris, Department of Mechanical and Aerospace Engineering, Rutgers University

## Women In Noise Control Engineering Meeting – 17:00

Sponsored By: Toyota Research & Development

[https://www.toyota.com/usa/operations/map.html#!/ttc ann arbor and saline](https://www.toyota.com/usa/operations/map.html#!/ttc%20ann%20arbor%20and%20saline)



**THURSDAY – NOVEMBER 19, 2020**

## **Plenary Session**

11:00      **Oral Only**      *Underwater acoustic noise effects on marine mammals in the northern Gulf of Mexico*  
Dr. Juliette W. Ioup, University of New Orleans

## **Piping and Hydraulic System Noise**

**Chairpersons: Mandy Kachur, Jeanette Hesedahl**

**Track: 1**

13:00      **NC20\_626.pdf**      *Investigating Piping Acoustic Induced Vibration Problems And Current Assessment Methods To Evaluate Fatigue Life*  
Ankit Chadha, McDermott; Wei Li, McDermott; Parimala Desai, McDermott; Demis Thomas, McDermott

13:20      **NC20\_357.pdf**      *Performance Of An In-Line Syntactic-Foam Device For Control Of Water Hammer And Fluid-Borne Noise*  
Kenneth Cunefare, The Georgia Institute of Technology, School of Mechanical Engineering; David Ramsey, The Georgia Institute of Technology, School of Mechanical Engineering; Nathaniel Pedigo, The Georgia Institute of Technology, School of Mechanical Engineering

13:40      **NC20\_451.pdf**      *Hydraulic Hose Modal Behavior To Investigate Structure-Borne Energy Transfer*  
Zachary Cohen, Michigan Technological University; Benjamin Kolb, ATA Engineering; Andrew Barnard, Michigan Technological University; Pravin Sondkar, Caterpillar Inc.; Rich Romick, Caterpillar Inc.; Joe Bobchik, Caterpillar Inc.

14:00      **NC20\_467.pdf**      *Acoustic Results Of Application Of Large Diameter Flexible Piping Connections On High Pressure Centrifugal Pumps*  
Joseph Horesco, Acentech; Terence Tyson, Acentech; Colin Worrich, Acentech

**Underwater Vessel Noise Impacts to Marine Life – A Global Issue:  
Sonic Sea Documentary Viewing and Panel Discussion – 13:00**

**Chairpersons: Mike Bahtiarian**

**Track: 2**



## Tutorial on Sound Level Meters, Part 1

Chairpersons: Andrew Barnard, Tyler Dare

Track: 3

- 13:00      **NC20\_466.pdf** *Tutorial On Sound Level Meters: Introduction To Sound Level Meters And Measurement Parameters*  
Jim Weir, Hottinger, Bruel & Kjaer
- 13:20      **NC20\_290.pdf** *Tutorial On Sound Level Meters: Choosing A Sound Level Meter*  
Tyler Dare, Applied Research Laboratory, Penn State
- 13:40      **NC20\_514.pdf** *Tutorial On Sound Level Meters: Practical Tips On Use*  
Judith Rochat, Cross-Spectrum Acoustics; Herbert Singleton, Cross-Spectrum Acoustics

## Passive Noise Control - New Generation Materials 3, Muffler and Silencers

Chairpersons: J. Stuart Bolton, Xiaoshi Su

Track: 4

- 13:00      **NC20\_573.pdf** *Performance Of A Modified Double Expansion Chamber Muffler Inspired By Acoustic Black Hole Theory*  
Chenhui Zhao, Stevens Institute of Technology; M.G. Prasad, Stevens Institute of Technology; Frank Fisher, Stevens Institute of Technology; B. Rajavel, Johnson Controls Inc.
- 13:20      **NC20\_448.pdf** *Overview Of Low Frequency Resonators Based On Leonar Design*  
Frank Simon, ONERA; Fabien Mery, ONERA; Remi Roncen, ONERA; Delphine Sebbane, ONERA; Estelle Piot, ONERA; Cecile Davoine, ONERA; Marc Thomas, ONERA
- 13:40      **NC20\_422.pdf** *Gunshot Suppressors And Sound Level Meters Dbz Peak Performance Tests*  
Erich Thalheimer, WSP USA, Inc.
- 14:00      **NC20\_575.pdf** *Perfect Absorption In Duct By Coupling Helmholtz Resonators*  
Huy Nguyen, University of Missouri-Columbia; Guoliang Huang, University of Missouri-Columbia



## Underwater and Maritime

Chairpersons: Allan Beaudry, Joe Smullin  
Track: 2

- 15:00 **NC20\_424.pdf** *Protecting Aquarium Sea Mammals And Fish From Pile Driving Noise And Vibration*  
Erich Thalheimer, WSP USA, Inc.; Brian Isoldi, WSP USA, Inc.; Edward Tadross, WSP USA, Inc.
- 15:20 **NC20\_380.pdf** *Sound Transmission Regulations And Testing On Marine Vessels*  
Allan Beaudry, Noise Control Engineering, LLC; Jeffrey Hunt, Noise Control Engineering, LLC; Jesse Spence, Noise Control Engineering, LLC
- 15:20 **NC20\_485.pdf** *SNAME Procedures for Evaluating the Transmission of Structure Borne Noise*  
Isaac Harwell, CSTI acoustics; Robert Bruce, CSTI acoustics; Adam Young, CSTI acoustics; Arno Bommer, CSTI acoustics

## Tutorial on Sound Level Meters, Part 2

Chairpersons: Andrew Barnard, Tyler Dare  
Track: 3

- 15:00 **NC20\_439.pdf** *Tutorial On Sound Level Meters: Tips For Making Standardized Measurements With A Sound Level Meter*  
Andrew Barnard, Michigan Tech University; Eoin King, University of Hartford
- 15:20 **NC20\_445.pdf** *Tutorial On Sound Level Meters: Conducting A Noise Survey With An Slm*  
Paul Burge, AECOM
- 15:40 **NC20\_536.pdf** *What Can "Go Wrong" In Acoustic Measurements: Common Errors, Hardware Failures And Mistakes.*  
Brian MacMillan, NTi Audio



## M.G. Prasad Memorial Session

Chairs: David Herrin, Prakash Thawani, Patrick Marks, Rajavel Balaguru

Track: 4

15:00

NC20\_547.pdf *An Appreciation Of The Exhaust System Research Of Prasad And Crocker*

D. W. Herrin, University of Kentucky

## Student Awards – 17:00

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FRIDAY – NOVEMBER 20, 2020

## Closing Ceremony & INCE-USA Technical Activity Meetings – 11:00AM

### Standards, Noise Policies and Regulations

Chairpersons: Paul Burge, Chris Kaiser

Track: 1

13:00 **NC20\_458.pdf** *Measuring In-Situ Sound Power Using A Simplified Acoustic Energy Density Method*

Travis N Hoyt, Brigham Young University; Scott D Sommerfeldt, Brigham Young University; David C Copley, Caterpillar Inc.; Jonathan D Blotter, Brigham Young University

13:20 **NC20\_538.pdf** *What Defines A Sound Level Meter In The Us Has Changed. Ansi/Asa S1.4 Equals Iec 61672. Understanding The Differences*

Brian MacMillan, NTi Audio; Berno Nigsch, NTi Audio AG

13:40 **NC20\_618.pdf** *Proposed Operator Positions For Rack-Mounted Equipment Measurements In Ecma-74*

Seth Bard, IBM; Ken Shadoff, IBM; Robert Boyes, IBM

### Sound Quality

Chairpersons: Patricia Davies, Shashikant More, Daniel Carr

Track: 2

13:00 **NC20\_373.pdf** *Promoting A Quiet Revolution Through Product Noise Control*

David Nelson, Nelson Acoustics

13:20 **NC20\_552.pdf** *Automotive Door Closure Sound Quality: Model, Target Definition And Identification Of Countermeasure For Performance Improvement*

Rabah Hadjit, Bruel & Kjaer North America Inc.

13:40 **NC20\_345.pdf** *Dishwasher Sound Quality Consumer Study With Factorial Treatment Of Background Variables*

Daniel Lesko, Whirlpool Corporation and Michigan Technological University; Andrew Barnard, Michigan Technological University



14:00

**NC20\_544.pdf** *Interactive Sound Quality Evaluation Of An Ev Virtual Prototype*

Rabah Hadjit, Bruel & Kjaer North America Inc.; Travis Histed, Romax Technology Inc; Alexis Talbot, MSC Software; Jeremy Charbonneau, MSC Software; Sanket Joshi, Romax Technology Inc

## Noise Control Tutorials and Tools

Chairpersons: Andrew Barnard, Tyler Dare

Track: 3

13:00

**NC20\_361.pdf** *Hearing Conservation Program Best Practices For Noise Control Engineers*

Bryan Beamer, National Institute for Occupational Safety and Health

13:20

**NC20\_599.pdf** *A Simple Spreadsheet Tool For Noise Path Characterization*

D. W. Herrin, University of Kentucky; Srinivasa Ippili, University of Kentucky; Keyu Chen, University of Kentucky; Xin Hua, University of Kentucky; Bryan Beamer, National Institute of Occupational Safety and Health; David Copley, Caterpillar Corp.

13:40

**NC20\_401.pdf** *Elements Of Uncertainty In The Prediction And Measurement Of Airborne Sound*

Robert Putnam, Retired; Richard Peppin, retired

## Aerodynamic Noise Prediction 1

Chairpersons: Robert Powell, Kristin Cody

Track: 4

13:00

**NC20\_433.pdf** *Automotive Aerodynamic Noise Prediction Using Scale Resolved Stress-Blended Eddy Simulation*

Krishna Zore, ANSYS Inc. Pune, India; Domenico Caridi, ANSYS Inc. Milano, Italy.



13:20 **NC20\_389.pdf** *Aeroacoustics Noise Prediction Of Low Mach Number Flow Using Hybrid Wave Equation Model*  
Krishna Zore, ANSYS Inc. Pune, India; Tushar Jadhav, ANSYS Inc. Pune, India

13:40 **NC20\_398.pdf** *Predicting Engine Noise With Computational Aero-Acoustics Model*  
Sreedevi Krishnan, ANSYS Inc.; Sujit Nimje, Kohler Co.; Xingshi Wang, ANSYS Inc.

## **Product Noise Rating (PNR): Financial and Marketing Support Workshop – 15:00**

**Chairpersons: Dana Lodico**

**Track: 1**

## **Mobility and Unmanned Aerial Vehicle Acoustics**

**Chairpersons: Greg Goetchius, Randolph Cabell**

**Track: 2**

15:00 **NC20\_474.pdf** *Anechoic Chamber Measurement Of An Octocopter*  
Kevin Herreman, Owens Corning; Corey Taylor, Owens Corning; Yahya Paya, Owens Corning

15:20 **NC20\_607.pdf** *Evaluation Of Embedded Windshield Resonators To Reduce Cabin Noise Of A Uam Concept Aircraft*  
Matthew Galles, NASA Langley Research Center; Albert Allen, NASA Langley Research Center

15:40 **NC20\_632.pdf** *Passenger Acceptance Of Vtols For Uam*  
James D. Rall, ShockTech; Benjamin Reydel, ShockTech; Daryoush Allaei, ShockTech



## Impact on Health

Chairpersons: Jim Thompson, David Herrin

Track: 3

- 15:00 **NC20\_483.pdf** *Noise Exposure For Instructors In Cycling Studios*  
Robert Bruce, CSTI acoustics; Arno Bommer, CSTI acoustics; Natalia Valladares, CSTI acoustics
- 15:20 **NC20\_349.pdf** *Integrating Point-Of-View Video Into Hearing Conservation Programs For Improved Outcomes*  
Amanda Azman, National Institute for Occupational Safety and Health; Yousef Elmashae, National Institute for Occupational Safety and Health
- 15:40 **NC20\_355.pdf** *Experimental Nonlinear Seat Suspension Characterization*  
James Haylett, CVG (Commercial Vehicle Group, Inc.)
- 16:00 **NC20\_318.pdf** *Degradation Of Sailor Performance Due To Noise And Vibration At Their Berthing Quarters – A Review And Recommended Approach*  
Daryoush Allaei, R&D Department, ShockTech; James Rall, R&D Department, ShockTech

## Aerodynamic Noise Prediction 2

Chairpersons: Robert Powell, Kristin Cody

Track: 4

- 15:00 **NC20\_395.pdf** *Numerical Simulation Of Underhood Cooling Noise For Off-Highway Application*  
Sanghoon Suh, Deere & Company; Brett Lenz, Iowa State University; Jose Magalhaes, John Deere
- 15:20 **NC20\_298.pdf** *Noise Control Concept Verification For A Ducted Fan System*  
Weimin Thor, Ray W. Herrick Laboratories at Purdue University; J. Stuart Bolton, Ray W. Herrick Laboratories at Purdue University
- 15:40 **NC20\_570.pdf** *Numerical Modeling And Method Of Air Bearing-Based Vibration And Noise Mitigation*  
Chao Yu, Corning Inc.