



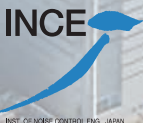
**inter·noise 2023**  
CHIBA, GREATER TOKYO 20-23 AUGUST

52nd International Congress and Exposition  
on Noise Control Engineering  
“Quieter Society with Diversity & Inclusion”  
**Congress Program**

Sponsored by



**International Institute of Noise Control  
Engineering (I-INCE)**



Co-organized by

**Institute of Noise Control Engineering  
of Japan (INCE/J)  
and Acoustical Society of Japan (ASJ)**



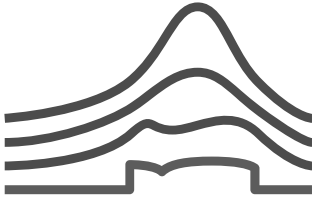
Published by

**Organizing Committee of Inter-Noise 2023**



**Norsonic has joined the RION Group.**

We will continue to strive to contribute to the realization of a better society by expanding the scope of our activities as a corporate group.



**inter·noise 2023**

CHIBA, GREATER TOKYO 20-23 AUGUST

52nd International Congress and Exposition

on Noise Control Engineering

“Quieter Society with Diversity & Inclusion”

## Congress Program



# Welcome Message from the I-INCE President



Dear Colleagues,

On behalf of the International Institute of Noise Control Engineering (I-INCE), I want to welcome you to INTER-NOISE 2023.

The INTER-NOISE series of congresses had no interruption since 1972, and my initial thanks go to all members of the Board of Directors and of the Congress Selection Committee of I-INCE, to the Societies member of I-INCE, to all the Organizing Committees, to the Congress participants, to Exhibitors and Sponsors that made all this possible.

After the editions 2020 and 2021 in which we were forced in considering and preparing virtual Congresses and this was done with success and after the last edition 2022 in Glasgow in which, even though all uncertainties, we experimented the first hybrid congress with a large in-presence participation and large final consensus, we can affirm now that with INTER-NOISE 2023 we are back to you with the classical organization but with some new features.

In Chiba we will experience an even rich program with many sessions with presentation in-person, plenary lectures, a large exhibition, meetings, professional programs, social activities.

Those participants that cannot travel to Japan will have their presentation pre-recorded and fully integrated in the sessions of the Congress. But above all, we will have once again the possibility to meet in person old and new friends and colleagues and share with them on-going and future programs and collaboration.

I hope you all will enjoy INTER-NOISE 2023. Thank you for supporting with your participation the congress.

A special thank you to the Organizing Committee, the Institute of Noise Control Engineering of Japan (INCE/J) and the Acoustical Society of Japan (ASJ), for the great efforts in the organization and for bringing us this excellent program.

Luigi Maffei, I-INCE President



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## International INCE

The International Institute of Noise Control Engineering (I-INCE) was founded in 1974. It is a worldwide consortium of organizations concerned with noise control, acoustics, and vibration.

The mission of I-INCE is to help people to create a world free from unwanted sound and for this I-INCE facilitate and stimulate international cooperation and sharing on control, management and policies of noise and vibration.

I-INCE represents a worldwide platform for the exchange of knowhow, new developments, inspiration and to form a lively international community on noise and vibration control and acts as a catalyst by bringing parties together and so stimulate new developments.

I-INCE stimulates the access of everybody to noise and vibration control technology and it is an active partner in the struggle to suppress unwanted sound.

I-INCE sponsors the important INTER-NOISE Series of International Congresses on Noise Control Engineering, held annually since 1972 and co-sponsors the Conference Digital Library, where all papers published in the proceedings of INTER-NOISE Congresses, as well as INCE-USA's Noise-Con Conferences, are available.

I-INCE co-sponsors symposia on specialized topics within the I-INCE field of interest and jointly publishes with the Institute of Noise Control Engineering of the USA (INCE/USA) the magazine Noise/News International (NNI) which is freely available on-line.

I-INCE provides a Young Professional Program with activities (courses, grants) for young engineers and scientists.

Luigi Maffei, I-INCE President (2023-2025)

<https://www.i-ince.org>



## Institute of Noise Control Engineering of Japan

It is with great pleasure that the Institute of Noise Control Engineering of Japan (INCE/J) extends a warm welcome to all participants as a co-organizer for the 52nd International Congress and Exposition on Noise Control Engineering, INTER-NOISE 2023. The INCE/J was founded in 1976 after the INTER-NOISE Congress was held for the first time in Japan in 1975. It was approved as an incorporated body of the Environmental Agency of Japan (the present Ministry of the Environment) in 1991. It has been newly authorized as a Public-interest Incorporated Association by the National Government since April 1, 2011.

At the end of April 2023, the membership reached 1111, including 726 Members, 23 Honorary Fellows, 49 Student Members, 218 Organizational Members, and 95 Sustaining Members. Members of INCE/J are with industries, central and local governments and universities, and from various fields such as architecture, civil engineering, mechanical engineering, applied physics, physiology and psychology.

The INCE/J promotes the advancement and distribution of science and technology in noise and vibration control and contributes to the protection and improvement of the living environment. At the annual meetings of the Institute in spring and autumn, about 100 papers and technical reports in total are presented every year. The technical committee of INCE/J also has some ten active subcommittees. Each subcommittee concentrates on its own special topic to meet the requirements of the times. Such topics are “Noise propagation”, “Low-Frequency Sound”, “High Frequency Sound”, “Sound Insulation”, “Floor Impact Sound”, “Machinery Noise Measurement”, “Strange Sound”, “Active Control”, “Sonic Environment Design”, “Environmental Vibration Evaluation”, “Prediction of Road Traffic Vibration”, “Socio-Acoustic Survey Data Archive”, “Noise & Vibration Policies”, “Noise Mapping” and “Aerodynamic Noise”. The INCE/J publishes the journal “Noise Control” bimonthly with original papers and review papers on special topics. Other meetings and technical visits are planned occasionally.

The following list highlights other significant international congresses co-organized by INCE/J:

The 23rd INTER-NOISE 1994 in Yokohama,

The 7th WESTPRAC 2000 in Kumamoto,

The 18th ICA 2004 in Kyoto,

The 35th INTER-NOISE 2006 in Hawaii,

The 40th INTER-NOISE 2011 in Osaka,

The 11th ICBEN 2014 in Nara.

Shinichi Sakamoto, President, the Institute of Noise Control Engineering of Japan (INCE/J)

<https://www.ince-j.or.jp/en>



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## Acoustical Society of Japan

日本へようこそ! (Welcome to Japan!) The Acoustical Society of Japan (ASJ) sincerely welcomes all of you to visit Japan and participate in this exciting conference: INTER-NOISE 2023.

The ASJ was founded in 1936 to foster communication among people working in all areas of acoustics in Japan and to promote the development of science and technology in acoustics. Since its establishment, the ASJ has brought together scientists, engineers, educators, students and business leaders in acoustic, and the current membership is about 4,000. In this September, the ASJ will hold 150th Meeting in Nagoya, and we are very proud and honored to host the INTER-NOISE 2023 in Chiba.

The specific objectives of ASJ are (1) to organize the ASJ spring and autumn meetings, technical seminars and symposiums; (2) to sponsor technical committee meetings organized by nine technical committees; (3) to publish regularly technical journals, the Journal of the Acoustical Society of Japan (monthly Journal in Japanese) and Acoustical Science and Technology (bimonthly Journal in English, which can be accessed through J-STAGE free of charge), and book series in acoustics; (4) to encourage education and research in acoustics; (5) to communicate and cooperate with other acoustic associations in the world; and (6) to commend achievements to acoustical research. The ASJ consists of nine technical committees, namely, Speech, Psychological and Physiological Acoustics, Noise and Vibration, Architectural Acoustics, Electro-Acoustics; Musical Acoustics, Ultrasonics, Sono-Physics and Acoustic Imaging committees. These committees have been receiving a high valuation by holding courses and technological seminars for public as well as academic activities for the society members.

ASJ hosted/co-hosted significant meetings with other societies as follows;

- ICA (International Congress on Acoustics): 1968, 2004
- INTER-NOISE (International Congress and Exposition on Noise Control Engineering): 1975, 1994, 2011
- ASA-ASJ Joint Meetings: 1978, 1988, 1996, 2006, 2016
- Japan-Korea Joint meetings on Acoustics: 1981, 1982, 1991
- WESPAC (Western Pacific Acoustics Conference): 1982, 2000
- China-Japan Joint Conference on Acoustics: 1985, 2002, 2007
- ICASSP (International Conference on Acoustics, Speech, and Signal Processing): 1986, 2012

- Congress of International Association of Logopedics and Phoniatrics: 1986
- Japan-China Symposium on Ultrasonics: 1987
- ICMPC (International Conference on Music Perception and Cognition): 1989, 2008
- ICSLP (International Conference on Spoken Language Processing)/ Interspeech: 1990, 2010
- International Symposium on Active Control of Sound and Vibration: 1991
- International Symposium on the Contribution of Acoustics to the Creation of a Comfortable Sound Environment: 1992
- ASVA (International Symposium on simulation, Visualization and Auralization for Acoustic Research and Education): 1997
- Japan-Germany Joint Symposium on Acoustics: 2000
- ASJ-EAA Joint Symposium: 2002
- IWPASH (International Workshop on Principles and Applications of Spatial Hearing): 2009
- ISNA (International Symposium on Nonlinear Acoustics): 2011

The ASJ is also contributing to international adjustments of various standards on acoustics in IEC/TC29, ISO/TC43/SC1 and ISO/TC43/SC2.

Yoichi HANEDA, President, Acoustical Society of Japan (ASJ)

<http://acoustics.jp/>



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# Welcome Message from the Congress President



Dear Colleagues,

On behalf of the organizing committee, it is our great pleasure to warmly welcome all participants worldwide to Inter-Noise 2023, the 52nd International Congress and Exposition on Noise Control Engineering held in Chiba, Greater Tokyo, Japan, on 20–23 August 2023.

Inter-Noise 2023 is sponsored by the International Institute of Noise Control Engineering (I-INCE) and co-organized by the Institute of Noise Control Engineering of Japan (INCE/J) and the Acoustical Society of Japan (ASJ). Japan has organized the Inter-Noise Congress on three occasions in the past: Sendai in 1975, Yokohama in 1994, and Osaka in 2011. Each congress was a great success, and we expect Inter-Noise 2023 held on Chiba, the Greater Tokyo, will be even better.

The congress venue is the Makuhari Messe International Conference Hall. It is easily accessible for international flights via Japanese first and second-ranked international airports, Haneda and Narita. In Greater Tokyo area, public transportations are well developed, and several railway lines are operating directly between Makuhari and central Tokyo with travel time within 30 minutes. You can find the beloved attractions of Tokyo at your fingertips.

Inter-Noise 2023 features a broad range of invited and contributed papers, together with plenary and keynote lectures by distinguished speakers. There will be extensive exhibitions of noise and

vibration control technology, measuring instruments, equipment, and systems from all over the world. We expect all of you to discuss the latest advancements in noise and vibration control engineering and technology, focusing on our congress theme, “Quieter Society with Diversity and Inclusion”.

As the pandemic comes to end gradually but steadily, the organizing committee expects that the congress can be held live/in-person. In order to encourage all our colleagues to participate in Inter-Noise 2023, pre-recorded presentations are also adopted for the participants who cannot travel to Japan. This congress will offer the best opportunities to learn about and share cutting-edge research with colleagues worldwide. We believe this congress will be an invaluable experience for all participants and a great opportunity to create friendships and new memories with Inter-Noise family.

Shinichi Sakamoto, Congress President of Inter-Noise 2023



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# Organization

## Organizing Committee

### **Congress President**

Shinichi Sakamoto

### **Secretary General**

Hiroyuki Imaizumi

### **Technical Program Chair**

Tetsuya Sakuma

### **Technical Program Co-Chair**

Yosuke Yasuda

Toru Yamazaki

Koji Nagahata

Masaaki Hiroe

### **Exposition Manager**

Masaharu Ohya

### **Social Event**

Tetsuya Doi

Hisao Funaba

Masaki Takeda

### **Young Scientist Support**

Kanako Ueno

Yuko Watanabe

### **Abstract/Proceedings**

Tatsuya Morishita

Masahiro Toyoda

### **Attendee Registration**

Yasuhiro Hiraguri

### **Honorary Consultants**

Ichiro Yamada

Kohei Yamamoto

### **Advisor**

Koji Ishida

Toru Otsuru

### **Auditor**

Sonoko Kuwano

Takashi Yano

### **Public Relations/Web**

Ken Anai

Yasuaki Okada

### **Application Development**

Katsuya Yamauchi

### **Subsidy**

Akira Omoto

Masayuki Takada

Ryuta Tomita

Takashi Morihara

Hiroshi Matsuda

### **Fundraising**

Naoaki Shinohara

## **Finance**

Hiroo Yano  
Sohei Tsujimura

## **Local Committee**

Kazuma Hoshi  
Makoto Morinaga

## **International Advisory Committee**

### **Pan American**

Davi Akkerman (Brazil)  
Sebastian Ghinet (Canada)  
Jorge P. Arenas (Chile)  
Patricia Davies (USA)  
Paul R. Donovan (USA)  
Robert J. Bernhard (USA)  
Rajendra Singh (USA)  
Stephen A. Hambric (USA)

### **Europe-Africa**

Dick Botteldooren (Belgium)  
Jean-Pierre Clairbois (Belgium)  
Kristian Jambrošić (Croatia)  
Ondřej Jiříček (Czech)  
Douglas Manvell (Denmark)  
Jean Tourret (France)  
Joachim Scheuren (Germany)  
Otto von Estorff (Germany)  
Gaetano Licitra (Italy)

Luigi Maffei (Italy)  
Truls Gjestland (Norway)  
Jorge Patricio (Portugal)  
Antonio Pedrero (Spain)  
Kerstin Persson Waye (Sweden)  
Barry Gibbs (UK)  
Jian Kang (UK)

### **Asia-Pacific**

Marion Burgess (Australia)  
John Laurence Davy (Australia)  
Fenghua Li (China)  
Li Cheng (Hong Kong)  
A. R. Mohanty (India)  
Yoichi Suzuki (Japan)  
Woon-Seng Gan (Singapore)  
Jeong-Guon Ih (South Korea)  
Jin Yong Jeon (South Korea)  
Michael Kingan (New Zealand)

## **Area Organizers**

Hiroshi Yokoyama  
Randolph Leung  
Toru Yamazaki  
Zenzo Yamaguchi  
Laurent Maxit  
Yasushi Takano

Makoto Otani  
Wan-Ho Cho  
Reiji Tomiku  
Takeshi Okuzono  
Cheol-Ho Jeong  
Shinya Kijimoto



Yoshinobu Kajikawa  
Woon-Seng Gan  
Masaaki Hiroe  
Scott Noel  
Naoaki Shinohara  
Takatoshi Yokota  
Sebastian Ghinet  
Takashi Yamamoto  
Koji Kato  
Mohammad Fard  
Junji Yoshida  
James Thompson  
Tomonari Akamatsu  
Michel Andre  
Kimihiro Sakagami  
Jorge Arenas

Yosuke Yasuda  
Susumu Hirakawa  
Carl Hopkins  
Keiji Kawai  
Timothy Van Renterghem  
Makoto Morinaga  
Irene van Kamp  
Masayuki Takada  
Ercan Altinsoy  
Koji Nagahata  
Brigitte Schulte-Fortkamp  
Shigenori Yokoshima  
Truls Gjestland  
Tetsuya Sakuma  
Jian Kang



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## Cooperating Organizations

### Supporting Organizations

Ministry of Land, Infrastructure, Transport and Tourism

Ministry of the Environment

Japan National Tourism Organization

Chiba prefecture

Chiba city

Chiba Convention Bureau and International Center (CCB-IC)

### Cooperating Organizations

Architectural Institute of Japan

Gas Turbine Society of Japan

Information Processing Society of Japan

Japan Association of Environment Assessment

Japan Ergonomics Society

Japan Environmental Measurement and Chemical Analysis Association

Japan Society of Civil Engineers

Japan Society for Impact Assessment

Japan Society for Occupational Health

Organization of Airport Facilitation

Society of Automotive Engineers of Japan

SMART SOUND DESIGN SOCIETY

Japan Measuring Instruments Federation

The Engineering Academy of Japan

The Institute of Electrical Engineers of Japan

The Institute of Electronics, Information and Communication Engineers

The Japan Refrigeration and Air Conditioning Industry Association

The Japan Society for Aeronautical and Space Sciences

The Japan Society of Applied Physics

The Japan Society of Mechanical Engineers

The Japanese Psychological Association

The Society of Heating, Air-Conditioning and Sanitary Engineers of Japan

The Society of Instrument and Control Engineers

Turbomachinery Society of Japan

## Financial Supporters

### Sponsors

Platinum	 The logo for RION features a stylized grey square with a white ring-like shape overlapping it, followed by the word "RION" in a bold, black, sans-serif font.	RION CO., LTD. / Norsonic AS
Platinum	 The logo for ONO SOKKI consists of the words "ONO SOKKI" in a bold, black, sans-serif font.	Ono Sokki Co., Ltd.
Gold	 The logo for SIMULIA features a stylized grey "DS" symbol followed by the word "SIMULIA" in a bold, black, sans-serif font.	Dassault Systèmes K.K.
Gold	 The logo for getzner features the word "getzner" in a bold, black, sans-serif font with a small grey curved shape to the right, and the tagline "engineering a quiet future" in a smaller, black, sans-serif font below it.	Getzner Werkstoffe
Gold	 The logo for HBK features the letters "HBK" in a bold, black, sans-serif font, followed by a grey globe icon, and the text "HOTTINGER BRÜEL & KJÆR" in a smaller, black, sans-serif font below it.	HBK – HOTTINGER BRÜEL & KJÆR
Gold	 The logo for Narita Airport features a stylized grey and black graphic of a bird or wing, followed by the text "Narita Airport" in a bold, black, sans-serif font and the tagline "Connecting Japan to the World" in a smaller, black, sans-serif font below it.	NARITA INTERNATIONAL AIRPORT CORPORATION

Silver



GERB Vibration  
Control Systems  
Japan, Inc.

Silver



Polytec Japan

Silver



Mitsui Chemicals,  
Inc.

Silver



Sony Corporation

Silver



TOKYU  
CONSTRUCTION  
CO., LTD.

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HEAD acoustics  
GmbH

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PACIFIC  
CONSULTANTS CO.,  
LTD.

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**Sound One**

Sound One Co., Ltd.

**Shaping a New Journey**

Contributor



**KANSAI  
AIRPORTS**

Kansai Airports

**Grant Foundations**

公益財団法人 村田学術振興財団

The Murata Science  
Foundation



The Obayashi Foundation



The Soda Toyoji Memorial  
Foundation



公益財団法人  
**電気通信普及財団**

The Telecommunications Advancement Foundation

The Telecommunications  
Advancement Foundation



Watanabe Memorial  
Foundation for The  
Advancement of New  
Technology



## Donation



Air Traffic Control Association, Japan

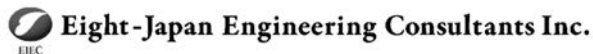
株式会社ANA総合研究所  
ANA STRATEGIC RESEARCH INSTITUTE CO., LTD.

BRIDGESTONE KBG CO., LTD.

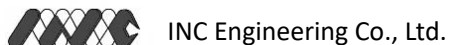


Defense Structure Improvement Foundation

EAST JAPAN RAILWAY COMPANY



HOKKAIDO RAILWAY COMPANY

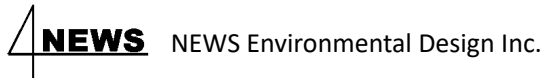




Kobayasi Institute of Physical Research



KYUSHU RAILWAY COMPANY



ONO Acoustic Design & Entertainment Inc.



 **RION SERVICE CENTER CO., LTD.**

 **TOBISHIMA**  
CORPORATION

 **WESCO** WESCO Inc.

 **JR** WEST JAPAN RAILWAY COMPANY  
JR-WEST

ZOOM GROUP ACADEMIC FOUNDATION



## General Information

### Congress Venue

#### Makuhari Messe International Conference Hall

<Address> 2-1, Nakase, Mihama-ku, Chiba-city, Japan, 261-8550

<Phone> +81-43-296-0001

<Web Page>

[https://www.m-messe.co.jp/en/organizers/guide/conferencehall/guide\\_conference](https://www.m-messe.co.jp/en/organizers/guide/conferencehall/guide_conference)



### Online Congress Platform

The online congress platform is available to make all participants with diverse needs be able to make presentation and discussion as well as on-site technical sessions.

The entrance to the platform and guidance document is available on the Program information page in Inter-Noise 2023 website:

<https://internoise2023.org/program/>



Only the participants who completed the payment of registration fee can access the platform. Please confirm your login information (ID and PASSWORD) to the Congress Platform provided via email.

The platform will be available on 20 August 2023 until 3 months after the congress.

- After the congress starts, full function will be available such as browsing proceeding PDFs, watching presentation videos, and having discussion with authors. (Until the congress starts, only the program info is available.)

- All pre-recorded presentations are available after the congress starts. The on-site presentation will be recorded at the venue, then will be available on the platform after approximately 24 hours.
- Clicking comment button on the presentations at Session/Presentation Detail Pages will give you a box in which you can enter and post any comments or questions.
- When any comments are posted to each presentation, notification will be sent to the corresponding author via email. The author is expected to post the answers to the comments or questions on the congress platform.

## Registration / General Information Desk

Registration / General Information Desk is located on Entrance Hall on the 1st floor of Makuhari Messe International Conference Hall.

August 20 (Sunday)	14:00-19:00
August 21 (Monday)	7:30-18:00
August 22 (Tuesday)	7:30-18:00
August 23 (Wednesday)	8:00-15:00

## Internet Access

Complimentary Wi-fi is available for Inter-Noise 2023 participants.

SSID : MESSE-WiFi

Password : nakase2-1

## Congress Banquet

The congress banquet will be served in a buffet-style. Reservations are required in advance. However, on-site registration will be also available if there are any openings.

Time & Date: August 22 (Tuesday) 19:00-21:00 (Doors open at 18:30)

Venue: Int'l Conf Rm (Makuhari Messe International Conference Hall 2F)

**Highlight:** The participants of the banquet will be able to enjoy the atmosphere of “Bon Odori (Bon Festival Dance)” in a traditional Japanese Summer Festival with street foods, festival dances, and the exhilarating performances of “Taiko”, the Japanese traditional drum.

## **Social Program**

### Opening Ceremony

**Time & Date:** August 20 (Sunday) 16:00-17:00 (Doors open at 15:00)

**Venue:** Int'l Conf Rm (Makuhari Messe International Conference Hall 2F)

**Highlight:** A Japanese calligraphy performance by a master calligrapher will be showcased during the opening ceremony

### Opening Reception

**Time & Date:** August 20 (Sunday) 18:00-20:00

**Venue:** Lobby outside Int'l Conf Rm (Makuhari Messe International Conference Hall 2F)

### Closing Ceremony

**Time & Date:** August 23 (Wednesday) 16:20-17:20

**Venue:** Int'l Conf Rm (Makuhari Messe International Conference Hall 2F)

### Closing Reception

(hosted by Inter-Noise 2024, Nantes, France)

**Time & Date:** August 23 (Wednesday) 17:30-19:00

**Venue:** Cafeteria “WORLD KITCHEN!” (in front of Hall 6, Makuhari Messe Central Mall, accessible from the 2nd floor of Makuhari Messe International Conference Hall via a connecting passage by a few minutes walk)

## **Accompanying Persons' Program**

Following three programs will be held for registered Accompanying Persons during the congress. There are limited seats for each program. Please reserve your seat at registration desk. First come, first served.

August 21 (Monday): Japanese fan making and calligraphy experience  
August 22 (Tuesday): Japanese wind-bell painting experience  
August 23 (Wednesday): Japanese Tea Ceremony experience in Mihama Park  
(Japanese garden)

## **Contacts**

Secretariat of INTER-NOISE 2023

Tel: +81-3-5549-6917

Email: [inter-noise2023@ig-online.jp](mailto:inter-noise2023@ig-online.jp)

# Young Professionals Information

## Goals of the Young Professionals Program

- Provide professional mentoring opportunities
- Learn from noise control case studies presented by world renowned experts
- Facilitate informal discussions between young professionals and I-INCE leaders and senior noise control engineers
- Give young professionals the opportunity to make new friends and connect with other friends who are part of the worldwide noise control community

## Young Professionals and Related Events

- August 20 (Sunday), 9:45-15:30, I-INCE Practice School (Case Studies on Noise Control) at Rm 105
- August 21 (Monday), 7:00-8:00, I-INCE Young Professionals Breakfast at Multipurpose Room
- August 21 (Monday), 15:00-17:00, I-INCE Young Professionals Workshop at Multipurpose Room
- August 21 (Monday), 17:00-17:30, I-INCE Young Professionals Travel/Congress Attendance Grant Awards Ceremony at Multipurpose Room
- August 21 (Monday), 17:30-18:30, I-INCE Social Networking Event for Young Professional Travel/Congress Attendance Grant Winners at Multipurpose Room



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## Meetings

### Executive Council Meeting

Time & Date: August 18 (Friday) 15:00-17:00

Venue: Rm VIP-1

### Congress Selection Committee (CSC) Meeting

Time & Date: August 19 (Saturday) 9:00-11:30

Venue: Rm 101

### Board of Directors (BoD) Meeting

Time & Date: August 19 (Saturday) 13:00-18:00

Venue: Rm 101

### Future Congress Technical Planners (FCTP) Committee

Time & Date: August 20 (Sunday) 10:30-12:00

Venue: Rm 103

### General Assembly (GA) Meeting

Time & Date: August 20 (Sunday) 13:00-15:30

Venue: Rm 103

### Session Chairs' Meeting

Time & Date: August 20 (Sunday) 19:00-21:00

Venue: Rm 301

### Future Congress Technical Planners (FCTP) Committee

Time & Date: August 23 (Wednesday) 11:30-13:00

Venue: Multipurpose Room

### Board of Directors (BoD) Meeting

Time & Date: August 23 (Wednesday) 18:00-20:00

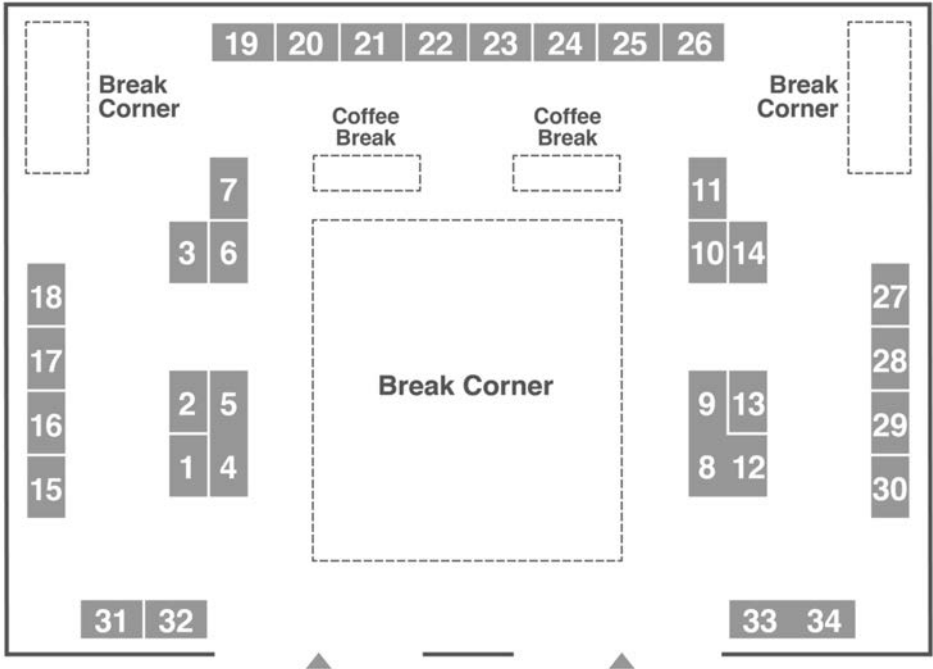
Venue: Multipurpose Room

# Exhibition

## Exhibition Floor Plan

Time & Date: August 20 (Sunday) 18:00-20:00  
August 21 (Monday) 9:00-18:00  
August 22 (Tuesday) 9:00-18:00  
August 23 (Wednesday) 9:00-12:00

Venue: Convention Hall  
(Makuhari Messe International Conference Hall 2F)



## List of Exhibitors

<b>Booth</b>	<b>Company</b>
1	SoundPLAN
2	MARUBUN CORPORATION
3	OrbiWise
4,5	Ono Sokki Co.,Ltd.
6	Dassault Systemes K.K.
7	HBK – HOTTINGER BRÜEL & KJÆR
8, 9, 12	RION CO., LTD. / Norsonic AS
10	Getzner Werkstoffe
11	NARITA INTERNATIONAL AIRPORT CORPORATION
13	BSWA Technology
14	SKC Acoustics Technology Co., Ltd
15	GERB Vibration Control Systems Japan, Inc.
16	Hangzhou Aihua Instruments Co., Ltd
17	Microflown Technologies
18	MECALC Technologies
19	Cornes Technologies Ltd.
20	DataKustik GmbH
21	HEAD acoustics GmbH
22	System Plus, Inc.
23	Seti Media
24	SVANTEK Sound and Vibration
25	NTi Audio AG
26	ODEON A/S
27	INTER-NOISE 2024
28	Hangzhou Crysound Electronics Co., Ltd.,



29	AIVS Inc.
30	Polytec Japan
31	TOBISHIMA CORPORATION Waseda Univ. INSPIREI Inc.
32	YAMAHA CORPORATION
33	Stapelfeldt Engineering Company Ltd
34	ODEN Systems

## Instruction for Presenters

- Inter-Noise 2023 will be held as a live/in-person congress. The presentation format will be oral or poster style at the venue.
- In order to accept the diverse needs of participants, Inter-Noise 2023 will accept the alternative presentation format using pre-recorded video presentation.
- In the program, pre-recorded presentations are assigned as well as onsite oral presentations, and will be streamed at the venue.
- Details of each format is described below.
- Regardless of the presentation format, all submitted manuscript will be published in the proceedings and the INCE-USA digital library.

### Onsite Oral

#### Presentation Time

	Presentation	Q & A	Reserve time for transition to the next
Technical session	15 min.	3 min.	2 min.
Plenary / Keynote	45 min.	5 min.	—

#### Procedures for Presentation

- 1) All onsite oral presenter should check-in to Preview Room (Rm 205) at least half day prior to your scheduled presentation and bring your presentation files (in PPTX or PDF format) on a USB memory drive.

Presentation Check-in	
Place	Rm 205
Opening hours	15:00-18:30, August 20 (Sunday)
	8:00-18:30, August 21 (Monday)
	8:00-18:30, August 22 (Tuesday)
	8:00-12:00, August 23 (Wednesday)

- 2) Your presentation will be recorded and made available on the online congress platform after approximately 24 hours. The video will contain your talk and presentation slides as projected in the session room (including the mouse pointer on the screen), but not your footage on speaker's platform. The Q&A discussion at the technical session after your presentation will be included in the video.

### After the session (Online Q&A)

- 3) Your presentation will be recorded and made available on the online congress platform after approximately 24 hours.
- 4) When a question or comment is submitted to your presentation video, you'll receive a notification via email. The author is expected to post the answers to the comments or questions on the congress platform.

### **Onsite Poster**

- 1) Poster sessions are held in Lobby outside Int'l Conf Rm, from 10:00 to 18:00 on August 21 (Monday) and 22 (Tuesday).
- 2) Poster setup:
  - August 21 (Mon) 9:20-10:00 for Areas 01 to 10
  - August 22 (Tue) 9:20-10:00 for Areas 11 to 17
- 3) The presenting author must be at your poster for the following days and time-periods for Q & A assigned to you:
  - August 21 (Monday) 10:20-11:40 for Areas 01 to 05
  - August 21 (Monday) 15:20-16:40 for Areas 06 to 10
  - August 22 (Tuesday) 10:20-11:40 for Areas 11 to 12
  - August 22 (Tuesday) 15:20-16:40 for Areas 13 to 17
- 4) Poster removal:
  - August 21 (Monday) 18:00-18:30
  - August 22 (Tuesday) 18:00-18:30

- 5) Authors should remove the posters during the suggested poster removal period. The Secretariat shall dispose all posters left at 19:00 on each day.

### **Online Pre-recorded**

- All pre-recorded presentations, which the author(s) choose to present in this style and completed upload by the designated date, are available on the online congress platform after the congress starts.
- The presentation video will be available on the online congress platform after the congress starts. In the program, pre-recorded presentations are assigned as well as onsite oral presentations, and will be streamed at the venue.
- When a question or comment is submitted to your presentation video, you'll receive email notification. The author is expected to post the answers to the comments or questions on the congress platform.

# Schedule at a Glance

Refer to “Technical Sessions” on Page 30

## August 20 (Sunday)

		13:20		14:00		15:00		16:00		17:00		18:00					
Venue																	
<b>1</b>	Int'l Conf Rm (2F)									<b>Opening</b>	<b>Plenary 1</b>	<b>Opening Reception (18:00-20:00)</b>					
<b>9</b>	Rm 201A									<b>Live Streaming</b>							
<b>10</b>	Rm 201B									<b>Live Streaming</b>							



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## August 21 (Monday)

		8:20	9:00	10:00	11:00	12:00
Venue						
1	Int'l Conf Rm (2F)	<b>Keynote 1</b>		<b>18.1</b>	<b>18.1</b>	Lunch
2	Rm 101A		<b>02.1</b>	<b>02.1</b>		
3	Rm 101B		<b>11.5</b>	<b>11.5</b>		
4	Rm 102A		<b>09.1</b>	<b>09.0</b>		
5	Rm 102B		<b>03.4</b>	<b>03.4</b>		
6	Rm 103		<b>01.0</b>	<b>01.0</b>		
7	Rm 104		<b>03.0</b>	<b>03.0</b>		
8	Rm 105		<b>04.0</b>	<b>04.0</b>		
9	Rm 201A		<b>06.3</b>	<b>06.4</b>		
10	Rm 201B		<b>13.3</b>	<b>13.3</b>		
11	Rm 202		<b>12.0</b>	<b>12.1</b>		
12	Rm 301A		<b>08.3</b>	<b>08.1</b>		
13	Rm 301B		<b>11.0</b>	<b>11.0</b>		
14	Rm 302		<b>12.8</b>	<b>12.8</b>		
15	Rm 303		<b>14.0</b>	<b>14.1</b>		
16	Rm 304		<b>16.0</b>	<b>16.1</b>		
P	Lobby (2F)			<b>Poster 1 (01/03/04/05)</b>		

		13:20	14:00	15:00	16:00	17:00	18:00
Venue							
1	Int'l Conf Rm (2F)	<b>Keynote 2</b>		<b>18.1</b>	<b>18.1</b>		
2	Rm 101A		<b>02.2</b>		<b>02.0</b>		
3	Rm 101B		<b>11.5</b>		<b>15.3</b>		
4	Rm 102A		<b>09.0</b>		<b>05.1</b>		
5	Rm 102B		<b>03.2</b>		<b>03.2</b>		
6	Rm 103		<b>01.0</b>		<b>01.0</b>		
7	Rm 104		<b>03.0</b>		<b>03.0</b>		
8	Rm 105		<b>04.1</b>		<b>04.1</b>		
9	Rm 201A		<b>06.4</b>		<b>06.1</b>		
10	Rm 201B		<b>07.3</b>		<b>07.3</b>		
11	Rm 202		<b>12.1</b>		<b>13.1</b>		
12	Rm 301A		<b>08.1</b>		<b>08.1</b>		
13	Rm 301B		<b>11.1</b>		<b>11.1</b>		
14	Rm 302		<b>12.5</b>		<b>12.5</b>		
15	Rm 303		<b>14.2</b>		<b>14.1</b>		
16	Rm 304		<b>16.1</b>		<b>16.3</b>		
P	Lobby (2F)				<b>Poster 2 (06/07/08/10)</b>		

## August 22 (Tuesday)

		8:20	9:00	10:00	11:00	12:00		
Venue								
1	Int'l Conf Rm (2F)	Keynote 3						
2	Rm 101A			02.2		02.3		
3	Rm 101B			05.0		05.0		
4	Rm 102A			13.4		13.4		
5	Rm 102B			06.5		06.5		
6	Rm 103			01.1		01.1		
7	Rm 104			03.2		03.1		
8	Rm 105			04.4		04.1		
9	Rm 201A			06.2		06.2		
10	Rm 201B			07.4		07.4		
11	Rm 202			15.2		15.2		
12	Rm 301A			13.2		13.2		
13	Rm 301B			12.6		12.6		
14	Rm 302			12.9		12.9	12.2	
15	Rm 303			14.5		14.3		
16	Rm 304			16.2		16.2		
P	Lobby (2F)			Poster 3 (11/12)				

Lunch

		13:20	14:00	15:00	16:00	17:00	18:00		
Venue									
1	Int'l Conf Rm (2F)	Keynote 4							Congress Banquet (19:00-21:00)
2	Rm 101A			02.0		01.2			
3	Rm 101B			05.3		05.3			
4	Rm 102A			10.1		10.1			
5	Rm 102B			07.2		07.2			
6	Rm 103			01.1		01.1			
7	Rm 104			03.1		03.1			
8	Rm 105			04.2		04.2			
9	Rm 201A			06.2		06.6			
10	Rm 201B			07.5		07.5			
11	Rm 202			08.2		15.0			
12	Rm 301A			08.0		08.0			
13	Rm 301B			11.1		11.1			
14	Rm 302			12.2		12.2			
15	Rm 303			14.3		14.3			
16	Rm 304			13.0		13.0			
P	Lobby (2F)			Poster 4 (13/14/15/16/17)					

## August 23 (Wednesday)

		8:20			9:00			10:00			11:00			12:00		
Venue																
1	Int'l Conf Rm (2F)										18.2			Lunch		
2	Rm 101A	12.4						12.3								
3	Rm 101B	05.2						05.2								
4	Rm 102A			10.2				10.2			10.3					
5	Rm 102B	07.1						07.1								
6	Rm 103	01.2						01.3								
7	Rm 104			03.3				03.3								
8	Rm 105	04.3						04.3			04.5					
9	Rm 201A	06.3						06.3								
10	Rm 201B	07.7						07.7								
11	Rm 202	17.0						15.4								
12	Rm 301A			08.2				08.0								
13	Rm 301B	11.4						11.2								
14	Rm 302	12.9						12.7								
15	Rm 303	14.4						14.6								
16	Rm 304	16.5						14.5								
17	Multipurpose Rm							FCTP (11:30-13:00)								

		13:20			14:00			15:00			16:00			17:00			18:00		
Venue																			
1	Int'l Conf Rm (2F)	18.2						Plenary 2			Closing			Closing Reception (at "WORLD KITCHEN!")					
2	Rm 101A	12.3																	
3	Rm 101B	05.2																	
4	Rm 102A	10.3																	
5	Rm 102B	07.6																	
6	Rm 103	01.3																	
7	Rm 104	03.3																	
8	Rm 105	04.5																	
9	Rm 201A	15.1																	
10	Rm 201B	11.3																	
11	Rm 202	17.0																	
12	Rm 301A	08.0																	
13	Rm 301B	11.2																	
14	Rm 302	12.7																	
15	Rm 303	14.6																	
16	Rm 304	16.4																	



## Distinguished Lectures

### Plenary Lecture 1

P-1

August 20 (Sunday) 17:00-18:00

Int'l Conf Rm (2F)

### Sound in Life and Acoustics for Society

Hiroshi Sato



Dr. Hiroshi Sato is a Deputy Director General of Department of Information Technology and Human Factors at National Institute of Advanced Industrial Science and Technology (AIST). His research area is human-centered evaluation and design of environment such as speech communication in rooms, classroom acoustics, low-frequency noise and floor impact sound. He is a director of Acoustical Society of Japan and chairing the committee for public address system for emergency. He contributes standardization work significantly in the area of building acoustics and ergonomics/human factors as national chair of ISO technical committees and leading the project of Wellbeing in the technical committee for Ageing Societies (ISO/TC 314). He is also active in the area of emotion recognition and prediction in daily life and leading the national project for cognitive interaction in service fields as a part of Cross-ministerial Strategic Innovation Promotion Program (SIP) Phase 2: Big Data and AI-Enabled Cyberspace Technologies.

### Plenary Lecture 2

P-2

August 23 (Wednesday) 15:20-16:20

Int'l Conf Rm (2F)

### Committing to Full-Spectrum Noise Equity

Judith L. Rochat



Dr. Judy Rochat is a Principal Associate at Cross-Spectrum Acoustics, with almost 30 years of experience in transportation noise and vibration, including highway, rail, and aircraft projects and research, working in both the public and private sectors. She received a B.A. in Applied Mathematics from the University of California, San Diego and a M.S. and Ph.D. in Acoustics from the Pennsylvania State University. Dr. Rochat is the current President of the Institute of Noise Control Engineering of the USA and the Transportation Associate Editor for the Noise Control Engineering Journal. She is also the former Chair of the Transportation Research Board Noise and Vibration Committee and is a member of the Acoustical Society of America and the American Institute of Aeronautics and Astronautics.

## Keynote Lecture 1

K-1

August 21 (Monday) 8:20-9:20

Int'l Conf Rm (2F)

### Underwater Acoustics and Marine Systems

Joseph M. Cuschieri



Joe got his PhD “A Parametric Study of Impact Noise” from the Institute of Sound and Vibration Research (ISVR), at the University of Southampton in the UK. He went to ISVR after completing his BS Degree in Mechanical Engineering from the University of Malta. Soon after he completed his PhD. Joe moved from Southampton to South Florida, USA to take a position as Assistant Professor in the Ocean Engineering Department at Florida Atlantic University. After spending 20 years as a Professor of Ocean Engineering, with two years as Associated Dean of Research, and focusing his research on underwater systems, Joe decided to leave academia and join industry where he continued to work on Underwater systems. He currently holds the position of a Lockheed Martin Fellow and his work is focused on marine system noise, structural acoustics, acoustic sensors and signal processing. Joe is a Fellow of the Acoustical Society of America, is a Member, Board-Certified of the Institute of Noise Control Engineering of the USA and a Fellow of the Institute of Acoustics.

## Keynote Lecture 2

K-2

August 21 (Monday) 13:20-14:20

Int'l Conf Rm (2F)

### Exploring Real-World Geometry Effects on Airfoil and Bluff-Body Flow Noise

Danielle Moreau



Dr. Danielle Moreau is an Associate Professor in the School of Mechanical and Manufacturing Engineering at UNSW Sydney. She obtained her PhD at the University of Adelaide in 2010 on the topic of virtual sensing for active noise control. Danielle’s current research is in the field of aeroacoustics and explores the production and control of flow-induced noise. Her major research contributions have been in (i) wall-mounted finite airfoil aeroacoustics, (ii) airfoil trailing edge noise production and control and (iii) bluff body flow noise. Danielle has co-authored two textbooks: ‘Active Control of Noise and Vibration’ (Taylor and Francis) and ‘Flow Noise: Theory’ (Springer). She serves as Chief Editor of Acoustics Australia and an Associate Editor of Applied Acoustics.

August 22 (Tuesday) 8:20-9:20

Int'l Conf Rm (2F)

**The Short Story of Urban Acoustics****Judicaël Picaut**

Dr. Judicaël Picaut is a senior researcher at the Gustave Eiffel University (France) and develops activities in the field of environmental acoustics, and more specifically on the development of alternative approaches for noise mapping. He leads the Environmental Acoustics Research Unit and is one of the co-founders of the Noise-Planet project, which has developed several innovative and open source approaches, such as NoiseCapture (smartphone application) and NoiseModelling (simulation tool).

August 22 (Tuesday) 13:20-14:20

Int'l Conf Rm (2F)

**Challenges and Opportunities of Urban Air Mobility****– How Much Noise is Acceptable?****Bianca I. Schuchardt**

Dr. Bianca I. Schuchardt works as aeronautical research engineer at the German Aerospace Center (DLR) in Braunschweig, Germany, and has been engaged in urban air mobility (UAM) research since 2011. She started with the investigation of flight mechanics and handling qualities of helicopters and vertical take-off UAM vehicles. In 2019 she changed her research focus towards the investigation of flight guidance concepts for UAM and UAS (unmanned aerial systems). At the DLR Institute of Flight Guidance she is leading the project "HorizonUAM – Urban Air Mobility Research at the German Aerospace Center". She is also coordinating the UAM topics within the NASA-DLR cooperation on "Air Traffic Management Exploration (ATM-X)". Dr. Bianca I. Schuchardt received a diploma and a doctoral degree in aeronautical engineering from the Technical University of Braunschweig. For her dissertation she was awarded with a Zonta Amelia Earhart Fellowship in 2013.

## Technical Sessions

### Area 01: Flow-induced Noise & Vibration

- Session 01.0: Flow-induced Noise & Vibration: General
- Session 01.1: Computational Methods in Flow-induced Noise & Vibration
- Session 01.2: Experiments in Flow-induced Noise & Vibration
- Session 01.3: Rotor & Turbomachinery Noise

### Area 02: Vibro-acoustics

- Session 02.0: Vibro-acoustics: General
- Session 02.1: Numerical Methods in Vibro-acoustics
- Session 02.2: Vibro-acoustics Experiments
- Session 02.3: Application of Vibro-acoustics Methods to Noise Control

### Area 03: Signal Processing & Measurements

- Session 03.0: Signal Processing & Measurements: General
- Session 03.1: Microphone Array Techniques
- Session 03.2: Spatial Capture & Reproduction
- Session 03.3: Measurement Instrumentation
- Session 03.4: Measurement Standard

### Area 04: Modeling & Numerical Simulation

- Session 04.0: Modeling & Numerical Simulation: General
- Session 04.1: Room Acoustics Modeling & Simulation
- Session 04.2: Vibration Analysis
- Session 04.3: Numerical Techniques in Acoustics & Vibration
- Session 04.4: Sound Source Modeling
- Session 04.5: Sound Propagation Modeling & Simulation

### Area 05: Active Control of Sound & Vibration

- Session 05.0: Active Control of Sound & Vibration: General
- Session 05.1: Active & Passive Noise Control
- Session 05.2: Signal Processing & Algorithms for ANC
- Session 05.3: New Applications of Active Control

## **Area 06: Transportation Noise & Vibration**

- Session 06.1: Railway Vehicle Acoustics
- Session 06.2: Railway Noise
- Session 06.3: Tire & Road Noise
- Session 06.4: Noise Barriers & Mitigation Techniques
- Session 06.5: Road Traffic Noise Calculation Methods
- Session 06.6: Road Vibrations: Predictions, Measurements & Mitigation Measures

## **Area 07: Aircraft Noise**

- Session 07.1: Aircraft Interior Noise
- Session 07.2: Aircraft Exterior Noise
- Session 07.3: Airport Noise
- Session 07.4: Airport Noise Modeling & Mapping
- Session 07.5: Advanced Monitoring & Measurement
- Session 07.6: Supersonic Aircraft Noise
- Session 07.7: Urban Air Mobility Community Noise

## **Area 08: Vehicle Noise & Vibration**

- Session 08.0: Vehicle Noise & Vibration: General
- Session 08.1: Pass-by Noise, Tire & Pavement
- Session 08.2: Interior Noise & Sound Design
- Session 08.3: Noise & Vibration of Electric, Hybrid & Alternative Powertrains

## **Area 09: Industrial Noise**

- Session 09.0: Industrial Noise: General
- Session 09.1: Wind Turbine Noise

## **Area 10: Underwater & Maritime Acoustics**

- Session 10.1: Target Detection & Classification
- Session 10.2: Measurement & Control of Ship Noise
- Session 10.3: Effect of Noise on Aquatic Animals & Noise Exposure Criteria

## **Area 11: Acoustic Materials**

- Session 11.0: Acoustic Materials: General
- Session 11.1: Acoustic Metamaterials
- Session 11.2: Microperforated Materials

- Session 11.3: Sound Absorbers & Diffusers
- Session 11.4: Additive Manufacturing for Acoustic Applications
- Session 11.5: Sound Absorption Measurements

## **Area 12: Building & Architectural Acoustics**

- Session 12.0: Building & Architectural Acoustics: General
- Session 12.1: Requirements, Classification Schemes  
& Standards in Building Acoustics
- Session 12.2: Impact & Structure-borne Sound in Buildings
- Session 12.3: Ventilation-enabling Sound Insulation Devices
- Session 12.4: Building System Noise & Vibration Control
- Session 12.5: Sound Insulation Measurement & Prediction
- Session 12.6: Sound Insulation of Wooden Buildings
- Session 12.7: Acoustics of Education Spaces
- Session 12.8: Acoustics of Workspaces
- Session 12.9: Acoustics in Indoor Spaces

## **Area 13: Environmental Noise**

- Session 13.0: Environmental Noise: General
- Session 13.1: Noise Mapping
- Session 13.2: Smart Cities & Noise Monitoring
- Session 13.3: Outdoor Noise Propagation
- Session 13.4: Low-frequency Sound

## **Area 14: Perception & Health**

- Session 14.0: Perception & Health: General
- Session 14.1: Community Response to Noise
- Session 14.2: Noise & Health
- Session 14.3: Psychoacoustics of Noise Evaluation & Universal Design
- Session 14.4: Physiological & Emotional Responses to Environment Sound
- Session 14.5: Occupational Noise & Hearing Loss
- Session 14.6: Response to Noise & Vibration

## **Area 15: Sound Quality & Product Noise**

- Session 15.0: Sound Quality & Product Noise: General
- Session 15.1: Psychological & Physiological Evaluation of Product Noise
- Session 15.2: Product Sound Quality

Session 15.3: Information Technology Equipment Noise

Session 15.4: Sound Design Based on Psychoacoustics

### **Area 16: Soundscapes**

Session 16.0: Soundscapes: General

Session 16.1: Soundscape Evaluations: Towards the Development of Standards

Session 16.2: Outdoor Soundscape Planning & Design, and Urban Design

Session 16.3: Indoor Soundscape Planning & Design

Session 16.4: Soundscape Preservation

Session 16.5: Artificial Intelligence & Machine Learning on Soundscape

### **Area 17: Noise Policy & Management**

Session 17.0: Noise Policy & Management: General

### **Area 18: Theme-related & Novel Approaches**

Session 18.1: Inclusive Design of Sound Environment

Session 18.2: Diversity of Local Noise Issues in the World





# **Program**

**August 20  
(Sunday)**



17:00–18:00 P-1

**Sound in life and acoustics for society**

Hiroshi Sato

Chair: Tetsuya Sakuma



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# **Program**

**August 21  
(Monday)**



8:20–9:20 K-1**Underwater acoustics and marine systems**

Joseph M. Cuschieri

Chair: Robert J. Bernhard

13:20–14:20 K-2**Exploring real-world geometry effects on airfoil and bluff-body flow noise**

Danielle Moreau

Chair: Li Cheng

**18.1 Inclusive Design of Sound Environment**

9:40–10:40 Chairs: Tetsuya Sakuma, Jin Yong Jeon

9:40–10:00 1-1-1**Effects of hearing aids and cochlear implants in education for deaf and hard-of-hearing children and the sound environment improvement**

Masayuki Sato, Hirohito Chonan, Anna Watanabe

10:00–10:20 1-1-2**Augmented-reality visual presentation of sounds for deaf and hard of hearing people**

Takumi Asakura

10:20–10:40 1-1-3**Study on suppression effect of air-conducted sound by bone-conducted sound**

Shunsuke Inoue, Teruki Toya, Yasufumi Uezu, Masashi Unoki

11:00–12:20 Chairs: Tetsuya Sakuma, Jin Yong Jeon

11:00–11:20 1-1-4**Proposal of guideline for the development of announcement at a railroad station in Japan with consideration for an elderly people**

Sohei Tsujimura

11:20–11:40 1-1-5**How many languages can be broadcast simultaneously as an emergency announcement?**

Hayato Sato, Masayuki Morimoto, Hiroshi Sato

11:40–12:00 1-1-6**Subjective and objective investigations on environmental properties to be displayed on sensory friendly maps at the Tokyo National Museum**

Arisa Kinoshita, Kanako Ueno, Ayako Matsuo, Midori Suzuki, Marina Masuda

12:00–12:20 1–1–7

**Application of sound field reproduction system to acoustic welfare engineering - Real time sound field transmission system for parent and child room in a concert hall -**  
Norika Miyahara, Akira Omoto

14:20–15:40 Chairs: Koji Ishida, Jongkwan Ryu

14:20–14:40 1–1–8

**Auditory-friendly activities for people with autism spectrum disorder**  
Hidetoshi Takahashi, Kanako Ueno

14:40–15:00 1–1–9

**Effect of sound absorption on performance in cognitive tasks: Focusing on characteristics of subjects with developmental disabilities**  
Naoya Maruyama, Keiji Kawai, Teppei Kikuchi

15:00–15:20 1–1–10

**Indoor soundscape design of autonomous vehicles that comprehensively applies acoustic characteristics of architectural space type**  
Hyowon Yoon, Haram Lee, Beta Bayu Santika, Ylhong Luo, Jin Yong Jeon, Juin Kim, Dongchul Park

15:20–15:40 1–1–11

**Restoration effect through VR soundscape and traditional music contents experience**  
Haram Lee, Ylhong Luo, Hyowon Yoon, Seonkyeong Kim, Yunjin Lee, Jin Yong Jeon

16:00–17:00 Chairs: Koji Ishida, Jongkwan Ryu

16:00–16:20 1–1–12

**Emotional response to natural and artificial sound and indoor sound scape in residential space**  
Dokyeong Kim, Songmi Lee, Jongkwan Ryu

16:20–16:40 1–1–13

**EEG responses and mental health restoration according to VR soundscape experience**  
Donghyun Ahn, Yunjin Lee, Haram Lee, Jin Yong Jeon, June Sic Kim

16:40–17:00 1–1–14

**Psychophysiological responses to changes in the acoustic design of concert halls**  
Beta Bayu Santika, Haram Lee, Yunjin Lee, Jin Yong Jeon

## 02.1 Numerical Methods in Vibro-acoustics

Venue 2  
Rm 101A

9:20–10:40 Chairs: Takao Yamaguchi, Yoshio Kurosawa

9:20–9:40 1–2–1

**Numerical computation of damped vibration and sound radiation for structures having a porous layer sandwiched by double walls with an acoustic black hole**  
Takao Yamaguchi, Tomoki Tamura, Chihiro Kamio, Yuta Hisamura



9:40–10:00 1–2–2

**Nonlinear numerical simulation of insertion loss for structures having a compressed softened porous layer sandwiched by double walls under acoustic excitation**

Takao Yamaguchi, Tetsuya Ozaki, Tsuyoshi Yamashita, Chihiro Kamio

10:00–10:20 1–2–3

**Evaluation of vibro-acoustic properties and structures of automotive door materials**

Yue Hu, Manabu Sasajima, Shuji Kano

10:20–10:40 1–2–4

**Instantaneous structural intensity analysis on vehicle body**

Keisuke Abe, Yunosuke Tanaka, Toru Yamazaki

11:00–12:20 Chairs: Yoshio Kurosawa, Takao Yamaguchi

11:00–11:20 1–2–5

**Development of sound field simulation and optimization over large acoustic space by use of novel SEA method**

Yasunori Miyamoto, Keisuke Fujimoto, Teppei Koido, Arnaud Charpentier

11:20–11:40 1–2–6

**BESO based multi-objective topology optimization of column and shell stiffened structures**

Xiaoyan Teng, Meng Zhou, Xudong Jiang

11:40–12:00 1–2–7

**Vibration reduction technology using modal energy propagation analysis method**

Koki Yamashita, Akinori Utsunomiya, Kohya Nakagawa, Daisuke Yamada, Kenji Matsumoto, Miho Kurata, Iwao Honda

12:00–12:20 1–2–8

**Vibro-acoustic analysis of sound-absorbing ducts using porous materials**

Yoshio Kurosawa, Ji Chengyao, Tsuyoshi Yamashita, Tetsuya Ozaki, Naoyuki Nakaizumi, Yuki Fujita, Manabu Takahashi

## 02.2 Vibro-acoustics Experiments

Venue 2  
Rm 101A

14:20–15:40 Chairs: Masao Nagamatsu, Dupont Thomas

14:20–14:40 1–2–9

**Using passive frequency response functions generated using the operational round trip method to make vibration predictions at remote points**

Scott Tranter, Robbie Glachan, Robert Potter, Ramin McGee

14:40–15:00 1–2–10

**Labor-saving input power identification method in actual operation using experimental SEA**

Ryota Okamoto, Toru Yamazaki, Kai Kurihara, Atsushi Kitahara

15:00–15:20 1–2–11

**Dynamic property evaluation of hydraulic clamp based on analyzing the propagation characteristics of bending wave in hydraulic pipeline**

Jie Jin, Tong He, ZhengBin Zhu, PeiXin Gao, Tao Yu

15:20–15:40 1–2–12

**Vibration analysis of drum membrane using computer vision**

Lokendra Singh, Arpan Gupta

**02.0 Vibro-acoustics: General**

Venue 2  
Rm 101A

16:00–18:20 Chairs: Steve Hambric, Toru Yamazaki

16:00–16:20 1–2–13

**Practical tutorial on cylindrical structure vibro-acoustics Part2 - Acoustics**

Stephen Hambric

16:20–16:40 1–2–14

**Vibration behaviors of orthogonally stiffened cylindrical shell coupled with internal circular plates in wavenumber-frequency domain**

Duoting Wu, Hongxing Hua, Jinpeng Su

16:40–17:00 1–2–15

**Effects of internal resonance on the nonlinear acoustic radiation induced by axial and bending vibration of hyperelastic cantilever beams**

Guoxu Wang, Yapeng Li, Yegao Qu

17:00–17:20 1–2–16

**Experimental and numerical investigations on the dynamic response of a power transformer**

Kiran Sahu, Anders Daneryd

17:20–17:40 1–2–17

**Modal analysis and dynamic characteristics of the flexible general rotor-disk system with various dynamical models**

Devavrit Maharshi, Amrita Puri, Barun Pratiher

17:40–18:00 1–2–18

**Theoretical and numerical investigation into the suppressing mechanism of radiated noise in an ABH-cavity system**

Hanfeng Ye, Hongli Ji, Chaoyan Wang, Chongcong Tao, Li Cheng, Jinhao Qiu

18:00–18:20 1–2–19

**Analyze the effect of stacking sequences on nonlinear acoustic signatures in GFRP composite laminates and quantify the delamination using subset simulations.**

Akhilendra Singh Gangwar, Dhanashri M. Joglekar

09:40–11:00 Chairs: Kazuma Hoshi, John Laurence Davy

09:40–10:00 1–3–1

### **Reverberation time measurement issues**

John Laurence Davy

10:00–10:20 1–3–2

### **Determination of the characteristic impedance and the complex wave number by five different approaches**

Yujun Zhao, Jinhui Xu, John Laurence Davy, Zhengqing Liu, Mohammad Fard

10:20–10:40 1–3–3

### **Sound absorption performance of coir fiber/polylactic acid composite microperforated panel**

Desmond Daniel Chin Vui Sheng, Keng Yinn Wong, Muhammad Rizal Muhammad Asyraf, Musli Nizam Bin Yahya, Nazli Bin Che Din, Narendra Reddy, Vignesh Sekar

10:40–11:00 1–3–4

### **Experimental investigation of the effect of material on the non-linear properties of perforated plates**

Niloofar Sayyad Khodashenas

11:20–12:20 Chairs: Kazuma Hoshi, John Laurence Davy

11:20–11:40 1–3–5

### **Development of sound-absorbing materials from rice straw**

Siwat Lawanwadeekul, Suphaporn Daothong, Teerawat Sangkas, Panisara Kongthavorn

11:40–12:00 1–3–6

### **Further improvements of the measurement method for sound absorption characteristics using the ensemble averaging technique**

Toru Otsuru, Reiji Tomiku, Noriko Okamoto

12:00–12:20 1–3–7

### **High-frequency measurement method of normal-incidence sound absorption coefficient with a square cross-section impedance tube using eight microphones**

Akira Sanada, Nozomu Fujimoto, Hiroshi Nakagawa

14:20–15:40 Chairs: Kazuma Hoshi, John Laurence Davy

14:20–14:40 1–3–8

### **Least-squares approach for improving the accuracy of bulk acoustic property measurements using an impedance tube**

Masateru Kimura

14:40–15:00 1–3–9

**A comprehensive study of broadband absorption performance and scattering coefficient evaluation of spiral resonators with soundproof sidewalls**

Jonghoon Jeon, Kyunglae Gu, Gyu Young Yi, Junhong Park

15:00–15:20 1–3–10

**Calibration of a cardioid microphone for improving accuracy of normal impedance measurement in a tube**

Kazuma Hoshi, Toshiki Hanyu

15:20–15:40 1–3–11

**Dynamic Young's modulus measurement by incident wave extracting for viscoelastic materials under variable water pressure**

Bing Wang, Zhe Liu, Zixuan Zhang, Hong Hou

**15.3 Information Technology Equipment Noise**

Venue 3  
Rm 101B

16:00–18:20 Chairs: Serkan Atamer, Mariko Tsuruta–Hamamura

16:00–16:20 1–3–12

**Understanding the main correlates of annoyance of home-type laser printer noise**

Serkan Atamer, M. Ercan Altinsoy

16:20–16:40 1–3–13

**Differences in optimal listening level for voice guidance of self-checkout machines between Japanese and Chinese men and women**

Mariko Tsuruta-Hamamura, Mengsongqi Li, Hiroshi Hasegawa, Shingo Kawazura, Naho Tazika, Naoto Hiroki

16:40–17:00 1–3–14

**Revision of stand alone standard, ECMA-418-1 for the detection of prominent discrete tones using tone-to-noise ratio method and prominence ratio method**

Ikuo Kimizuka

17:00–17:20 1–3–15

**Approaches to address response variations in psychoacoustic tests focused on the assessment of tonal office noise**

Guochenhao Song, Patricia Davies, Yangfan Liu

17:20–17:40 1–3–16

**Auditory evaluation of switch sounds according to listening situation**

Kenji Ozawa, Mai Ando, Takeshi Shirasaka, Hisato Shimomura

17:40–18:00 1–3–17

**Prediction-segmentation tasks for self-supervision of anomaly detection networks under noisy conditions**

Jihoon Choi, Gyouk Chu, Jung-Woo Choi

18:00–18:20 1–3–18

**Acoustic metamaterials for electronics cooling fan noise reduction**

Sahan Wasala, Wenguang Zhao, Oluwaseyi Ogun, Lon Stevens, Raye Sosseh, John Kennedy, Tim Persoons

**09.1 Wind Turbine Noise**

Venue 4  
Rm 102A

09:20–11:00 Chairs: Junji Yoshida, James Thompson

09:20–09:40 1–4–1

**Prediction of wind turbine noise**

**Comparison of three standardized prediction methods**

Karen Brastad Evensen, Truls Gjestland, Piotr Kokowski, Paweł Libiszewski, Tomasz Kaczmarek, Michał Gałuszka

09:40–10:00 1–4–2

**Wind turbine blade damage detection and classification based on sound feature signal using machine learning**

Shu-Fen Kuo, Stone Cheng, Fang-Chun Lo, Tsung-Hsien Tu

10:00–10:20 1–4–3

**Identifying and overcoming the challenges of offshore wind park noise in Japan**

Markus Busse, Krispian Lowe, Sylvia Broneske, Shogo Uchiyama

10:20–10:40 1–4–4

**Measurements of underwater noise generated during wind turbine operation in Korea Southwest Offshore Wind Farm**

Young Geul Yoon, Dong-Gyun Han, Jee Woong Choi

10:40–11:00 1–4–5

**Increase of trailing-edge noise due to inflow turbulence**

Laura Botero-Bolívar, Fernanda L. dos Santos, Cornelis H. Venner, Leandro D. de Santana

**09.0 Industrial Noise: General**

Venue 4  
Rm 102A

11:20–12:20 Chairs: Gaku Naoe, Tamer Elnady

11:20–11:40 1–4–6

**Acoustic modes in a rectangular flow duct with a wall of finite acoustic impedance value**

Tomonobu Goto, Kuri Maeda, Tonau Nakai, Masaharu Nishimura

11:40–12:00 1–4–7

**The measurement and practical effectiveness of noise attenuation kits for mobile equipment**

Joe McNamara, Yang Liu

12:00–12:20 1–4–8

**Relationship between noise and cavitation at various cavitation numbers in fan type inducer blades of a centrifugal pump**

Haruto Utsumi, Sota Nakayama, Shinichiro Ejiri, Masahiro Miyabe

14:20–15:40 Chairs: Tamer Elnady, Gaku Naoe

14:20–14:40 1–4–9

**Application of efficient noise control strategy to a vibratory-rotary drilling machine**

Tetsuya Miyazaki, Shinji Okabe

14:40–15:00 1–4–10

**Relation between acoustic absorption performance and flow field around perforated plate with cross flow**

Ryouya Yamada, Syouta Maeda, Hiromitsu Hamakawa, Eru Kurihara, Hidechito Hayashi

15:00–15:20 1–4–11

**Extraction of high contributing vibration mode to the loudness of industrial sewing machine radiated noise using operational TPA**

Masahiro Okazaki, Junji Yoshida

15:20–15:40 1–4–12

**Low frequency noise control using coupled loudspeaker and negative impedance circuit**

Shiqi Zhang, Xiaochen Zhao

**05.1 Active & Passive Noise Control**

Venue 4  
Rm 102A

16:00–18:00 Chairs: Takanobu Nishiura, Dong Yuan Shi

16:00–16:20 1–4–13

**Simulation research on active noise control in turboprop cabin with complex sound field environment**

Ningjuan Dong, Qun Yan, Feng Hou, Qing Xue

16:20–16:40 1–4–14

**Minimization of acoustic power in free space using quadrupole sound sources**

Yuta Ogasawara, Hiroyuki Iwamoto, Shotaro Hisano

16:40–17:00 1–4–15

**Study of non-linear filter-based algorithms for active noise control of machinery noises**

Arvind Kumar Sharma, Amrita Puri

17:00–17:20 1–4–16

**Investigation of effect of mean flow on active noise control system in duct**

Vignesh Saravanan, Dongwook Kim, Hyunkee Kim, Soogab Lee

17:20–17:40 1–4–17

**Active noise control with variable directivity loudspeakers**

Bokai Du, Qun Yan, Ningjuan Dong, Qing Xue, Yixiao Cheng

17:40–18:00 1–4–18

**Optimal viscoelastic properties for passive damping treatments**

Lucie Rouleau, Boris Lossouarn, Jean-François Deü

### 03.4 Measurement Standard

Venue 5  
Rm 102B

9:20–10:40 Chairs: Yukio Takahashi, Triantafillos Koukoulas

9:20–9:40 1–5–1

**A simplified approach to measuring tactical noise from firearms - relative to STANREC 4785**

Morten Huseby

9:40–10:00 1–5–2

**Sound absorption analysis of carbon steel varied in density and microstructures**

Mardin H, Kusno Kamil, Ahmad Amri, Muhammad Rizal

10:00–10:20 1–5–3

**On the test method for short-term level fluctuations of sound calibrators**

Lixue Wu, Triantafillos Koukoulas

10:20–10:40 1–5–4

**A precision sound pressure level measurement system**

Lixue Wu, Triantafillos Koukoulas

11:00–12:20 Chairs: Yukio Takahashi, Triantafillos Koukoulas

11:00–11:20 1–5–5

**Estimation of acoustic reflection pattern using multi-point impulse response and spatial Fourier transform**

Satoshi Hoshika, Takahiro Iwami, Akira Omoto, Satoshi Sugie

11:20–11:40 1–5–6

**Towards a revised international standard for personal sound exposure meters**

Peter Hanes

11:40–12:00 1–5–7

**Need for international standards to evaluate airborne ultrasound emitted by high-intensity ultrasonic equipment**

Hironobu Takahashi

12:00–12:20 1–5–8

**Development of higher back-pressure application of cooling fan test plenum per ISO 10302-1**

Ikuo Kimizuka

## 03.2 Spatial Capture & Reproduction

Venue 5  
Rm 102B

14:20–16:00 Chairs: Shuichi Sakamoto, Jorge Trevino

14:20–14:40 1–5–9

**Multilingual sound spot synthesis systems**

Takuma Okamoto

14:40–15:00 1–5–10

**Enhancing acoustic contrast in multi-zone sound field reproduction through optimization of loudspeaker arrangements**

Tong Zhou, Kazuya Yasueda, Akitoshi Kataoka

15:00–15:20 1–5–11

**A multizone sound field reproduction method based on modal domain analysis**

Xin Wen, Haijun Wu, Yilong Fan, Weikang Jiang

15:20–15:40 1–5–12

**Multizone sound field reproduction based on equivalent source decomposition**

Bokai Du, Qun Yan

15:40–16:00 1–5–13

**Radiation mode-based personal audio system: Robustness against wall reflection**

Akira Higashikawa, Yoshiteru Uchida, Manabu Sasajima, Tsutomu Kaizuka

16:20–18:00 Chairs: Sungyoung Kim, Makoto Otani

16:20–16:40 1–5–14

**Sound field control in a rectangular closed space using multiple selected room modes**

Natsuko Maeda, Yoichi Haneda

16:40–17:00 1–5–15

**Three-dimensional sound field reproduction using reflected sounds based on pressure-matching with equivalent sources**

Yuya Obata, Yukika Suzuki, Izumi Tsunokuni, Yusuke Ikeda

17:00–17:20 1–5–16

**2.5 dimensional sound field reproduction based on mode matching and equivalent sources considering primary reflections**

Yukika Suzuki, Izumi Tsunokuni, Yusuke Ikeda



17:20–17:40 1–5–17

**Sound field recording using distributed spherical microphone arrays based on a virtual spherical model**

Shuichi Sakamoto, Kosuke Katada

17:40–18:00 1–5–18

**Evaluation of the respective effects of microphone type and dummy head type on measured head-related transfer functions**

Pierre Grandjean, Olivier Robin, Alain Berry, Philippe-Aubert Gauthier

**01.0 Flow-induced Noise & Vibration: General**

Venue 6  
Rm 103

9:40–11:00 Chairs: Hiroshi Yokoyama, Hiromitsu Hamakawa

9:40–10:00 1–6–1

**Numerical investigation on the mechanism of cascade unsteady force control based on pre-stator actuated oscillating trailing edge flaps**

Wanghao Tang, Shuaikang Shi, Xiuchang Huang

10:00–10:20 1–6–2

**Analysis of turbulence distortion effects on flow-induced noise prediction for propeller blade sections**

Fernanda L. dos Santos, Johan Bosschers, Cornelis H. Venner, Leandro D. de Santana

10:20–10:40 1–6–3

**One sight on sound generation and absorption by vortices**

Masaharu Nishimura, Yuka Iwaki, Tomonobu Goto

10:40–11:00 1–6–4

**Numerical prediction of aerodynamic noise for a propeller-wing configuration and an investigation of pitch effect**

Guangyuan Huang, Sidharath Sharma, Stephen Ambrose, Richard Jefferson-Loveday

11:20–12:20 Chairs: Hiroshi Yokoyama, Randolph C. K. Leung

11:20–11:40 1–6–5

**Direct aeroacoustic simulation of a flow through an expanding pipe with orifice plates**

Akitomo Fukuma, Hiroshi Yokoyama, Manato Kawai, Kenji Kawasaki, Ichiro Yamagiwa, Masahito Nishikawara, Hideki Yanada

11:40–12:00 1–6–6

**Utilization of embedded surface compliance for suppression of deep cavity flow noise**

Muhammad Rehan Naseer, Irsalan Arif, Randolph C. K. Leung

12:00–12:20 1–6–7

**Reduction of flow-induced trailing edge noise of semi-infinite flat plate by structural resonance**

Irsalan Arif, Randolph C. K. Leung, Muhammad Rehan Naseer, Shuaib Salamat

14:20–16:00 Chairs: Randolph C. K. Leung, Hiroshi Yokoyama

14:20–14:40 1–6–8

**Numerical study on the estimation of the low-wavenumber wall pressure field using vibration data**

Hesam Abtahi, Mahmoud Karimi, Laurent Maxit

14:40–15:00 1–6–9

**Investigation of characteristics and generating mechanism of wind noise on external microphone of mobile device**

Jihun Choi, Wonhee Lee, Vignesh Saravanan, Seeyoun Kwon, Soogab Lee

15:00–15:20 1–6–10

**Vibro-acoustic responses of coupled pump-jet-hull model under duct excitation and the influence of shafting support modes**

Junyue Zhang, Zhenhua Zhang, Zhiqiang Rao, Hongxing Hua

15:20–15:40 1–6–11

**Prediction and analysis of flow-induced noise of a real-size high-speed train using compressible Large Eddy Simulation and vortex sound source**

Kwongi Lee, Cheolung Cheong, Jaehwan Kim

15:40–16:00 1–6–12

**Experimental study of aerodynamic noise source measurement around an automobile door mirror by hot-film sensor**

Soichi Sasaki

16:20–18:00 Chairs: Randolph C. K. Leung, Hiroshi Yokoyama

16:20–16:40 1–6–13

**Effect of leading edge and trailing edge serrations on a rotating wells turbine**

Hiroki Yasui, Naoya Akatani, Eru Kurihara, Hiromitsu Hamakawa

16:40–17:00 1–6–14

**Evaluating the effects of cavitating refrigerant flow on noise radiation from electronic expansion valve: a numerical study**

Sangheon Lee, Cheolung Cheong, Byeonghwi Lee, Sangkyoung Park

17:00–17:20 1–6–15

**The noise prediction of cassette air conditioners using AI models and analysis based on SHAP**

Youngsu Jeong, Seonghee Choi, Jangwoo Lee, Simwon Chin

17:20–17:40 1–6–16

**Improving flow and noise performances of centrifugal pump in dishwasher through impeller design optimization**

Younguk Song, Seo-Yoon Ryu, SungDae Cho, Cheolung Cheong, Tae-hoon Kim, Junhyo Koo

17:40–18:00 1–6–17

**Study of unsteady flow-induced vibration of centrifugal pump volute casing using fluid-solid coupling**

Lianghu Meng, Zhengxiang Wang

**03.0 Signal Processing & Measurements: General**

Venue 7  
Rm 104

9:40–11:00 Chairs: Makoto Otani, Kazuhiro Kondo

9:40–10:00 1–7–1

**An AI-powered acoustic detection system based on YAMNet for UAVs in search and rescue operations**

Theoktisti Marinopoulou, Antonios Lalas, Konstantinos Votis, Dimitrios Tzovaras

10:00–10:20 1–7–2

**Performance evaluation of sound source localisation and tracking methods using multiple drones**

Benjamin Yen, Taiki Yamada, Katsutoshi Itoyama, Kazuhiro Nakadai

10:20–10:40 1–7–3

**Drone audition: improved Gaussian mixture model Wiener filtering approach for audio signal enhancement**

Wageesha N. Manamperi, Thushara D. Abhayapala, Prasanga N. Samarasinghe, Jihui (Aimee) Zhang

10:40–11:00 1–7–4

**Datasets for detection and localization of speech buried in drone noise**

Jong Hwan Ko, Jiho Chang, Daniel Rho, Taesoo Kim

11:20–12:20 Chairs: Kazuhiro Kondo, Makoto Otani

11:20–11:40 1–7–5

**Speech signal extraction method based on Bayesian estimation using air- and bone-conduction sound in speech confusion**

Yukina Tamura, Hisako Orimoto, Akira Ikuta

11:40–12:00 1–7–6

**A music file detection method based on convolutional neural network for video-on-demand platform**

Qianping Wu, Jing Chen, Fan Li

12:00–12:20 1–7–7

**State estimation for sound environment system by using Bayesian filter based on fuzzy observation**

Akira Ikuta, Hisako Orimoto

14:20–16:00 Chairs: Yasushi Takano, Wan-Ho Cho

14:20–14:40 1–7–8

**Anomaly detection and visualization for sound data with pre-trained deep neural networks**

Keisuke Kimura, Taro Kasahara, Hikaru Watabe

14:40–15:00 1–7–9

**Variational mode decomposition based vibro-acoustic analysis for spur gear fault detection**

Shahis Hashim, Piyush Shakya

15:00–15:20 1–7–10

**Investigating the slowness characteristics in acoustic emission tomography**

Md Tawhidul Islam Khan, Md Abdur Rahman

15:20–15:40 1–7–11

**Detection of arc discharge through sound event detection techniques and public datasets**

Byeong-Yun Ko, Hyeonuk Nam, Deokki Min, Gyeong-Tae Lee, Yong-Hwa Park

15:40–16:00 1–7–12

**Bearing fault diagnosis based on 2D-acoustic imaging and convolutional neural networks**

Sitesh Kumar Mishra, Piyush Shakya

16:20–18:00 Chairs: Yasushi Takano, Wan-Ho Cho

16:20–16:40 1–7–13

**Using open source neural networks for noise classification in production as novice to machine learning**

Jakob Tschavoll

16:40–17:00 1–7–14

**Condition monitoring of ball bearing using MEMS-based accelerometer**

Mahesh Gaikwad, Piyush Shakya, Sivasrinivasu Devadula

17:00–17:20 1–7–15

**Application analysis of restoring force surface method, detection of non-symmetrical pretension of cylindrical test-specimens**

Balázs Vehovszky, Dávid Bohus, Zoltán Gazdag, Benjamin Eichinger

17:20–17:40 1–7–16

**Non-destructive evaluation of FSW tool plunge depth in thin metallic sheet weld using low frequency ultrasonic Lamb waves signal**

Manish Kumar Mehta, Govinda Gautam, Dhanashri M. Joglekar,  
Dheerendra Kr. Dwivedi

17:40–18:00 1–7–17

**Elastic wave based non-destructive evaluation for joint characterization in thin section welded structures**

Govinda Gautam, Manish Kr Mehta, Dhanashri. M. Joglekar, Dheerendra Kr. Dwivedi

**04.0 Modeling & Numerical Simulation: General**

Venue 8  
Rm 105

9:20–10:40 Chairs: Reiji Tomiku, Takeshi Okuzono

9:20–9:40 1–8–1

**Localization of skin-core disbond damage in a honeycomb core sandwich composite structure using the A0 guided wave mode**

Aurovinda Kumar Mitra, Dhanashri M. Joglekar

9:40–10:00 1–8–2

**Optimisation of system configuration using machine learning as a surrogate model**

Dale Smith, Robbie Glachan, Scott Tranter, Robert Potter

10:00–10:20 1–8–3

**Designing of ultrasonic reactor using machine learning**

Kamin Kanchanapradit, Worakrit Thida, Sorasak Danworaphong

10:20–10:40 1–8–4

**Improved SPH method based on moving least square method for acoustic problems**

Jie Yang, Xinyu Zhang

11:00–12:20 Chairs: Reiji Tomiku, Takeshi Okuzono

11:00–11:20 1–8–5

**A coupling FEM/BEM method for acoustic-structural interaction problems in uniform relative motion between structure source and fluid**

Ruihua Sun, Haijun Wu, Jinxiao Li, Haiyang Zhao, Bao Chen

11:20–11:40 1–8–6

**Automotive disc-brake squeal noise modeling for shape optimization under uncertainties**

Achille Jacquemond, Sébastien Besse, Koji Shimoyama, Frédéric Gillot

11:40–12:00 1–8–7

**Reverse design of involute helical gear pairs considering machining errors based on IMAGEWARE and HYPERMESH**

Shanran Li, Shuguang Zuo, Panxue Liu, Huan Li

12:00–12:20 1–8–8

**Stability analysis of graphite circumferential seal considering perturbation**

Jinxin Ye, Jinlong Meng, Lanqing Hu, Junbo Xu, Chen Lu, Yutao Yan

**04.1 Room Acoustics Modeling & Simulation**

Venue 8  
Rm 105

14:20–16:00 Chairs: Antoine Richard, Noriko Okamoto

14:20–14:40 1–8–9

**Symplectic time-domain finite element method (STD-FEM) for room acoustic modeling**

Csaba Huszty, Ferenc Izsák

14:40–15:00 1–8–10

**A 3D modeling method of layered acoustic material structures with finite dimensions**

Gergely Firtha, Csaba Huszty

15:00–15:20 1–8–11

**Prediction of surface admittance impulse responses from frequency-dependent sound absorption coefficients**

Csaba Huszty, Gergely Firtha

15:20–15:40 1–8–12

**An auditory virtual reality of meeting room acoustics using wave-based acoustic simulations: A content for intuitive understanding of room-acoustics control effect by sound absorbers**

Kazuha Okazawa, Takeshi Okuzono, Takumi Yoshida

15:40–16:00 1–8–13

**Partial problem-based learning on open-source acoustics software education for marine engineering degree programme**

Cheng Siong Chin, Simon See

16:20–18:20 Chairs: Albert Prinn, Csaba Huszty

16:20–16:40 1–8–14

**Prediction of room acoustic parameters in rectangular rooms using recurrent neural networks**

Csaba Huszty, Bence Bakos, Bálint Csanády, Gábor Hidy, András Lukács

16:40–17:00 1–8–15

**Estimation of the sound power of multiple sources using SPL measurements and room acoustic simulations**

Antoine Richard, Carlos Monteserin, Claus Lynge Christensen, Caroline Gaudeoso

17:00–17:20 1–8–16

**Determination of sound-field diffusion indices based on FMBEM incidence directivity analysis**

Ryo Hagiwara, Tetsuya Sakuma, Yosuke Yasuda, Takayuki Masumoto

17:20–17:40 1–8–17

**Mixed reality visualization of sound field using the room impulse responses modeled by room geometry and physical model**

Ayame Uchida, Izumi Tsunokuni, Yusuke Ikeda, Yasuhiro Oikawa

17:40–18:00 1–8–18

**Data-driven simulation for two-dimensional sound field considering room shape**

Gen Sato, Yusuke Ikeda

18:00–18:20 1–8–19

**Data-driven estimation of sound absorption coefficients considering the positions of microphones**

Hiroto Arai, Gen Sato, Yusuke Ikeda

### 06.3 Tire & Road Noise

Venue 9  
Rm 201A

9:40–10:40 Chairs: Hiroshi Koike, Gijsjan van Blokland

9:40–10:00 1–9–1

**Sound power measurement of tyre/road noise using the close-proximity (CPX) trailer**

Dong Fang Li, Randolph C. K. Leung, Sanjaya Rai

10:00–10:20 1–9–2

**Impedance measurements on reflective surfaces: effect of nodes**

Gijsjan van Blokland, Richard C. Sohaney, Wout Schwanen

10:20–10:40 1–9–3

**Improving the ISO 11819 standards for better characterization of noise reduction of porous pavements**

Ulf Sandberg

### 06.4 Noise Barriers & Mitigation Techniques

Venue 9  
Rm 201A

11:00–12:20 Chairs: Masaaki Hiroe, Jean–Pierre Clairbois

11:00–11:20 1–9–4

**Evaluation of noise reduction performance of new steel noise barrier for Shinkansen**

Daigo Sato, Takeshi Sueki, Yukio Abe, Kenjiro Yamamoto, Yuta Nakamura

11:20–11:40 1–9–5

**Effect of large bus body reflection on sound barrier efficiency for road traffic noise control: a simulation study**

Jiping Zhang, Qingdong Luo, Hong Zhu, Yong Zhang

11:40–12:00 1–9–6

**Diffraction on a low screen: a valid alternative for conventional noise screens along multi lane motorways?**

Luc Goubert

12:00–12:20 1–9–7

**Prediction and analysis of noise impact and noise reduction scheme effect for complex road types**

Jie Yang, Qiang Liu, Zhongxu Kang, Lei He

14:20–16:00 Chairs: Masaaki Hiroe, Jean–Pierre Clairbois

14:20–14:40 1–9–8

**Need for a new test method for determining the acoustic performance of road traffic noise reducing devices**

Yang Ki Oh, Ha Geun Kim

14:40–15:00 1–9–9

**Modified insertion loss (IL) analysis for nonuniform trapezoidal (zigzag wall) and sinusoidal (crinkle-crinkle wall) 3-D sound barriers**

Rosenhouse Giora

15:00–15:20 1–9–10

**Experimental study on structure-borne noise of vertical concrete noise barriers sitting on the ground**

Bideng Liu, Yubin Wu, Ruixiang Song, Dan Wu, Rui Wu, Yang Zhao

15:20–15:40 1–9–11

**Numerical analysis of the effect of trench on indoor vibration adjacent to railway ground line**

Yubin Wu, Yanan Wu, Ruixiang Song, Lei He, Qiong Wu

15:40–16:00 1–9–12

**Train mitigation measures in the transmission path: Seismic metamaterial and granular barriers**

Slimane Ouakka, Patryk Dec, Baldrik Faure, Olivier Verlinden, Georges Kouroussis

**06.1 Railway Vehicle Acoustics**

Venue 9  
Rm 201A

16:20–18:00 Chairs: Kiyoshi Nagakura, Ulf Orrenius

16:20–16:40 1–9–13

**Validation of rolling-stock interior noise simulation in viaduct and tunnel environments**

Joan Sapena, Clement Dalmagne



16:40–17:00 1–9–14

**Bayesian inference for the interior noise improvement of railway vehicles**

Daisuke Muto, Takashi Yoshizawa, Wataru Sato

17:00–17:20 1–9–15

**Feasibility of a new noise prediction method using vibration speakers to verification of interior noise reduction effects**

Yasunobu Makita, Yuki Akiyama, Mineyuki Asahina, Tadao Takigami

17:20–17:40 1–9–16

**Sound propagation from the underfloor of railway vehicles to the wayside**

Satoru Akiyama, Joji Yamada

17:40–18:00 1–9–17

**Effects of locomotive noise reduction to freight train noise in Switzerland and Europe**

Markus Hecht, Thilo Hanisch, Anastasia Ullrich, Jean-Marc Wunderli, Jonas Jäggi, Fredy Fischer, Sandro Ferrari, Franz Kuster

### 13.3 Outdoor Noise Propagation

Venue 10  
Rm 201B

9:40–11:00 Chairs: Takuya Oshima, Timothy Van Renterghem

9:40–10:00 1–10–1

**Field measurement of ground effect for road traffic noises**

Shinichi Sakamoto, Xynyi Zhang, Miki Yonemura

10:00–10:20 1–10–2

**A segment-based A-weighted sound propagation model for road traffic noise assessment: A general concept**

Takuya Oshima, Yusaku Koshiba

10:20–10:40 1–10–3

**Comparative study on interpolation method for road traffic noise level behind buildings in Japanese city blocks for noise mapping**

Kazunori Harada, Yasuhiro Hiraguri, Takuya Oshima, Yoshinori Saito, Satoshi Atobe

10:40–11:00 1–10–4

**A 3D complex urban sound propagation benchmark case**

Timothy Van Renterghem

11:20–12:20 Chairs: Takuya Oshima, Timothy Van Renterghem

11:20–11:40 1–10–5

**Experimental study on outdoor sound propagation under various meteorological conditions**

Takatoshi Yokota, Koichi Makino, Genki Iizumi, Takuya Tsutsumi

11:40–12:00 1–10–6

**Comparison of power probability density functions for vertical sound propagation**

Matthew J. Kamrath

12:00–12:20 1–10–7

**Uncertainties of band sound levels when estimated from monochromatic outdoor sound propagation calculations**

David Ecotièrre

**07.3 Airport Noise**

Venue 10  
Rm 201B

14:20–15:40 Chairs: Naoaki Shinohara, Toshiyasu Nakazawa

14:20–14:40 1–10–8

**Pilot study on evaluation indices for aircraft noise considering sound quality**

Naoaki Shinohara, Koji Shimoyama, Toshiyasu Nakazawa, Makoto Morinaga, Tomohiro Kobayashi, Kazuyuki Hanaka

14:40–15:00 1–10–9

**Investigation for recent trend of the extraordinary tonal sounds observed from landing aircraft and its influence on noise evaluation**

Kazuyuki Hanaka, Naoaki Shinohara, Toshiyasu Nakazawa, Koji Shimoyama

15:00–15:20 1–10–10

**A laboratory experiment on subjective evaluation of the sound quality of aircraft noise**

Makoto Morinaga, Tomohiro Kobayashi, Kazuyuki Hanaka, Koji Shimoyama, Toshiyasu Nakazawa, Naoaki Shinohara

15:20–15:40 1–10–11

**Research on U.S. military base aircraft noise aircraft and aircraft flight routes in Okinawa Prefecture**

Takeshi Tokashiki

16:00–17:40 Chairs: Naoaki Shinohara, Laurent Leyeikian

16:00–16:20 1–10–12

**Review of strategies for mitigation countermeasures of aircraft noise in Japan and current issues**

Naoaki Shinohara

16:20–16:40 1–10–13

**Current status and good examples of airport environmental measures focusing on community coexistence in Japan**

Ryo Yamamoto

16:40–17:00 1–10–14

**Toward the symbiosis and co-prosperity between Narita International Airport and the local community**

Daisaku Takeda, Hirokatsu Kuroda

17:00–17:20 1–10–15

**Issues facing Osaka International Airport and its dialogues with the surrounding communities**

Makiko Inoue, Yoshio Nishino, Junshi Izumi, Kenji Matsubara

17:20–17:40 1–10–16

**Aviation noise in the United States: The current state of federal aviation administration research on community response**

Adam Scholten, Donald Scata Jr., Fabio Grandi, Joseph J. Czech

**12.0 Building & Architectural Acoustics: General**

Venue 11  
Rm 202

9:20–11:00 Chairs: Carl Hopkins, Yosuke Yasuda

9:20–9:40 1–11–1

**Optimization methods for acoustic material selection in interior spaces**

Vijaya Sree N K, Venkatesham B

9:40–10:00 1–11–2

**A portable augmented/virtual reality auralisation tool for consumer-grade devices with companion desktop application**

Tim Beresford, Jack Wong

10:00–10:20 1–11–3

**Assessment of the impact of mihrab form on sound diffusion in mosques**

Hany Hossam Eldien, Umaru Mohammed Bongwirnsu, Emad Hammad

10:20–10:40 1–11–4

**The acoustic conditions in Asian music practice rooms based on Korean traditional music and traditional architecture**

Youngsun Kim, Mina Kim, Jiyoung Oh, Jeongho Jeong

10:40–11:00 1–11–5

**Case study of the insulation performance in different types of flanking path construction**

Wang Po Yao, Hsu Ting Kuei

11:20–12:20 Chairs: Hiroshi Sato, Jeffrey Mahn

11:20–11:40 1–11–6

**Acoustic performance and lifecycle assessment of common building materials: A comparative case analysis**

David Kotyck, Alex Ho Ting Ng, Henry Chi-Kee Chan, Dr. William Chi-Wing Ng, Arup Hong Kong

11:40–12:00 1–11–7

**Multi-cultural perception of impact sound -- An international online listening survey about the perceived annoyance due to impact sounds**

Iara Batista da Cunha, Sabrina Skoda, Markus Müller-Trapet, Young-Ji Choi, Jeffrey Mahn

12:00–12:20 1–11–8

**Noise by neighbours: an update**

Ric van Poll, Sendrick Simon

14:20–15:40 Chairs: Hiroshi Sato, Jeffrey Mahn

14:20–14:40 1–11–9

**A study on how to apply improvements to standards for measurement elevator noise in high-rise residential buildings**

Min-Woo Kang, Yang-Ki Oh, Jeong-Ho Jeong

14:40–15:00 1–11–10

**Comparison between noise annoyance and noise sensitivity**

Manabu Chikai, Susumu Hirakawa, Hayato Sato, Atsuo Hiramitsu, Kenta Kimura, Hiroko Terasawa, Jeffrey Mahn, Markus Müller-Trapet, Iara Batista da Cunha, Hiroshi Sato

15:00–15:20 1–11–11

**Importance of acoustic quality in a high-rise residential building in green and healthy building certification standards and its relationship to human health and wellbeing**

May Han Grace Kwok, Ka Yeung Andy Lai, Hang Yi Lam, Ka Hou Karl Ho, Cheuk Wing Kan

15:20–15:40 1–11–12

**Evolution of acoustic performance on residential buildings: An analysis from the acoustic tests database since the release of Brazilian acoustic standard performance**

José Carlos Giner, Yann Ardanaz de Sá, Murilo Soares, Raquel Rossatto, Bárbara Fengler

16:00–18:00 Chairs: Naoki Suda, Eoin King

16:00–16:20 1–11–13

**A study on the application of road traffic noise map in Japan through the case of Osaka**

Satoshi Atobe, Yoshinori Saito, Kazunori Harada, Takuya Oshima, Yudai Yamashiro, Yasuhiro Hiraguri

16:20–16:40 1–11–14

**Widespread area estimation of Shinkansen Superexpress Railway noise for noise mapping in Japan**

Naoya Maruyama, Kazunori Harada, Akiko Sugahara, Yasuhiro Hiraguri, Shigenori Yokoshima

16:40–17:00 1–11–15

**Developing the algorithm for aircraft noise prediction on building façade**

Linus Yinn Leng Ang, Kenny Chiang, Fangsen Cui, Hee Joo Poh

17:00–17:20 1–11–16

**Estimation of annual sound pressure levels based on mobile measurements**

Andreu Balastegui, Guillermo Quintero, Jordi Romeu, Jessica Gissella Maradey

17:20–17:40 1–11–17

**A mini review of the Chinese literature on noise maps**

Ke Ni, Yu Huang, Li Yan, Weikang Jiang

17:40–18:00 1–11–18

**Sound map of urban areas recorded by smart devices: case study at Okayama and Kurashiki**

Sunao Hara, Masanobu Abe

9:20–11:00 Chairs: Takashi Yamamoto, Fumihiko Kosaka

9:20–9:40 1–12–1

**Analysis of the noise mechanism and interactions of torsional decoupling devices in the belt driven 48V mild hybrid powertrain**

Keychun Park, Daehyeon Kwon, Sunghoon Bae, Jungyeoul Hwang, Hyungjin Kim, Sukzoon Kim

9:40–10:00 1–12–2

**6-degree-of-freedom motor mounting characteristic for high frequency solid-borne of battery electric vehicles**

Keisuke Oba, Shingo Kanaiwa, Takayuki Miyakawa, Toshio Enomoto, Eric Pasma, Dennis de Kleark

10:00–10:20 1–12–3

**Effects of power-assist and load torque on vibration characteristics of electric bicycles**

Yusuke Kaji, Hirofumi Inoue, Akira Saito

10:20–10:40 1–12–4

**The sound characteristic of armored electric and internal combustion engine SUV**

Yogi Fitriadi Rakhim, R. Sugeng Joko Sarwono, Anugrah Sabdono Sudarsono,  
Ni Putu Amanda Nitidara, Keysha Wellviestu Zakri

10:40–11:00 1–12–5

**Vibration-based performance analysis between lithium-ion and lithium-polymer batteries**

Umar Shafique Awan, Kazem Ghabraie, Ali Zolfagharian, Bernard Rolfe

**08.1 Pass-by Noise, Tire & Pavement**

Venue 12  
Rm 301A

11:20–12:20 Chairs: Yoshihiro Shirahashi, Koji Kato

11:20–11:40 1–12–6

**Determination of the noise reduction potential at bus stops through the use of hybrid and electric buses**

Arne Henning, Thomas Kowalski, Peter de Haan

11:40–12:00 1–12–7

**Noise contribution analysis of road noise with transfer path analysis based on neural network in the box car system**

Uyeup Park, Yeon June Kang

12:00–12:20 1–12–8

**Partial sound source estimation with Helmholtz inverse beamforming as a part of passby noise virtualization**

Fabian Knappe, Volker Becker, Christof Puhle, Alexander Jahnke, Andy Meyer

14:20–15:40 Chairs: Yoshihiro Shirahashi, Ulf Sandberg

14:20–14:40 1–12–9

**A simulation and diagnosis of tire radiation noise**

Fumihiko Kosaka, Hiroshi Fujii, Yuji Kodama

14:40–15:00 1–12–10

**Fundamental study on directivity of acoustic radiation from tire by using ray tracing method**

Kai Kurihara, Yoshihiro Shirahashi, Ryota Okamoto, Toru Yamazaki

15:00–15:20 1–12–11

**Numerical investigation of tire shape parameters on the tire acoustic cavity resonance noise**

Yue Bao, Xiandong Liu, Xueman Hu, Yingchun Shan, Tian He

15:20–15:40 1–12–12

**Modeling of sound radiation from a loaded rolling tire**

Won Hong Choi, J. Stuart Bolton

16:00–17:40 Chairs: Yoshihiro Shirahashi, Ulf Sandberg

16:00–16:20 1–12–13

**Study on the relationship between the basic physical characteristics of ISO road surfaces and tyre noise**

Masayuki Wada, Haruki Okada, Ryouichi Nakagawa, Hisayoshi Matsuoka, Takafumi Kidera

16:20–16:40 1–12–14

**Representativity of ISO test track surface based on controlled pass-by measurements**

Truls Berge, Piotr Mioduszewski

16:40–17:00 1–12–15

**Novel methodology for isolating rotational phenomena in tire testing**

Domenico Minervini, Davide Mastrodicasa, Theo Geluk, Emilio Di Lorenzo

17:00–17:20 1–12–16

**A neural network approach for prediction of tyre rolling noise during indoor tests**

Luca Rapino, Arianna Dinosio, Francesco Ripamonti, Roberto Corradi, Simone Baro

17:20–17:40 1–12–17

**The resonance mode splitting rule of the rotating tire cavity considering the vertical load**

Xueman Hu, Xiandong Liu, Yue Bao, Yingchun Shan, Tian He

**11.0 Acoustic Materials: General**

Venue 13  
Rm 301B

9:20–10:40 Chairs: Satoshi Sugie, Kimihiro Sakagami

9:20–9:40 1–13–1

**Mass-air-mass resonance for multiple leaf partition using perforated plate**

Satoshi Sugie, Hajime Suzuki, Ryuma Nitta

9:40–10:00 1–13–2

**Improvement of the low-frequency sound insulation performance of hollow double-leaf panels by inserting a bending panel**

Hodaka Koizumi, Akihiko Matsuoka

10:00–10:20 1–13–3

**A measurement system for the assessment of the effectiveness of sound-insulating multilayers against structure-borne excitation: design, prototyping and validation**

Claudio Bertolini, Giulio Ruggeri, Mariano Galante

10:20–10:40 1–13–4

**Investigation of vibration damping characteristics of natural rubber composites reinforced with waste carbonaceous fillers**

Sunali Jaish, Jonty Mago, Ashutosh Negi, S. Fatima

11:00–12:20 Chairs: Satoshi Sugie, Kimihiro Sakagami

11:00–11:20 1–13–5

**Comparison of different methods for dynamic characterization of porous-elastic materials**

Attila Schweighardt, Balázs Vehovszky

11:20–11:40 1–13–6

**A sonic black hole structure with perforated boundary for slow wave generation**

Shihui Li, Jiajun Xia, Xiang Yu, Xiaoqi Zhang, Li Cheng

11:40–12:00 1–13–7

**How the bundengan string material affects its musical sound**

Gea Oswah Fatah Parikesit, Fadhil Aulia, Indraswari Kusumaningtyas

12:00–12:20 1–13–8

**Assessment of materials on covid-19 spread prevention in public buildings**

Asniawaty Kusno, Baharuddin Hamzah, Nurul Jamala, Kusno Kamil, Qushay Umar Malinta, Munawir Muhammad

## 11.1 Acoustic Metamaterials

Venue 13  
Rm 301B

14:20–16:00 Chairs: Takashi Yamamoto, Gioia Fusaro

14:20–14:40 1–13–9

**Effect of micro-slit entries on the sound absorption and size of a labyrinthine acoustic metamaterial**

Golakoti Pavan, Sneha Singh

14:40–15:00 1–13–10

**An acoustic metasurface by applying planar periodic arrays of resonators with a multiple folded long neck for broadband sound absorption**

Shinsuke Nakanishi

15:00–15:20 1–13–11

**A basic study on sound absorption characteristics of disordered hyperuniform periodic structures**

Akiko Sugahara, Tomonari Dotera

15:20–15:40 1–13–12

**Acoustic metaporous layer with extended neck structures for enhancing low frequency absorption performance**

Kamila Azzahra Nadiva, Iwan Prasetyo, Anugrah Sabdono Sudarsono



15:40–16:00 1–13–13

**On the hybrid modelling of rigid sonic crystal embedded in plenum chamber at low frequencies using the effective medium approach and finite element method**

Wai Kit Lam, Anton Krynkina, Shiu Keung Tang

16:20–18:20 Chairs: Takashi Yamamoto, Gioia Fusaro

16:20–16:40 1–13–14

**Development of a compact device for duct noises**

Masahiro Toyoda

16:40–17:00 1–13–15

**Ultrasound focusing enhancement through the stiff plate with inversely optimized metamaterial lens**

He Gao

17:00–17:20 1–13–16

**Acoustic wave focusing using holographic acoustic metalens and its optimization using Gaussian process**

Sungjun Park, Jedo Kim

17:20–17:40 1–13–17

**Multiphysical numerical analysis for acoustic metamaterials in ventilated ducts**

Gioia Fusaro, Simone D'Auria, Dario D'Orazio

17:40–18:00 1–13–18

**Ventilating noise barrier with slow wave propagation metamaterial**

Shanjun Liang, Yuyu Fu

18:00–18:20 1–13–19

**Optimal design of low-frequency sound absorber based on Snake Optimizer**

Wei Sun, Shuwei Ren, Yiyang Liu, Ye Lei, Haitao Wang, Xiangyang Zeng

## 12.8 Acoustics of Workspaces

Venue 14  
Rm 302

9:20–10:40 Chairs: Takashi Koga, Hyojin Lee

9:20–9:40 1–14–1

**A study on the relationships of acoustic parameters relative to serial recall performance and acoustic satisfaction in open-plan offices**

Shengxian Kang, Cheuk Ming Mak, Dayi Ou, Hai Ming Wong

9:40–10:00 1–14–2

**Investigation of the proper sound levels of artificial masking sounds for the speech privacy in open-plan offices**

Seung-Min Lee, Chan-Hoon Haan

10:00–10:20 1–14–3

**Consideration of “adaptive acoustic comfort” in office with surveying current office**  
Mizuki Inoue

10:20–10:40 1–14–4

**Effect of rail traffic noises on the perception of the acoustic environment in office spaces**

Yuying Chai, Boya Yu

11:00–12:20 Chairs: Takashi Koga, Hyojin Lee

11:00–11:20 1–14–5

**Examination of sound environment design method for the behavior of office workers**  
Toya Kitagawa, Takeshi Sakai, Sohei Tsujimura

11:20–11:40 1–14–6

**Influence of changes in the sound environment when conversation is interrupted on facilitation of conversation**

Takahiro Sato, Sinya Hyodo, Masahito Kobayashi, Sohei Tsujimura

11:40–12:00 1–14–7

**Noise and vibration test analysis of working and resting spaces in subway equipment areas**

Yu Li, Peijie Liu

12:00–12:20 1–14–8

**The reduction of the reverberation using the sound-absorbing metamaterial in the conference rooms**

Yudai Taira, Masaki Gomi, Ryusuke Goto, Yoshiki Nagatani, Mitsutaka Tsuji, Kazuki Miura

## 12.5 Sound Insulation Measurement & Prediction

Venue 14  
Rm 302

14:20–16:00 Chairs: Barry Marshall Gibbs, Yu Aida

14:20–14:40 1–14–9

**Comparison of different methods to determine the sound reduction index R of walls**  
Filip Verbandt, Jan Vandendriessche, Bart Van de Velde

14:40–15:00 1–14–10

**FMBEM simulation of the laboratory measurement of sound transmission loss in rectangular test rooms**

Keiko Nishizawa, Naohisa Inoue, Tetsuya Sakuma

15:00–15:20 1–14–11

**A basic study on laboratory measurement of oblique-incidence sound transmission loss of building elements**

Yasutomo Yamasaki, Hikari Tanaka, Kiyoshi Masuda, Naohisa Inoue, Tetsuya Sakuma

15:20–15:40 1–14–12

**Parameter of wide-band normal sound intensity reconstruction study based on the equivalent source near-field acoustic holography method**

Hongwei Wang, Guangyao Zhang, ZhiXuan Huang

15:40–16:00 1–14–13

**Comparison of measurement methods of room sound energy for sound insulation performance evaluation at low frequencies**

Yu Aida, Satoshi Sugie, Kenichi Takebayashi, Reiji Tomiku

16:20–18:20 Chairs: Barry Marshall Gibbs, Yu Aida

16:20–16:40 1–14–14

**Basic study of practical prediction of sound insulation performance of double-glazed window**

Yohei Tsukamoto, Kaoru Tamai, Kimihiro Sakagami, Takeshi Okuzono

16:40–17:00 1–14–15

**Theoretical and numerical analysis on low-frequency sound transmission from façades into room**

Jinyu Liu, Naohisa Inoue, Tetsuya Sakuma

17:00–17:20 1–14–16

**Study on the design values of windows for high-rise residential buildings on street level based on Odeon simulation calculations**

Huaying Luo, Haitao Sun

17:20–17:40 1–14–17

**Sound insulation study of modular integrated construction**

H.T. Ng, C.K. Chan, C.W. Ng, I.W. Baeck

17:40–18:00 1–14–18

**Walls in office building ended against ceiling plate - measured sound insulation**

Bernt Mikal Larsen

18:00–18:20 1–14–19

**Machine learning applied to acoustic insulation analysis in residential buildings – Part 2: Vertical partitions**

José Carlos Giner, Bárbara Fengler, Raquel Rossatto Rocha, Yann Ardanaz de Sá, Murilo Soares

**14.0 Perception & Health: General**

Venue 15  
Rm 303

9:20–11:00 Chairs: Makoto Morinaga, Irene Van Kamp

9:20–9:40 1–15–1

**Transferring sound-related expertise into urban planning and design practice on a project-by-project basis**

Trond Maag, Sven Anderson, Arnthrudur Gísladóttir

9:40–10:00 1–15–2

**Exploring the public perception of sound of medical delivery drones in Scotland. An online listening test approach**

Adam Thomas, David Hiller, Ana Luisa Maldonado, Laura McLeod, Calum Sharp, James Woodcock

10:00–10:20 1–15–3

**Acoustic environment and its restorative potential in small urban green spaces**

Shan Shu, Jiaxin Tang, Xuechuan Geng

10:20–10:40 1–15–4

**Differences in speech intelligibility in noise under Ambisonics-based virtual acoustic environments with varying sound recording/rendering methods**

Yusuke Hioka, C.T. Justine Hui, Yunqi C. Zhang, Alyssa D'Souza, Kenneth Wu

10:40–11:00 1–15–5

**Performance of speech enhancement algorithms on the speech intelligibility of native Mandarin listeners immersed in English-speaking environment**

Yunqi C. Zhang, Yusuke Hioka, C.T. Justine Hui, Catherine I. Watson

## 14.1 Community Response to Noise

Venue 15  
Rm 303

11:20–12:20 Chairs: Takashi Yano, Dirk Schreckenberg

11:20–11:40 1–15–6

**Introducing ICBen's new socio-acoustic survey archive ISAR**

Mark Brink, Thu Lan Nguyen, Dirk Schreckenberg, Jördis Wothge

11:40–12:00 1–15–7

**Factors influencing the results of a social survey**

Truls Gjestland

12:00–12:20 1–15–8

**Infrasound – what it means for people and what role it plays for the acceptance of wind turbines**

Dirk Schreckenberg, Christin Belke, Sarah Leona Benz, Alexandra Mankarios, Corinna Melcher, Till Kühner

## 14.2 Noise & Health

Venue 15  
Rm 303

14:20–15:40 Chairs: Junta Tagusari, Calum Sharp

14:20–14:40 1–15–9

**The effects of ultrasound exposure with regard to the existing TVLs - a literature review**

Jan Radosz

14:40–15:00 1–15–10

**Evaluating the effect of masks on the vocal health and speech intelligibility of healthcare workers in various hospital unit**

Khairini Oktavi, Sugeng Joko Sarwono, Ni putu amanda Nitidara,  
Anugrah Sabdono Sudarsono, Nurul Hidayah, P.J. Lee dan S. Ziwei,  
Gladys Thenny Selintung

15:00–15:20 1–15–11

**A concept to evaluate activity-based acoustic settings in preschools for children aged three to six**

Karin Loh, Julia Seitz, Frederike Rust, Janina Fels

15:20–15:40 1–15–12

**Improving the sound environment and preventing risky practices for youth**

Valérie Rozec

## 14.1 Community Response to Noise

Venue 15  
Rm 303

16:00–18:00 Chairs: Takashi Yano, Dirk Schreckenberg

16:00–16:20 1–15–13

**Exposure response relationships of annoyance and vibration and noise from passenger and freight trains in Sweden - results from the EpiVib study**

Kerstin Persson Waye, Elise van Kempen, Mikael Ögren, Natalia Vincens

16:20–16:40 1–15–14

**Effects of step changes in railway noise exposure and earthquakes on sleep disturbance**

Takashi Morihara, Yasuhiro Murakami, Koji Shimoyama, Makoto Morinaga, Shigenori Yokoshima, Sohei Tsujimura, Yasuhiro Hiraguri, Takashi Yano

16:40–17:00 1–15–15

**Analysis of the community responses to road traffic noise using structural equation modeling —comparison of the covariance structure models for different housing types—**

Yui Komi, Shigenori Yokoshima, Sohei Tsujimura, Katsuya Yamauchi, Naoki Suda,  
Toru Yamazaki

17:00–17:20 1–15–16

**Development and validation of the aircraft noise related fairness inventory (fAIR-In)**

Dominik Hauptvogel, Tobias Rothmund, Dirk Schreckenberg, Marie-Therese Schmitz,  
Susanne Bartels

17:20–17:40 1–15–17

**Cumulative noise metric design considerations for the NASA Quesst community test campaign with the X-59 aircraft**

Aaron B. Vaughn, William J. Doebler, Andrew W. Christian

17:40–18:00 1–15–18

**Dose error impacts on a collection of realistic dose-response curves based on a NASA sonic boom community noise survey**

William J. Doebler, Kathryn M. Ballard, Aaron B. Vaughn, Peter A. Parker

**16.0 Soundscapes: General**

Venue 16  
Rm 304

9:20–11:00 Chairs: Koji Nagahata, Brigitte Schult–Fortkamp

9:20–9:40 1–16–1

**The concept of soundscape and intervention**

Brigitte Schulte-Fortkamp

9:40–10:00 1–16–2

**Soundscape: a lower level is not in any case a better sound**

Klaus Genuit

10:00–10:20 1–16–3

**Static recording apparatus for soundscape analysis in Macau**

Gerald Estadieu, Yin Yan Cheung, Pedro Duarte Pestana, Alvaro Barbosa

10:20–10:40 1–16–4

**Virtual reality reproducing outdoor audio-visual environments in nursing homes: exploring the restorative effects of soundscapes on the elderly**

Xiaojie Long, Nazli Che Din, Norhayati Mahyuddin, Yuliang Lei, Lin Liu

10:40–11:00 1–16–5

**Promotion of the understanding of sensory diversity through elementary school class activity**

Kanako Ueno, Toru Takahashi, Ayako Matsuo

**16.1 Soundscape Evaluations: Towards the Development of Standards**

Venue 16  
Rm 304

11:20–12:20 Chairs: Koji Nagahata, Andrew Mitchell

11:20–11:40 1–16–6

**Can the perceived affective quality scales evaluate the restorativeness of soundscapes?**

Koji Nagahata, Minori Saito, Taiki Funayama, Takumi Ishii

11:40–12:00 1–16–7

**Translating the soundscape attributes into Korean**

Tae-Hui Kim, Geon-Hee Kim, Joo-Young Hong

12:00–12:20 1–16–8

**Using agglomerative hierarchical cluster analysis to validate Turkish perceptual attributes emerged by a corpus-driven data**

Semiha Yilmazer, Ela Faslija, Enkela Alimadhi, Zekiye Şahin, Elif Mercan, Donya Dalirnaghadeh

14:20–15:40 Chairs: Koji Nagahata, Andrew Mitchell

14:20–14:40 1–16–9

**ARAUSv2: An expanded dataset and multimodal models of affective responses to augmented urban soundscapes**

Kenneth Ooi, Zhen-Ting Ong, Bhan Lam, Trevor Wong, Woon-Seng Gan, Karn N. Watcharasupat

14:40–15:00 1–16–10

**Development of soundscape evaluation method: an application of psychoacoustics perception scale (PPS)**

Kuen Wai Ma, Cheuk Ming Mak, Hai Ming Wong

15:00–15:20 1–16–11

**The characteristics of the acoustic environment and the restorative benefits of soundscape in interventional therapy rooms**

Yu Tian, Hui Xie, Kai Hu Xiao, Wang Yang Lv, Chang Liu

15:20–15:40 1–16–12

**Soundscape diversity of different public green spaces in cities**

Yi Xiang, Qi Meng, Xueyong Zhang

## 16.3 Indoor Soundscape Planning & Design

Venue 16  
Rm 304

16:00–18:00 Chairs: Takeshi Akita, Bhan Lam

16:00–16:20 1–16–13

**Masking effect of water sound on road and rail traffic noises in office soundscape**

Boya Yu, Yuying Chai

16:20–16:40 1–16–14

**Effect of added natural and artificial sounds on emotional response and indoor soundscape to residential noises**

Songmi Lee, Dokyeong Kim, Jongkwan Ryu

16:40–17:00 1–16–15

**A cross-cultural study on perception of residential noises using the online questionnaire**

Jiwei He, Takeshi Akita, Naoko Sano, Hanui Yu, Kotaroh Hirate

17:00–17:20 1–16–16

**Grounded theory approach on audio-visual perception of users in the restaurant environment**

Shomaila Fatima Syed, Semiha Yilmazer

17:20–17:40 1–16–17

**Bringing the tranquillity rating prediction tool (TRAPT) indoors – an extended investigation of the TRAPT relating to indoor maritime-themed environments**

James Oatley, Mark Swale

17:40–18:00 1–16–18

**Exploring the pediatric intensive care unit soundscape from health professionals' perspective**

Cemre Orhan, Semiha Yilmazer



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# **Program**

**August 22  
(Tuesday)**



8:20–9:20 K-3**The short story of urban acoustics**

Judicaël Picaut

Chair: Luigi Maffei

13:20–14:20 K-4**Challenges and opportunities of urban air mobility – How much noise is acceptable?**

Bianca I. Schuchardt

Chair: Kristian Jambrosic

**02.2 Vibro-acoustics Experiments**9:20–11:00 Chairs: Dupont Thomas, Masao Nagamatsu9:20–9:40 2-2-1**Preliminary study of acoustic black holes implemented in CT/MRI housings including validation experiments**

Niklas Thoma, Fabian Duvigneau, Daniel Juhre, Elmar Woschke

9:40–10:00 2-2-2**The acoustic method for diagnosing machines operating under variable conditions**

Paweł Pawlik

10:00–10:20 2-2-3**Decoding acoustic tone from vibrating paper using a smartphone**

Lokendra Singh, Arpan Gupta

10:20–10:40 2-2-4**Acoustic determination of the chatter and the cutting tool Planarity fault of an on-site milling**

Christopher Langrand, Antoine Albert, Maxime Masset

10:40–11:00 2-2-5**Design of Coupled Helmholtz resonator with rectangular enclosure to mitigate low frequency noise in recording booths**

Farbod Ghanouni

## 02.3 Application of Vibro-acoustics Methods to Noise Control

Venue 2  
Rm 101A

11:20–12:20 Chairs: Zenzo Yamaguchi, Adrien Pelat

11:20–11:40 2-2-6

### **Modeling of multi-material beams in analytical SEA**

Shu Sekiguchi, Ichiro Yamagiwa, Zenzo Yamaguchi, Toru Yamazaki

11:40–12:00 2-2-7

### **Damper arrangement to reduce structure born sound based on structural intensity**

Chihiro Matsumoto, Toru Yamazaki, Kai Kurihara, Takuto Kimura

12:00–12:20 2-2-8

### **Structural vibration damping by the use of poro-elastic layers: a summary**

Yutong Xue, J. Stuart Bolton

## 02.0 Vibro-acoustics: General

Venue 2  
Rm 101A

14:20–16:00 Chairs: Adrien Pelat, Zenzo Yamaguchi

14:20–14:40 2-2-9

### **Optimization of reinforcement layout for power flow response based on the guided weight method**

Xiaoyan Teng, Meng Zhou, Xudong Jiang

14:40–15:00 2-2-10

### **A subwavelength insulation panel for acoustic and aeroacoustic sources**

Damien Lecoq, Natacha Aberkane Gauthier, Clément Lagarrigue,  
Vicente Romero-García, Charles Pézerat, Miguel Molerón

15:00–15:20 2-2-11

### **Optimization of a microperforated panel backed by a panel resonator with multiresonators using particle swarm optimization**

Wai Yeen Yeang, Dunant Halim, Xiaosu Yi, Hao Chen

15:20–15:40 2-2-12

### **On the analysis of antiresonance frequencies for structural damage localization**

Lukas Outzen, Tobias P. Ring, Sabine C. Langer

15:40–16:00 2-2-13

### **Validation of a model on the coupling between circular membrane and Helmholtz resonator**

Munhum Park

16:20–18:20 Chairs: Hiromitsu Hamakawa, Hiroshi Yokoyama

16:20–16:40 2-2-14

### **Fluctuating aerodynamic noise radiated from longitudinal vortex in the flow field with turbulence**

Shigeru Ogawa, Takahiro Nomura, Yuji Yamada

16:40–17:00 2-2-15

### **Producing a high level harmonic acoustic pressure field with harmonic acoustic pneumatic source (HAPS): Experimental validation of the harmonic distortion reduction**

Pierre Grandjean, Philippe Micheau, Pierre-Olivier Lajoie

17:00–17:20 2-2-16

### **Visualization of a jet stream group influencing the noise increase phenomena in generated by airflow through a perforated metal plate**

Hiroki Matsumoto, Kanta Yokoyama

17:20–17:40 2-2-17

### **Prediction of aerodynamic broadband noise generated from a flat plate based on machine learning**

Soichi Sasaki, Kodai Tanaka, Daiki Aramaki

17:40–18:00 2-2-18

### **Study on airfoil tip with inflow turbulence and aerodynamic sound generated from it**

Shunya Uda, Yasumasa Suzuki, Lin Bai, Yuya Miki

18:00–18:20 2-2-19

### **Optimization of microphone array arrangements for wavenumber-frequency spectral measurements**

Katsuya Ogawa, Tsukasa Yoshinaga, Akiyoshi Iida

9:40–11:00 Chairs: Yoshinobu Kajikawa, Woon-Seng Gan

9:40–10:00 2-3-1

### **Adaptive analog and digital active noise control**

Yoav Vered, Stephen J. Elliott

10:00–10:20 2-3-2

### **Vibration control of a P1 mild hybrid powertrain**

Keychun Park, Sanghun Han, Younghoon Cho, Changwan Kim

10:20–10:40 2–3–3

**Investigation on lateral vibration transmission control of a shafthull system with a piezoelectric actuator support**

Yueyue Zhu, Xiling Xie, Zhiyi Zhang

10:40–11:00 2–3–4

**Vibration control of a multi-disc rotor system with active lateral bearings and disturbance estimation**

Liaoyuan Ran, Dunant Halim, Chung Ket Thein, Michael Galea

11:20–12:20 Chairs: Yoshinobu Kajikawa, Woon–Seng Gan

11:20–11:40 2–3–5

**Active noise control in the new century: The role and prospect of signal processing**

Dongyuan Shi, Bhan Lam, Woon-Seng Gan, Jordan Cheer, Stepehen J. Elliott

11:40–12:00 2–3–6

**Acoustic contrast control in two regions in car cabins**

Shuping Wang, Qiaoxi Zhu, Jiancheng Tao, Xiaojun Qiu

12:00–12:20 2–3–7

**Withdrawn**

### 05.3 New Applications of Active Control

Venue 3  
Rm 101B

14:20–15:40 Chairs: Kenta Iwai, Yoav Vered

14:20–14:40 2–3–8

**Active noise control for kitchen hood**

Julia Regala, Cheng-Yuan Chang, Mu-Chun Mei

14:40–15:00 2–3–9

**Coherence between error and acoustic reference microphones with two closely located noise sources**

Wandong Gu, Jiancheng Tao, Xiaojun Qiu

15:00–15:20 2–3–10

**A unidirectional secondary sound source for local active noise control in enclosures**

Ruoyan Chen, Jiancheng Tao, Xiaojun Qiu

15:20–15:40 2–3–11

**Using infrared radars for ear positioning in active noise control headrests**

Hang Li, Kai Chen, Jiancheng Tao, Xiaojun Qiu

16:00–17:40 Chairs: Kenta Iwai, Yoav Vered

16:00–16:20 2–3–12

**FxLMS and Lateralization: A combined strategy for crosstalk cancellation in bone conduction**

Irwansyah, Sho Otsuka, Seiji Nakagawa

16:20–16:40 2–3–13

**Application of active impulsive noise control (AINC) for excavator cabin using advanced convex-combined normalized step size algorithm and verification of robustness**

Donghyeon Lee, Narae Kim, Yeonjin Jang, Junhong Park

16:40–17:00 2–3–14

**Robustness optimization of active headrest with virtual sensing to head rotation**

Hongyu Chen, Yang Yu, Haishan Zou, Jing Lu

17:00–17:20 2–3–15

**Multi-channel active noise reduction system realizes the local area sound field control of the subway driver's cabin**

An Peng, Xiaojie Zhang, Hengliang Wu, Xiaohu Li, Ziyu Yin, Zongpeng Tong

17:20–17:40 2–3–16

**Variation of the secondary acoustic paths from loudspeakers at the seat shoulder in an automobile cabin**

Ziyi Yang, Youfan Wang, Jiancheng Tao

## 13.4 Low-frequency Sound

Venue 4  
Rm 102A

9:40–10:40 Chairs: Yukio Takahashi, Hiroshi Matsuda

9:40–10:00 2–4–1

**Psychological responses to amplitude-modulated low-frequency sound**

Hiroshi Matsuda, Nobuo Machida

10:00–10:20 2–4–2

**Experimental studies of the impact of amplitude modulation (AM) and tonality on the annoyance of wind turbine noise in the low frequency (LF) range**

Tadeusz Wszolek, Paweł Pawlik, Paweł Matecki, Maciej Kłaczyński, Dominik Mleczeko, Marcjanna Czapla, Bartłomiej Stępień

10:20–10:40 2–4–3

**Subjective evaluation on vibratory feeling to noises containing a low-frequency tonal component**

Miki Yonemura, Shinichi Sakamoto

11:00–12:20 Chairs: Yukio Takahashi, Hiroshi Matsuda

11:00–11:20 2–4–4

**Study of drone self-noise estimation for low frequency noise measurement by multicopter drone**

Toshiya Kitamura, Atsuya Onuki, Koki Inomata, Yoshinari Hayashi, Koji Nishio, Norio Oshima

11:20–11:40 2–4–5

**Wind noise estimation method in low-frequency sound measurement in windy outdoor environment**

Noboru Kamiakito, Masayuki Shimura, Toshikazu Osafune, Takashi Nomura, Hiroshi Hasebe, Hiroshi Iwabuki, Kimikazu Ikeya

11:40–12:00 2–4–6

**A study of measurements and countermeasures for low-frequency noise caused by expressway bridges**

Kimikazu Ikeya, Toshikazu Osafune, Hiroshi Iwabuki

12:00–12:20 2–4–7

**Active vibration control for window rattling caused by infrasound: Field experiment for one pair of sliding glass doors installed on the test building**

Keiichiro Iwanaga, Tetsuya Doi, Akira Omoto

## 10.1 Target Detection & Classification

Venue 4  
Rm 102A

14:20–16:00 Chairs: Tomonari Akamatsu, Andre Michel

14:20–14:40 2–4–8

**Development of stealth design systems for advanced submarine hull forms to reduce underwater radiated noise and target strength**

Suk-yoon Hong, Jee-hun Song, Sang-jae Yeo

14:40–15:00 2–4–9

**Vibration suppression of a hull section by shunted piezoelectric patches: Experiments**

Zhiwei Zheng, Qixiang Zhang, Xiuchang Huang, Hongxing Hua

15:00–15:20 2–4–10

**Enhance signal of underwater locator beacon by adaptive filter and simulation received signal**

Ching-Tang Hung, Chao-Jung Wu, Chiao-Ming Peng, Jian-Wu Lai, Li-Chang Chuang, Wen-Rong Yang, Chi-Fang Chen

15:20–15:40 2–4–11

**Estimation of seafloor burrow length and inclination using underwater ultrasound**

Teruki Fujimaru, Haruki Hirasawa, Hajime Tachiki, Takumi Asakura, Katsunori Mizuno, Koji Seike



15:40–16:00 2-4-12

**Underwater target material classification based on feature extraction of finite element simulated signal**

Yiting Wang, Ning Han

16:20–18:20 Chairs: Andre Michel, Tomonari Akamatsu

16:20–16:40 2-4-13

**Numerical analysis of underwater acoustics in the presence of complex flow**

Lishu Duan, Hanbo Jiang

16:40–17:00 2-4-14

**A comparison of the classification performance of shallow and deep convolutional neural networks in small active sonar dataset**

Geunhwan Kim, Youngsang Hwang, Sungjin Shin, Myoungin Shin, Jongkwon Choi, Keunhwa Lee, Juho Kim, Youngmin Choo

17:00–17:20 2-4-15

**An effective hybrid deep neural network for underwater acoustic target recognition**

Anqi Jin, Xiangyang Zeng, Menghui Lei

17:20–17:40 2-4-16

**Deep attention-based multi-task learning for underwater acoustic target recognition**

Menghui Lei, Xiangyang Zeng, Anqi Jin

17:40–18:00 2-4-17

**Line spectrum trajectory detection method of underwater acoustic signal based on particle filter**

Minjie Zhang, Xinwei Luo

18:00–18:20 2-4-18

**An improved DOA estimation method for vector hydrophone**

Wen Cao, Xinfang Zhao, Huanli Li, Yongheng Wang, Jinbo Liu

## 06.5 Road Traffic Noise Calculation Methods

Venue 5  
Rm 102B

9:20–10:40 Chairs: Tomoyuki Itiki, Simon J. Shilton

9:20–9:40 2-5-1

**Comparison of sound emission in ASJ RTN-Model 2018 and several European prediction models**

Yasuaki Okada, Koichi Yoshihisa

9:40–10:00 2-5-2

**Development of reference energy mean emission level models for traffic noise from cement concrete pavement in mid-sized cities in India**

Saurabh Upadhyay, Manoranjan Parida, Praveen Kumar, Brind Kumar

10:00–10:20 2–5–3

**Determination of road surface correction factors for CNOSSOS-EU in Ireland**

Simon Shilton, Bert Peeters, Wout Schwanen, Stephen Smyth, Stephen Byrne

10:20–10:40 2–5–4

**Road traffic noise correction coefficients associated with temperature. Case study and comparison with calculation methods**

David Montes González, Sánchez-Fernández, Manuel, Barrigón Morillas, Juan Miguel, Atansio-Moraga, Pedro, Rey-Gozaló, Guillermo, Vílchez-Gómez, Rosendo

11:00–12:20 Chairs: Tomoyuki Itiki, Simon J. Shilton

11:00–11:20 2–5–5

**Consideration on accuracy on road traffic noise prediction model “ASJ RTN-Model 2018” in power level and equivalent noise level**

Naoto Maeda, Takashi Okura, Hitoshi Kaneshige

11:20–11:40 2–5–6

**Employing the maximum likelihood fitting method in the principle of probability and statistics to continually apply the original FHWA road traffic noise prediction model**

Jiping Zhang

11:40–12:00 2–5–7

**Sound power level determination of roads in Tokyo using aerial photographs, machine learning, and ASJ RTN-Model 2018**

Xinyi Zhang, Wenrui Xu, Miki Yonemura, Shinichi Sakamoto

12:00–12:20 2–5–8

**Effect of embankment slope on road traffic noise propagation: numerical investigation and construction of correction formula for difference by slope angle**

Yosuke Yasuda, Seiya Nishimura, Yu Kamiya, Makoto Morinaga

## 07.2 Aircraft Exterior Noise

Venue 5  
Rm 102B

14:20–16:00 Chairs: Carsten Spehr, Takehisa Takaishi

14:20–14:40 2–5–9

**The importance of experimental airframe noise research**

Michael Pott-Pollenske

14:40–15:00 2–5–10

**Toward airframe noise reduction for passenger aircraft**

Kazuomi Yamamoto, Takehisa Takaishi, Mitsuhiro Murayama, Yasushi Ito

15:00–15:20 2–5–11

**Expert decision support system to improve the analysis of airframe noise measurements**

Carsten Spehr

15:20–15:40 2–5–12

**Application of accelerated H-matrix boundary element methods to predict exterior eVTOL acoustics**

Chadwyck T. Musser, Rabah Hadjit, Massimiliano Calloni, Weimin Thor, Taiki Tsukada

15:40–16:00 2–5–13

**Propeller influence on surface pressure fluctuation under boundary layer ingestion condition**

Leandro Alan Castelucci, Cornelis H. Venner

16:20–18:00 Chairs: Carsten Spehr, Takehisa Takaishi

16:20–16:40 2–5–14

**Acoustic measurement for resin-based acoustic liner on turbofan engine testbed**

Ryo Kagaya, Tsutomu Oishi, Shohei Yamanaka, Masahiro Hojo, Mitsumasa Makida, Keiichi Okai

16:40–17:00 2–5–15

**A framework to simulate and to auralize the sound emitted by aircraft engines**

Antoine Moreau, Andrej Prescher, Stephen Schade, Maikhanh Dang, Robert Jaron, Sébastien Guérin

17:00–17:20 2–5–16

**Outdoor engine test using acoustic liners combined with fine-perforated-film**

Yo Murata, Tatsuya Ishii, Shunji Enomoto, Hideshi Oinuma, Kenichiro Nagai, Junichi Oki, Gai Kubo, Hirofumi Daiguji

17:20–17:40 2–5–17

**Noise prediction of an open fan using acoustic analogy approaches**

Masakazu Sugiyama, Fabrice Falissard, Gabriel Reboul, Nassim Jaouani, Xavier Gloerfelt

17:40–18:00 2–5–18

**Aerodynamic performance test and flow visualization for reducing acoustic liner drag in grazing flow**

Junichi Oki, Tatsuya Ishii, Hideshi Oinuma, Shunji Enomoto, Kenichiro Nagai, Gai Kubo, Hitoshi Ishikawa, Nagayoshi Hiromitsu

**01.1 Computational Methods in Flow-induced Noise & Vibration**

Venue 6  
Rm 103

9:40–10:40 Chairs: Akiyoshi Iida, Siyang Zhong

9:40–10:00 2–6–1

**Evaluation of the aeroacoustic sources of a swirl diffuser**

Philipp Ostmann, Martin Kremer, Dirk Müller

10:00–10:20 2–6–2

**A theoretical study of self-soise generation in turbulent jets using one-dimensional turbulence and Lighthill's acoustic analogy**

Sparsh Sharma, Lorna Ayton, Marten Klein, Juan A. Medina Méndez

10:20–10:40 2–6–3

**Prediction of the wall pressure spectrum over a curved structure excited by a non-homogeneous turbulent boundary layer in water**

Nicolas Trafny, Gilles Serre

11:00–12:20 Chairs: Akiyoshi Iida, Siyang Zhong

11:00–11:20 2–6–4

**Low Mach number aeroacoustic computation of airfoils based on Pierce's wave equation**

Étienne Spieser, Xin Zhang

11:20–11:40 2–6–5

**Aeroacoustic analysis of a bass-reflex loudspeaker using LES: Validation of 2D and 3D numerical model with experiment**

Ryoya Tabata, Katsuya Uchida, Yuko Okada, Yoshikazu Honji, Kinya Takahashi

11:40–12:00 2–6–6

**Aeroacoustic simulation of transient vortex dynamics inside double-degree-of-freedom orifice-cavity structure subjected to high-intensity acoustic waves**

Xu Qiang, Peng Wang, Yingzheng Liu

12:00–12:20 2–6–7

**An improved artificial compressibility method for aeroacoustics at low Mach numbers**

Zhicheng Zhang, Yuhong Li, Étienne Spieser, Peng Zhou, Xin Zhang

14:20–15:40 Chairs: Siyang Zhong, Akiyoshi Iida

14:20–14:40 2–6–8

**On the use of a tailored fluid-fluid Green's function to predict scattering from two-phase fluid interfaces**

Louise Pacaut, Gilles Serre, Jean-François Mercier

14:40–15:00 2–6–9

**Wideband fast multipole boundary element method for flow-induced noise analysis based on Lighthill's equation**

Takayuki Masumoto, Masaaki Mori, Yosuke Yasuda, Naohisa Inoue, Tetsuya Sakuma

15:00–15:20 2–6–10

**Withdrawn**

15:20–15:40 2-6-11

**Sensitivity of compressor aerodynamic noise prediction to time setup of CFD simulations using hybrid CAA method**

Can Cao

16:00–17:40 Chairs: Siyang Zhong, Akiyoshi Iida

16:00–16:20 2-6-12

**Numerical prediction of noise generated from a box fan**

Yoshitaka Nakashima, Yuya Kitano, Thomas Deconinck, Viswesh Sujjur Balamraja, Yves Detandt

16:20–16:40 2-6-13

**Investigation on the comparison analysis of the characteristics between the Forward and Backward curved fan system and the Improvement on flow/noise performances by optimizing blade angles in clothes dryers**

Jinho Choi, Wonick Choi, Jinman Jang, Bosun Chung, Youngsoo Kim

16:40–17:00 2-6-14

**A numerical study of the duct geometry effects on the aerodynamics and aeroacoustics of ducted propellers**

Sinforiano Cantos, Han Wu, Zhida Ma, Peng Zhou, Xin Zhang, Siyang Zhong

17:00–17:20 2-6-15

**Acoustic radiation from an engine intake using an admittance multimodal method**

Bruno Mangin, Majd Daroukh, Gwénaél Gabard

17:20–17:40 2-6-16

**Numerical study on flow-induced vibration and radiated noise of tube bundle in a shell-and-tube heat exchanger**

Wang Han, Yipeng Cao, Chen Liu, Gongmin Liu

## 03.2 Spatial Capture & Reproduction

Venue 7  
Rm 104

9:40–11:00 Chairs: Yoichi Haneda, Shuichi Sakamoto

9:40–10:00 2-7-1

**Neural-network clustering for evaluating immersive sound fields**

Sungyoung Kim, Will Howie

10:00–10:20 2-7-2

**Spatial audio reproduction for studying second language speech perception in varying acoustic environments**

Yusuke Hioka, C.T. Justine Hui, Hinako Masuda, Catherine I. Watson, Eri Osawa, Takayuki Arai

10:20–10:40 2–7–3

**Further investigation of horizontal sound localization in noise**

Daocheng Chen, Dingding Yao, Jianjun Gu, Junfeng Li, Yonghong Yan

10:40–11:00 2–7–4

**Enhancing the recognition of speakers in different distances using voice features**

Chia-Hung Dylan Tsai, Michael Hu, Stone Cheng

**03.1 Microphone Array Techniques**

Venue 7  
Rm 104

11:20–12:20 Chairs: Akira Omoto, Yoshinori Takahashi

11:20–11:40 2–7–5

**Counting and localization of multiple unknown harmonic sound sources in entire 3D space using just five microphones**

Shikha Thakur, Sneha Singh

11:40–12:00 2–7–6

**Intelligent sniper localization technique using convolutional neural network**

Priyadarshini Dwivedi, Rakesh Reddy, Gyanajyoti Routray, Rajesh M. Hegde

12:00–12:20 2–7–7

**Direction-of-arrival estimation of impulse noise using MUSIC algorithm**

Takuro Asai, Kiyoshi Masuda

14:20–16:00 Chairs: Shuichi Sakamoto, Kenji Ishikawa

14:20–14:40 2–7–8

**Error analysis of the compact microphone array for sound source localization**

In-Jee Jung, Wan-Ho Cho, Jeong-Guon Ih

14:40–15:00 2–7–9

**Real-time sound field separation of multiple unsteady rotating loading sources**

Ying Xu, Xiao-Zheng Zhang, Yong-Bin Zhang, Chuan-Xing Bi

15:00–15:20 2–7–10

**Numerical simulation results of double nearfield acoustic holography method with extrapolation**

Masao Nagamatsu

15:20–15:40 2–7–11

**An adaptive multichannel speech dereverberation approach based on robust estimation**

Xiaojin Zeng, Hongsen He, Zhen Zhu

15:40–16:00 2–7–12

**Signal processing applications for sound field measurements using instantaneous array input**

Takahiro Iwami, Akira Omoto

16:20–18:20 Chairs: Wan-Ho Cho, Yusuke Ikeda

16:20–16:40 2-7-13

**Array configuration-agnostic personal voice activity detection based on spatial coherence**

Yicheng Hsu, Mingsian R. Bai

16:40–17:00 2-7-14

**Measurement system for harmonic source noise directivity definition, based on phase correlation in multimicrophone configuration**

Michał Kozupa, Robert Baranski, Tadeusz Wszótek, Paweł Pawlik

17:00–17:20 2-7-15

**Comparison of microphone array techniques and standardized methods for sound power estimation**

Marjorie Takai, Wookeun Song

17:20–17:40 2-7-16

**Designing of two-dimensional acoustic beamforming array using machine learning**

Sirawit Tripia, Worakrit Thida, Sorasak Danworaphong

17:40–18:00 2-7-17

**Influence of emitter's position in the field of view of the acoustic camera and ground reflection in sound source localization with beamforming**

Luca Fredianelli, Gregorio Pedrini, Marco Bernardini, Matteo Bolognese, Gaetano Licitra

18:00–18:20 2-7-18

**A study on the influence of reflective surfaces on sound source localization using distributed acoustic measurement equipment**

Ren Takeuchi, Itsuki Ikemi, Kazunori Harada, Akiko Sugahara, Yasuhiro Hiraguri

## 04.4 Sound Source Modeling

Venue 8  
Rm 105

9:20–11:00 Chairs: Stefan Bilbao, Takahiro Iwami

9:20–9:40 2-8-1

**Complex source distributions in wave-based virtual acoustics**

Stefan Bilbao

9:40–10:00 2-8-2

**Modeling source directivity by solving inverse problems**

Kohei Yatabe

10:00–10:20 2-8-3

**Modeling and reproduction of sound field by moving complex sound source**

Yo Sasaki

10:20–10:40 2–8–4

**Direct sound field estimation based on sound source modeling with sparse equivalent sources**

Izumi Tsunokuni, Haruka Matsuhashi, Yusuke Ikeda

10:40–11:00 2–8–5

**A study on constructing arbitrary directivity of sound sources by fitting the spherical harmonics coefficients**

Maki Kato, Takahiro Iwami, Akira Omoto

## 04.1 Room Acoustics Modeling & Simulation

Venue 8  
Rm 105

11:20–12:20 Chairs: Antoine Richard, Noriko Okamoto

11:20–11:40 2–8–6

**Investigation on measurement sound field of absorption coefficient in reverberation room by numerical simulation -Relationships between room shapes and measurement results -**

Reiji Tomiku, Noriko Okamoto, Toru Otsuru, Arata Yoshida, Yuto Kinjyo, Shoma Suzuki

11:40–12:00 2–8–7

**A finite element study of absorption coefficient measurement at low frequencies**

Albert G. Prinn

12:00–12:20 2–8–8

**Reverberant sound field analysis of a rectangular room by modal synthesis method**

Yasushi Takano, Ryouhei Hanayama, Yusuke Makino

## 04.2 Vibration Analysis

Venue 8  
Rm 105

14:20–15:40 Chairs: Tomohiro Oda, Seung-Hyun Lee

14:20–14:40 2–8–9

**Influence of ballast heterogeneity on railway induced vibrations and identification of heterogeneous properties of a ballast layer**

Patryk Dec, Régis Cottureau

14:40–15:00 2–8–10

**Numerical and experimental investigation of a high-static-low-dynamic stiffness vibration isolator with tunable stiffness and damping**

Mehran Shahraeeni, Vladislav Sorokin, Brian Mace, Sinniah Ilanko

15:00–15:20 2–8–11

**Free vibration analysis of corrugated plate based on improved Fourier series method**

Hongbo Meng, Runze Zhang, Shanyue Zhang, Yipeng Cao



15:20–15:40 2–8–12

**Effects of nonlinear oil film force of main bearing on the vibration characteristics of diesel engine**

Yipeng Cao, Guodong Yang, Zhiyao Feng

16:00–18:00 Chairs: Tomohiro Oda, Seung-Hyun Lee

16:00–16:20 2–8–13

**A model-based approach for gear train whine noise reduction by mesh phasing modification**

Mattia Battarra, Francesco Pizzolante, Alberto Frulli, Stefano Meleti, Emiliano Mucchi

16:20–16:40 2–8–14

**NVH numerical analysis of the mounting layout of hydrostatic transmissions in continuously variable transmissions**

Mattia Battarra, Davide Guerra, Filippo Bonacini, Stefano Meleti, Emiliano Mucchi

16:40–17:00 2–8–15

**Simulation and experimental study on impact dynamic characteristics of the spline rotor system**

Yuxiang Song, Xinxing Ma, Zhenguo Zhang

17:00–17:20 2–8–16

**Uncertainty quantification and probabilistic reliability analysis for the self-excited vibration of a spline-shafting system**

Xinxing Ma, Shizhang Huang, Yuxiang Song, Zhenguo Zhang

17:20–17:40 2–8–17

**Vibration analysis of a six-degree-of-freedom rotor supported on two different deep groove ball bearings with waviness on races**

Zeli Yang, Shuguang Zuo

17:40–18:00 2–8–18

**Study on the influence of transfer floor on dynamic response of building structure under subway-induced vibrations**

Jing Zhang, Yubin Wu, Bideng Liu, Ruixiang Song, Qiong Wu

**06.2 Railway Noise**

Venue 9  
Rm 201A

9:40–11:00 Chairs: Takeshi Kurita, Scott R. Noel

9:40–10:00 2–9–1

**Determination of railway noise contribution based on noise source identification and acoustic transfer function**

Toki Uda, Tsugutoshi Kawaguchi, Yukie Ogata

10:00–10:20 2–9–2

**Recent research advances on high-speed railway noise**

Xiaozhen Sheng, Yuan He

10:20–10:40 2–9–3

**Anechoic wind tunnel tests for high-speed train bogie aerodynamic noise characterization**

Eduardo Latorre Iglesias, Tatsuya Tonai, Toki Uda, Jorge Muñoz Paniagua

10:40–11:00 2–9–4

**Development of the sound barriers for speeding up the Joetsu Shinkansen**

Masao Myouken, Takashi Suzuki, Takashi Kashima, Yuji Suzuki, Kenichi Kuribayasi

11:20–12:20 Chairs: Takeshi Sueki, Scott R. Noel

11:20–11:40 2–9–5

**Flanging, squeal and corrugation-induced noise: Insights from recent measurement campaigns at interconnected tight curves**

Priyadarshi Pandey, Radoslaw Kochanowski, Evan Milton

11:40–12:00 2–9–6

**Auralization and visualization for infrastructure planning in the joint project “EAV-Infra”**

Christoph Ende, Thomas Koch, Thorben Kron, Laura Höhle, Jens Bartnitzek, Anton Schlesinger, Jonas Egeler, Christine Huth, Ralf Böhme, Benjamin Schlüter

12:00–12:20 2–9–7

**City-train noise reduction in urban area by using acoustic mini-screens made of metamaterials**

Gino Iannace, Giovanni Amadasi, Amelia Trematerra, Antonella Bevilacqua

14:20–15:40 Chairs: Masaaki Hiroe, Scott R. Noel

14:20–14:40 2–9–8

**Geometrical influence of structures in close proximity to a railway wheel on its sound radiation**

Xianying Zhang, Xubo Bai, David Thompson, Giacomo Squicciarini

14:40–15:00 2–9–9

**Development of analytical model for a wheel and rail vibration associated with curve squeal noise of railways**

Takeshi Sueki, Yasuhiro Shimizu

15:00–15:20 2–9–10

**A 2.5D hybrid SBM-MFS methodology for the evaluation of free-field vibrations induced by underground railway infrastructures**

Hassan Liravi, Robert Arcos, Arnau Clot, Luís Godinho, Kenny F. Conto

15:20–15:40 2-9-11

**Study on the noise generated in curved sections of railways**

Yasuhiro Shimizu, Takeshi Sueki, Takuma Nitta

**06.6 Road Vibrations: Predictions, Measurements & Mitigation Measures**

Venue 9  
Rm 201A

16:00–18:00 Chairs: Masayuki Shimura, Yasuyuki Sano

16:00–16:20 2-9-12

**Development of a method for predicting traffic vibration transmitted from viaducts**

Saiji Fukada, Tatsuaki Mori, Hiroshi Iwabuki, Yasuyuki Sano, Yasunao Matsumoto, Noboru Kamiakito, Akito Yabe

16:20–16:40 2-9-13

**Influence of truck platooning with various vehicular gaps on bridge vibration**

Saiji Fukada, Tatsuaki Mori, Hiroshi Iwabuki, Yasuyuki Sano, Yasunao Matsumoto, Noboru Kamiakito, Akito Yabe

16:40–17:00 2-9-14

**A study of 3D FEM traffic vibration simulator and comparison with INCE/J RTV-Model 2003**

Akito Yabe, Saiji Fuakda

17:00–17:20 2-9-15

**A study on soil propagation mechanism of traffic-induced vibration based on numerical analysis and theoretical approach**

Toru Sekiguchi, Riei Ishida

17:20–17:40 2-9-16

**Study of simple prediction method for road traffic vibration from viaducts**

Noboru Kamiakito, Masayuki Shimura, Yasuyuki Sano, Tatsuaki Mori

17:40–18:00 2-9-17

**Actual measurement on vibration propagation of embankment and cut road**

Yasuyuki Sano

**07.4 Airport Noise Modeling & Mapping**

Venue 10  
Rm 201B

9:20–10:40 Chairs: Jacqueline Huynh, Takatoshi Yokota

9:20–9:40 2-10-1

**Impact of aircraft deviations from the standard trajectories in the vertical and horizontal planes on generated noise**

Igor Ardashev

9:40–10:00 2–10–2

**Noise impact of changing flight routes: from planning to reality**

Karina Einicke, John Kennedy

10:00–10:20 2–10–3

**Component-wise regression sound source models for the aircraft noise prediction framework J-FRAIN**

Takehisa Takaishi, Tomohiro Kobayashi, Yuho Ikuta, Taro Imamura

10:20–10:40 2–10–4

**Verification and application of the aircraft noise simulation framework J-FRAIN**

Tomohiro Kobayashi, Takatoshi Yokota, Koichi Makino, Yuho Ikuta, Taro Imamura, Takehisa Takaishi, Yasuaki Kawase

11:00–12:20 Chairs: Jacqueline Huynh, Takatoshi Yokota

11:00–11:20 2–10–5

**Study on noise calculation method considering gear and flap conditions during aircraft landing**

Toshiyasu Nakazawa, Naoaki Shinohara, Masayuki Sugawara, Kazuyuki Hanaka, Tomohiro Kobayashi, Ryo Yamamoto

11:20–11:40 2–10–6

**Practical calculation methods for ground noise correction factors in airport noise prediction model**

Masayuki Sugawara, Toshiyasu Nakazawa, Naoaki Shinohara, Kazuyuki Hanaka, Takatoshi Yokota

11:40–12:00 2–10–7

**Comparison of data-based and modeled-based analysis of aircraft departure noise using noise monitor network recordings**

Jacqueline Huynh, Melissa Lepe, Trinity Lee, Philip Hood, R. John Hansman

12:00–12:20 2–10–8

**The potential for spatiotemporal population data sets for aviation noise studies**

Charles M. Murphy, Stephen Augustine, Donna G. Warren

**07.5 Advanced Monitoring & Measurement**

Venue 10  
Rm 201B

14:20–16:00 Chairs: Ichiro Yamada, Ben Sharp

14:20–14:40 2–10–9

**Indoor-outdoor method for measuring building noise reduction**

Ben H. Sharp, J. Eric Cox, Hua He

14:40–15:00 2–10–10

**Field acoustical measurements for sound insulation residences against aircraft noise**

Satoshi Sugie, Emi Toyoda

15:00–15:20 2–10–11

**Practical noise measurement method for confirmation of effectiveness of sound insulation in residential houses around airports**

Koji Shimoyama, Naoaki Shinohara, Toshiyasu Nakazawa, Kazuyuki Hanaka

15:20–15:40 2–10–12

**Analysis of the short-term noise situation around Bangkok International Airport prior to the second phase of airport expansion begins**

Krittika Lertsawat, Alongkorn Pimpin, Pornnapas Huntrakool, Worasai Sonjai

15:40–16:00 2–10–13

**A study examining the long-term effects of aircraft noise on the surrounding residents before the opening of Long Thanh Airport**

Thu Lan Nguyen, Tran Thi Hong Nhung Nguyen, Bach Lien Trieu, Makoto Morinaga, Takashi Morihara, Yasuhiro Hiraguri, Takashi Yano, Yosiaki Sasazawa

16:20–18:20 Chairs: Ichiro Yamada, Ben Sharp

16:20–16:40 2–10–14

**Integrated aircraft noise data processing at Narita International Airport**

Kentaro Kondo, Yasufumi Nojiri, Osamu Hasegawa, Naoaki Shinohara

16:40–17:00 2–10–15

**A review of recent situation and technical issues of aircraft noise monitoring**

Koichi Makino, Naoaki Shinohara

17:00–17:20 2–10–16

**An experimental investigation of ground board mounted microphones for outdoor noise measurement**

Michael J. Kingan, Sung Tyaek Go, Andrew Hall, Gian Schmid

17:20–17:40 2–10–17

**Determining disturbance sounds in aircraft sound events using a CNN-based method**

Tsumugi Nakayama, Taisuke Naito, Shunsuke Kouda, Takatoshi Yokota

17:40–18:00 2–10–18

**Ecoflight Monitoring – new aircraft noise monitoring system with neural network-based data filtering**

Michael Kartyshev

18:00–18:20 2–10–19

**Application of 3D acoustic scene analysis using sound arrival direction at Noi Bai International Airport in Vietnam**

Keishi Sakoda, Ichiro Yamada, Thu Lan Nguyen, Thi Thanh Vu

9:20–10:40 Chairs: Ercan Altinsoy, Masayuki Takada

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9:20–9:40 2–11–1

**Tire-road noise assessment**

Takeo Hashimoto, Shigeo Hatano

9:40–10:00 2–11–2

**Sound improvement emitted from copy machines**

Takeo Hashimoto, Shigeo Hatano

10:00–10:20 2–11–3

**Quantification of sound quality for lawnmower radiated noise considering listening conditions**

Junji Yoshida, Motoki Terada, Gaku Naoe, Mai Ohba

10:20–10:40 2–11–4

**Auditory impression of amplitude-modulated vehicle horn sounds and their detectability in noisy environment**

Masayuki Takada, Kanji Goto

11:00–12:20 Chairs: Ercan Altinsoy, Masayuki Takada

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11:00–11:20 2–11–5

**Factor affecting dynamic feeling of vehicle sound related to firing-order component and its effect**

Dongkyu Lew, Suho Cha, Sung-hwan Shin

11:20–11:40 2–11–6

**Designing the rotary switch operation feeling based on cross-modal correspondences between tactile and auditory sensations**

Toru Miyairi, Hideki Sakamoto, Hisato Shimomura, Takashi Otomo, Takeshi Toi

11:40–12:00 2–11–7

**Sound quality characteristics of reciprocating hermetic refrigeration compressors**

Nuri Onur Çatak, Ergin Arslan

12:00–12:20 2–11–8

**Effect of physical characteristics of strings on the instrumental sound of violin**

Yoshito Kakegawa, Takumi Asakura

14:20–15:40 Chairs: Koji Kato, Zhengqing Liu

14:20–14:40 2–11–9

**Research on the optimal excitation threshold interval of targeted energy transfer for piezoelectric nonlinear energy sink**

Jianwang Shao, Huihong Zhao, Qimeng Luo, Bingxin Wu, Xian Wu

14:40–15:00 2–11–10

**Influence of parameters of a piezoelectric nonlinear energy sink on targeted energy transfer characteristic**

Jianwang Shao, Huihong Zhao, Qimeng Luo, Bingxin Wu, Xian Wu, Peng Xing, Dongxiao Meng

15:00–15:20 2–11–11

**Design of full vehicle PBNR based on side windows with embedded acoustic black holes**

Xian Wu, Shengjie Qin, Zhiwei Zhu, Mingyang Liu, Jianwang Shao

15:20–15:40 2–11–12

**Acoustic performance of a multi-layer vehicle interior trim sound-absorbing material**

Zhengqing Liu, Jiangmei Liang, Yujun Zhao, Dawei Gu, Mohammad Fard, John Laurence Davy

16:00–18:20 Chairs: Ercan Altinsoy, Masayuki Takada

16:00–16:20 2–11–13

**Torque dependent behavior of the vehicle background noise and its influence on masking thresholds in electric vehicles**

Victor Abbink, David Landes, Ercan Altinsoy

16:20–16:40 2–11–14

**Indonesian users' active sound design preference for armored electric SUV interior**

Timothy Nathaniel Gunawan, Joko Sarwono, Ni Putu Amanda Nitidara, Anugrah Sabdono Sudarsono

16:40–17:00 2–11–15

**Exploring the potential of virtual environment for electric vehicle: Study case and sound quality performance**

Aisha Asta Tabsyira, Joko Sarwono, Ni Putu Amanda Nitidara, Anugrah Sabdono Sudarsono

17:00–17:20 2–11–16

**Psychological evaluation of auditory warning signal for train horn**

Ki-Hong Kim

17:20–17:40 2–11–17

**Shin-sound quality evaluation: Image recognition AI for sound quality evaluation**

Norio Kubo

17:40–18:00 2–11–18

**SQAT: a MATLAB-based toolbox for quantitative sound quality analysis**

Gil Felix Greco, Roberto Merino-Martínez, Alejandro Osses, Sabine C. Langer

18:00–18:20 2–11–19

**Motor and bearing multi-fault diagnosis with sound quality metrics**

Rismaya Kumar Mishra, Tauheed Mian, S. Fatima, A.R. Mohanty, B.K. Panigrahi

## 13.2 Smart Cities & Noise Monitoring

Venue 12  
Rm 301A

9:20–11:00 Chairs: Yoshihiro Shirahashi, Douglas Manvell

9:20–9:40 2–12–1

**Integration of smart city planning in noise assessment and its benefits**

May Han Grace Kwok, Ka Hou Karl Ho, Hang Yi Lam, Yi Hang Cathy Man,  
Kin Man Raymond Wong

9:40–10:00 2–12–2

**Autonomous monitoring of traffic, rail, and industrial noise using acoustic vector beamformers based on 3D MEMS accelerometers**

Jim Waite, David Dall'Osto, Callum McCubbin

10:00–10:20 2–12–3

**Automatic detection of source direction and exclusion of irrelevant sounds in unattended noise monitoring systems**

Daniela Toledo Helboe, Erlend Fasting

10:20–10:40 2–12–4

**AI-technology for efficient noise monitoring and analysis in complex urban soundscapes**

Karl Henrik Ejdfors

10:40–11:00 2–12–5

**A study on source separation of traffic vehicle noise using deep learnin**

ManYong Jeong, Toru Yamazaki, Kai Kurihara, Yoshihiro Shirahashi

11:20–12:20 Chairs: Yoshihiro Shirahashi, Douglas Manvell

11:20–11:40 2–12–6

**AI-based method for determining vehicles with illegal muffler from pass-by noise**

Hiroyuki Houzu



11:40–12:00 2–12–7

**Objective evaluation of voice quality by intermittent recording of sound on English voice**

Satoki Ogiso, Takashi Okuma

12:00–12:20 2–12–8

**Exploring deep Learning architectures for urban sound classification**

Marcel Borin, Bruno Masiero, Carolina Monteiro

**08.0 Vehicle Noise & Vibration: General**

Venue 12  
Rm 301A

14:20–16:00 Chairs: Fumihiko Kosaka, Takashi Yamamoto

14:20–14:40 2–12–9

**Sensor misalignment correction for virtual point transformation**

Jie Zhang, Theo Geluk

14:40–15:00 2–12–10

**Simulation of aeroacoustic pressure on a vehicle glass with turbulent inflow**

Masashi Miyazawa

15:00–15:20 2–12–11

**Aeroacoustic measurements of a contra-rotating UAV vehicle**

Lourenco Tercio Lima Pereira, Brian Puroja, Riccardo Zamponi, Ilaria Rosa, Daniele Ragni

15:20–15:40 2–12–12

**Assessment of a wind-tunnel test-bed for drone aeroacoustics in simulated flight conditions**

Ilaria Rosa, Brian Puroja, Lourenco Tercio Lima Pereira, Riccardo Zamponi, Daniele Ragni, Daniele Fiscaletti

15:40–16:00 2–12–13

**Research on sound field reproduction using a frequency domain feedforward adaptive transfer function method**

Zhe Zhang, Zihong Ling, Xiao Lv, Chenlu Shi

16:20–18:20 Chairs: Takashi Yamamoto, Jinhui Xu

16:20–16:40 2–12–14

**Effects of vehicle vibration on driver alertness: a pilot study**

Jinhui Xu, Neng Zhang, Stephen R. Robinson, John L. Davy, Mohammad Fard

16:40–17:00 2–12–15

**Exploring integrated seating structures in fully autonomous vehicles from an NVH perspective**

Shaun Whimpey, Bernard Rolfe, Kazem Ghabraie, Mohammad Fard

17:00–17:20 2–12–16

**Experimental and numerical investigation of the damping performance of metal additively manufactured particle damper**

Honghu Guo, Akihiro Takezawa, Kazuo Ichikawa, Hiroyuki Sakai

17:20–17:40 2–12–17

**Model optimization in system equivalent model mixing using analytical modal analysis**

Jeongmin Nam, Yeonjune Kang, Sangyoung Park, Injeong Choi

17:40–18:00 2–12–18

**Input force contribution separation method for utilizing blocked force and operational TPA**

Yuto Morita, Junji Yoshida

18:00–18:20 2–12–19

**Vibration and noise analysis of a vehicle equipped with magneto rheological damper**

Anand Pratap Singh, Manoj Paul, Ravindra Brammajyosula

## 12.6 Sound Insulation of Wooden Buildings

Venue 13  
Rm 301B

9:20–10:40 Chairs: Jeffrey Mahn, Manabu Tanaka

9:20–9:40 2–13–1

**Experimental study on reduction of floor impact sound in wooden buildings**

Hikari Tanaka, Ryu Tomitaka, Kiyoshi Masuda, Tomotaka Hiramatsu, Yutaka Kojima

9:40–10:00 2–13–2

**Study on heavy weight impact sound insulation of CLT floor slab and reduction performance with floor structure**

Hyo-jin Lee, Sang-joon Lee, Yeon-su Ha, Kwang-mo Kim

10:00–10:20 2–13–3

**Case study of sound insulation performance of a first pure timber 3-story elementary school in Japan**

Atsuo Hiramitsu, Hisashi Kubo, Masaki Muraoka

10:20–10:40 2–13–4

**Performances of low frequency impact sound in wooden buildings**

Klas Hagberg, Delphine Bard

11:00–12:20 Chairs: Jean-Luc Kouyoumji, Klas Hagberg

11:00–11:20 2–13–5

**Development of a dry-type double floor with high vibration isolation for improvement of floor impact sound insulation performance on CLT buildings**

Shinya Hyodo, Yu Yamashita, Masahito Kobayashi, Makoto Morinaga, Yosuke Yasuda

11:20–11:40 2–13–6

**Vibration reduction indices for junctions between cross-laminated timber floors and lightweight timber framed walls**

Jeffrey Mahn, Markus Müller-Trapet, Sabrina Skoda, Iara Batista da Cunha

11:40–12:00 2–13–7

**Current performance of floor impact sound insulation in wooden apartment buildings in Hokkaido**

Tomohito Hirota

12:00–12:20 2–13–8

**Acoustic prediction and testing for “Basajaun” EU Project demo building using neural network, prediction for innovative wooden partition wall with composites and bio-based insulation**

Jean-Luc Kouyoumji, Delphine Bard, Mohamad Bader Eddin, Sylvain Ménard

**11.1 Acoustic Metamaterials**

Venue 13  
Rm 301B

14:20–16:00 Chairs: Naohisa Inoue, Yuki Noguchi

14:20–14:40 2–13–9

**Eigenvalue analysis and impact response analysis for T-shaped structures with new acoustic black hole including residual thickness supported by nonlinear concentrated springs**

Takao Yamaguchi, Tomohiro Tanaka, Ryoichi Fujinuma, Shinichi Maruyama, Chihiro Kamio

14:40–15:00 2–13–10

**Inertial amplification plates for low-frequency sound and vibration reduction**

Chenyang Xi, Yongzhen Mi, Xiang YU

15:00–15:20 2–13–11

**Anomalous refraction of acoustic waves using double layered acoustic grating**

Liangfen Du, Zheng Fan

15:20–15:40 2–13–12

**Reflected wave manipulation by aeroacoustic metasurfaces in sheared grazing flows**

Renhao Qu, Jingwen Guo, Yi Fang, Wei Yi, Xin Zhang

15:40–16:00 2–13–13

**Loss-induced multiple modal coalescences in an acoustic ring cavity**

Tuo Liu, Tongyang Shi

16:20–18:20 Chairs: Yuki Noguchi, Naohisa Inoue

16:20–16:40 2–13–14

**A lightweight and transparent acoustic metamaterial sheet with designed structures for sound insulation applications**

Masanari Nakayama, Takeshi Matsuoka, Yuya Saito, Naoyuki Uchida, Takahiro Komamura, Haruki Koshitouge, Shuichi Akasaka, Shogo Koga

16:40–17:00 2–13–15

**Development of acoustic metamaterial sheets with two-dimensional array of hollow local resonators**

Takahiro Komamura, Kazuma Inoue, Takeshi Matsuoka, Yuya Saito, Naoyuki Uchida, Masanari Nakayama, Shuichi Akasaka, Shogo Koga

17:00–17:20 2–13–16

**Combination of a 3D-printed microperforated panel and a Helmholtz resonators array for low-frequency sound absorption**

Eduardo Latorre Iglesias, Sergio Martín Heredero, Henar Redondo Martín, David Fuentes Bernalte, Marta Gil-Barba, Francisco Aznar-Ballesta

17:20–17:40 2–13–17

**Movement tracking using asymmetric impedance meta-surface based on Helmholtz resonator**

Jaehyeon Park, Jedo Kim

17:40–18:00 2–13–18

**Level set-based topology optimization for programmable acoustic structures**

Yuki Noguchi, Takayuki Yamada

18:00–18:20 2–13–19

**Free-layer damping influence on the evanescent wave in a strip containing periodic acoustic black holes**

Bing Han, Hongli Ji, Jinhao Qiu

## 12.9 Acoustics in Indoor Spaces

Venue 14  
Rm 302

9:20–10:40 Chairs: Toshiki Hanyu, Ning Xiang

9:20–9:40 2–14–1

**Diffusion equation-based modelling of reverberation chambers for sound absorption measurements**

Ning Xiang, Juan Miguel Navarro Ruiz, Jiahua Zhang, Mélanie Nolan

9:40–10:00 2–14–2

**Mathematical model of reverberation decay in a rectangular room with uneven distribution of absorption**

Toshiki Hanyu

10:00–10:20 2–14–3

**A diffuseness of a sound field in the domains of spherical harmonics and plane waves**

Tatsuhiko Tanaka, Makoto Otani

10:20–10:40 2–14–4

**Estimating the characteristic vibrations of a sound field in a room using coefficient of variation in the power spectrum of a decay-cancelled impulse response**

Ryoichi Suzuki, Kazuma Hoshi, Toshiki Hanyu

11:00–11:40 Chairs: Toshiki Hanyu, Ning Xiang

11:00–11:20 2–14–5

**Acoustics of a Sitzprobe rehearsal**

Stephen Dance

11:20–11:40 2–14–6

**Optimizing the shapes of concert halls through parametric design**

Yen-Chieh Yu, Yaw-Shyan Tsay

## 12.2 Impact & Structure-borne Sound in Buildings

Venue 14  
Rm 302

11:40–12:20 Chairs: Berndt Zeitler, Atsuo Hiramitsu

11:40–12:00 2–14–7

**Assessing the potential to use structure-borne sound to detect survivors in collapsed buildings**

Carl Hopkins, Marios Filippoupolitis

12:00–12:20 2–14–8

**Noise from gym in apartments above - measured levels from deadweight lifting**

Bernt Mikal Larsen

14:20–16:00 Chairs: Berndt Zeitler, Atsuo Hiramitsu

14:20–14:40 2–14–9

**Study on indoor vibration and secondary radiated noise of rail-piercing buildings**

Qiong Wu, Yubin Wu, Bideng Liu, Ximing Zhang, Jing Zhang, Ruixiang Song

14:40–15:00 2–14–10

**Assessing the low-frequency measurement procedure for the measurement of impact sound insulation using the rubber ball**

Susumu Hirakawa, Carl Hopkins

15:00–15:20 2–14–11

**Verification on prediction method of floor impact sound using vibro-acoustic coupling effect**

Suhong Kim, Jaeseung Hwang, Jongkwan Ryu

15:20–15:40 2–14–12

**Classification of the location of floor impact noise using AI model based on temporal, spectral, and spatial features in apartment building**

Jeong Hun Kim, Jong Kwan Ryu

15:40–16:00 2–14–13

**Maximum Fast time-weighted levels – when can a transient be seen as a Dirac impulse?**

Berndt Zeitler, Christoph Hoeller, Steffi Reinhold

16:20–18:20 Chairs: Berndt Zeitler, Atsuo Hiramitsu

16:20–16:40 2–14–14

**Experimental and numerical study on transfer force characteristics and sound pressure in air layer of dry-type double floor system**

Da Cao, Yu Aida, Naohisa Inoue, Tetsuya Sakuma

16:40–17:00 2–14–15

**Comparison in sound energy and spatial properties between direct and flanking transmitted floor impact sound in apartment house**

Chunwon Eom, Jongkwan Ryu

17:00–17:20 2–14–16

**Study on compatibility of reduction transmitted impact sound of dry-type floating floor due to car-tire source and rubber ball source**

Ryuta Tomita

17:20–17:40 2–14–17

**Relationship between non-destructive inspection and heavy-weight floor impact noises in a box-type test building**

Yong-Hee Kim, Jun-Oh Yeon, Soon-Seong Moon, Seong-Hoon Kee, Jung-Bin Im

17:40–18:00 2–14–18

**Heavy-weight floor impact sound in the state of coupled vibration of floor slab and girder of a pure framed structure**

Tomoaki Uemura, Norihisa Hashimoto, Masatoshi Harada

18:00–18:20 2–14–19

**Floor vibration reduction using damping pad and composed of metal recycling materials**

Wanseung Kim, Donghyeon Lee, Narae Kim, Junhong Park

9:20–10:40 Chairs: Takeshi Nakaichi, Jenny Selander

9:20–9:40 2–15–1

**Sound transmission through reconstructed middle ear using a full-scale model experiment**

Takuma Ichino, Tomoki Sakurai, Ryuya Ito, Yuta Kurashina, Motoki Hirabayashi, Sho Kurihara, Takumi Asakura

9:40–10:00 2–15–2

**Enhanced finite-element model and acoustic test fixture to assess the objective occlusion effect induced by earplugs under bone-conducted stimulation**

Franck Sgard, Huiyang Xu, Kevin Carillo, Eric Wagnac, Jacques De Guise

10:00–10:20 2–15–3

**Development of the ear insertion-type noise dosimeter with hearing protection**

Aoi Takeda, Takeshi Nakaichi, Nobuyuki Shibata

10:20–10:40 2–15–4

**Overview of the acoustics and psychoacoustics of reverse alarms installed on moving vehicles**

Hugues Nélisse, Christian Giguère, Chantal Laroche, Véronique Vaillancourt, Jérôme Boutin

11:00–12:20 Chairs: Sonoko Kuwano, Tomomi Yamada

11:00–11:20 2–15–5

**Psychophysics based on sensation level of older adults by self-experiments at home: A case study**

Sonoko Kuwano, Seiichiro Namba, Jiro Kaku, Ichiro Yamada

11:20–11:40 2–15–6

**Combining online aural experimentation and physical analysis**

Koji Ishida, Hirohiko Furukawa, Hirochika Suzuki, Takahiro Kusumi, Risa Takahashi, Daisuke Karibe, Yasuhiro Goto

11:40–12:00 2–15–7

**Sound perception in virtual environments**

Asli Zeynep Dogan, Arzu Gonenc Sorguc

12:00–12:20 2–15–8

**Loudness of double impulsive sounds and its relation to temporal masking curves**

Takeo Hashimoto, Shigeko Hatano

14:20–16:00 Chairs: Takeo Hashimoto, Roland Sottek

14:20–14:40 2–15–9

**Planning infrastructure projects by means of psychoacoustic quantities in the joint project “EAV-Infra”**

Jonas Egeler, Christine Huth, Anton Schlesinger, Christoph Ende, Thomas Koch, Jens Bartnitzek, Laura Höhle, Ralf Böhme, Benjamin Schlüter

14:40–15:00 2–15–10

**Experimental study on the effect of visual information of source image to evaluate the annoyance of aircraft noise**

Asahi Akiyama, Miki Yonemura, Shinichi Sakamoto

15:00–15:20 2–15–11

**Optimized tools and process for a better prediction of future aircraft noise perception**

Isabelle Boulet, Antoine Minard, Nathalie Pellegrin, Patrick Boussard

15:20–15:40 2–15–12

**Subjective evaluation test on the effect of tonal components on broadband noise**

Miki Yonemura, Shinichi Sakamoto

15:40–16:00 2–15–13

**Multidimensional psychoacoustic grading method for road traffic noise**

Kuen Wai Ma, Cheuk Ming Mak, Fu Lai Korris Chung, Hai Ming Wong

16:20–18:20 Chairs: Koji Ishida, Miki Yonemura

16:20–16:40 2–15–14

**Psychoacoustic evaluation of the combined noise from devices in dental clinics**

Tomomi Yamada, Mikako Hayashi, Kazunori Nozaki, Sonoko Kuwano

16:40–17:00 2–15–15

**Evaluating emotionalizing effects of active sound designs**

Manuel Petersen, Mesud Zaimovic, Albert Albers

17:00–17:20 2–15–16

**Effects of expectation on auditory impression of car door-closing sounds**

Hiroaki Morita, Masayuki Takada, Hiroki Maruyama

17:20–17:40 2–15–17

**Effects of sound insulation and light reflection of desktop partitions on subjective impression during conversation**

Miyuri Nakajima, Tetsuya Sakuma, Miki Kozaki, Asami Matsuyama, Miki Sakai

17:40–18:00 2–15–18

**Subjective evaluation of outdoor environments for sedentary office activities -Trial experiment on two terrace locations**

Tsuguto Hoshino, Motoki Yairi, Yui Murakami, Sohei Tsujimura



18:00–18:20 2–15–19

**A preliminary study on the effect of rough sound on discomfort**

Bingcong Lv, Yu Huang, Zhenjing Miao

**16.2 Outdoor Soundscape Planning & Design, and Urban Design**

Venue 16  
Rm 304

9:20–10:40 Chairs: Keiji Kawai, Jin Yong Jeon

9:20–9:40 2–16–1

**Impacts of the covid lockdown on the soundscape of an urban area: noise, psychoacoustic metrics and ecoacoustic indices**

Tatiana Alvares-Sanches, Patrick E. Osborne, Paul R. White

9:40–10:00 2–16–2

**Identifying contextual factors of soundscape based on mental mapping and caption evaluation methods**

Geon-Hee Kim, Tae-Hui Kim, Joo-Young Hong

10:00–10:20 2–16–3

**Acoustic analysis for urban design evaluation**

Yoshiyuki Kawazoe, Hiroyuki Tanabe

10:20–10:40 2–16–4

**A study on the evaluation structure of urban soundscape using the extended caption evaluation method**

Keiichiro Nishizawa, Takeshi Akita, Hanui Yu, Naoko Sano, Kotaroh Hirate

11:00–12:20 Chairs: Keiji Kawai, Jin Yong Jeon

11:00–11:20 2–16–5

**Cultivating a harmonious soundscape in urban public space: An empirical study of sound and activities**

Ni Putu Amanda Nitidara, Anugrah Sabdono Sudarsono, Joko Sarwono

11:20–11:40 2–16–6

**Research progress and development trends in urban tranquil areas from the soundscape perspective**

Wei Yan, Qi Meng

11:40–12:00 2–16–7

**Exploring the use of soundscape sketchpads with professionals**

Richard Yanaky, Gianluca Grazioli, Ying-Ying Zhang, Catherine Guastavino

12:00–12:20 2–16–8

**Sound perception of tourists and locals in public squares: Istanbul Taksim case**

Anas Jumaa, Mine Ascigil-Dincer

14:20–16:00 Chairs: Keiji Kawai, Timothy Van Renterghem

14:20–14:40 2–16–9

**Status of the revision of ISO 1996–1 standard on the assessment of environmental noise**

Manvell Douglas, Kenneth Kaliski

14:40–15:00 2–16–10

**Convergence of noise, climate, air and energy actions for an efficient planning: how to act on urban and architectural forms?**

Philippe Strauss

15:00–15:20 2–16–11

**How streetscape affects subjective responses regarding acoustic comfort: an empirical study based on pedestrian environments with traffic noise**

Xinxin Ren, Qi Li, Qiran Wang, Minmin Yuan, Shegang Shao

15:20–15:40 2–16–12

**A pilot scheme for public education on minimizing noise and other environmental nuisances from domestic renovation**

Cheung Lam Wong, Antonio Ching, Anthony Ng, Harold Ng

15:40–16:00 2–16–13

**A mock-up laboratory for arousing public awareness on the use of quiet methods for domestic renovation**

Cheung Lam Wong, Antonio Ching, Anthony Ng, Harold Ng

16:20–18:20 Chairs: Keiji Kawai, Timothy Van Renterghem

16:20–16:40 2–16–14

**A pilot study on the environmental noise of transit oriented development (TOD) projects in Chongqing, China**

Elsa Nalita Wongso, Hui Xie

16:40–17:00 2–16–15

**New stakes and challenges for transport noise observatories, case studies for Acou-cité, skills cluster for French Metropolises**

Bruno Vincent, Patricio Munoz, Valérie Janillon, Sébastien Carra, Xavier Olny

17:00–17:20 2–16–16

**The covid-19, an unexpected “tool” to assess the chances of reaching the WHO recommended noise limits in medium-sized cities**

Rosendo Vilchez-Gómez, David Montes-González, Guillermo Rey-Gozaló, Juan Miguel Barrigón Morillas, Manuel Sánchez-Fernández

17:20–17:40 2–16–17

**Predicting impulse prominence and tone audibility at remote assessment locations**

Matt Torjussen, Patrick Hoyle, Jo Webb, Antonio J Torija-Martinez, David Waddington

17:40–18:00 2–16–18

**Environmental noise tagging via audio spectrogram transformer**

Tong Xiao, Benjamin Halkon, Sipei Zhao, Ben Cooper-Woolley, Fergus Strange, Adam Ferguson

18:00–18:20 2–16–19

**Analysis of the effect of noise on the users of urban green areas according to their activity**

Guillermo Rey-Gozalo, David Montes-González, Juan Miguel Barrigón Morillas, Rosendo Vilchez-Gómez, Carlos Iglesias-Merchan



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# **Program**

**August 23  
(Wednesday)**



15:20–16:20 P–2**Committing to full-spectrum noise equity**

Judith L. Rochat

Chair: Patricia Davies

**18.2 Diversity of Local Noise Issues in the World**10:40–12:20 Chairs: Thu Lan Nguyen, Hui Ma10:40–11:00 3–1–1**A study examining the long-term effects of aircraft noise on the surrounding residents before the opening of Long Thanh Airport**

Thu Lan Nguyen, Tran Thi Hong Nhung Nguyen, Bach Lien Trieu, Makoto Morinaga, Takashi Morihara, Yasuhiro Hiraguri, Takashi Yano, Yosiaki Sasazawa

11:00–11:20 3–1–2**Characteristics of community responses to airport noise around Bangkok International Airport**

Krittika Lertsawat, Ichiro Yamada, Takashi Yano, Rattapon Onchang, Satanat Kitsiranuwat, Thapana Boonchoo, Alongkorn Pimpin, Supet Jirakajohnkool

11:20–11:40 3–1–3**Local soundmark to conquer traffic noise. Case of Kotagede, Indonesia**

Christina Eviutami Mediastika, Anugrah Sabdono Sudarsono, Sentagi Sesotya Utami, Teguh Setiawan, James G. Mansell, Laurence Cliffe, Revianto B. Santosa, Ressy J. Yanti

11:40–12:00 3–1–4**Impact of traffic noise and apartment building features on the quality of life in Matsue city**

Tran Thi Hong Nhung Nguyen, Sosuke Matsuoka, Thu Lan Nguyen

12:00–12:20 3–1–5**Toward music-related sound control and hearing conservation in the leisure soundscape**

Julia Chieng, Shamsul Bahri Hj, Mohd Tamrin

13:20–14:40 Chairs: Thu Lan Nguyen, Hui Ma13:20–13:40 3–1–6**Preliminary survey on the effects of indoor noise in the hospital located close to Tan Son Nhat Airport**

Bach Lien Trieu, Tran Thi Hong Nhung Nguyen, Thu Lan Nguyen, Makoto Morinaga, Takashi Morihara, Yasuhiro Hiraguri, Takashi Yano, Yosiaki Sasazawa, Quoc Viet Tran, Duc Thanh Bui, Ha Hieu Tran, Thi Ngoc Dung Nguyen, Pham Nguyet Thanh Do

13:40–14:00 3–1–7

**Soundscape improvement of 45 Danish nursing homes**

Marie Koldkjær Højlund, Mads Duevang Dahl, Sissel Raahede Lundgård

14:00–14:20 3–1–8

**The acoustics knowledge alliance project: the most recent addition to the acoustic courseware online educational platform**

Kristian Jambrošić, Lukas Aspöck, Emilie Carayol, Andreas Herweg, Marko Horvat, Karolina Jaruszewska, Antonin Novak, Yannick Sluyts, Blažej Wojtyła

14:20–14:40 3–1–9

**Variations in sound environment in an urban apartment building: A case study during and after the covid-19 lockdown**

Tingting Yang, Jian Kang

**12.4 Building System Noise & Vibration Control**

Venue 2  
Rm 101A

8:40–10:20 Chairs: Yozo Araki, Cheuk Ming Mak

8:40–9:00 3–2–1

**A metamaterial sandwich plate with spring-lever-mass resonators**

Lei Gao, Cheuk Ming Mak, Chenzhi Cai

9:00–9:20 3–2–2

**Environmental controls of air-conditioned noise with the aid of the psychoacoustics perception scale (PPS)**

Kuen Wai Ma, Cheuk Ming Mak, Fu Lai Korris Chung, Hai Ming Wong, Shengxian Kang, Lei Gao

9:20–9:40 3–2–3

**Design of an instrumentation system for assessing the acoustic attenuation performance of ducted Helmholtz resonators in the presence of grazing flow**

Rong Xue, Cheuk Ming Mak, Chenzhi Cai, Kuen Wai Ma

9:40–10:00 3–2–4

**Rain impact noise on aluminium cladding and the mitigation by damping material**

Hing Shun Leung

10:00–10:20 3–2–5

**Experimental study on the sound of water flowing through a storm drain**

Shimpei Sawaki, Yuzo Tsuchiya, Takashi Yamauchi, Yuki Takenaka



10:40–12:20 Chairs: Shiu Keung Tang, Takashi Ishizuka

10:40–11:00 3–2–6

**3D printed acoustic materials for the performance enhancement of a building acoustics silencer**

Agnieszka Ciochon, John Kennedy

11:00–11:20 3–2–7

**Reconfigurable sonic crystals with built-in Helmholtz's resonators for noise mitigation**

Heow Pueh Lee

11:20–11:40 3–2–8

**The sound insulation across a plenum window with staggered sound scatter arrays**

Xiao-Long Li, S.K.Tang

11:40–12:00 3–2–9

**A pilot study on the sound insulation performance of plenum doors**

Kimihiro Sakagami, Haruhi Inoue, Takeshi Okuzono

12:00–12:20 3–2–10

**On the acoustical protection of acoustic balconies**

Shiu Keung Tang, Mors Leung, Sherman S. L. Yip, Rudolf Y. C. Lee

13:20–14:40 Chairs: Shiu Keung Tang, Takashi Ishizuka

13:20–13:40 3–2–11

**Efficiency testing of active noise control in the duct outlet and effect of the error microphone location**

Stéphane Lesoinne

13:40–14:00 3–2–12

**Applications of ventilation-enabling sound insulation devices based on mock-up test findings**

K. C. Gary Yuen, B. K. David Yeung, K. F. Calvin Chiu, C. M. Tony Cheng

14:00–14:20 3–2–13

**Numerical study on the sound insulation potential of the ventilating double-leaf facades**

Egzon Bajraktari

14:20–14:40 3–2–14

**Development of ventilation and sound insulation materials by multi-objective optimization**

Keigo Kajitani, Kiichiro Sawada, Thu Lan Nguyen, Bach Lien Trieu

8:20–10:20 Chairs: Tatsuya Murao, Dong Yuan Shi

8:20–8:40 3–3–1

**Optimized nonlocal active sound control with preservation of desired sound field**

Nan Hu, Sergey Utyuzhnikov

8:40–9:00 3–3–2

**Frequency domain adaptation of multichannel active road-noise sound control system with virtual sensing**

Stephen J. Elliott, Yoav Vered

9:00–9:20 3–3–3

**Rational b-spline adaptive filter for active noise control of machinery noises**

Arvind Kumar Sharma, Amrita Puri

9:20–9:40 3–3–4

**A modified simultaneous perturbation stochastic approximation algorithm for active noise control**

Zhiwu Gu, Li Shi, Haishan Zou, Kai Chen

9:40–10:00 3–3–5

**Convex combination of online secondary path modeling and improved cuckoo search for active noise control**

Anqi Tu, Chuang Shi, Huiyong Li

10:00–10:20 3–3–6

**Frequency domain online secondary path modelling for active noise control without auxiliary noise**

Siyuan Lian, Tianyou Li, Shuping Wang, Jing Lu, Jincheng Gu, Yuxiang Hu, Changbao Zhu

10:40–12:20 Chairs: Tatsuya Murao, Bhan Lam

10:40–11:00 3–3–7

**Study of machine learning based algorithms for active noise control of machinery noise**

Arvind Kumar Sharma, Amrita Puri

11:00–11:20 3–3–8

**A diffusion filtered-x affine projection algorithm for distributed active noise control**

Tianyou Li, Sipei Zhao, Kai Chen, Jing Lu

11:20–11:40 3–3–9

**Simultaneous perturbation algorithm for active noise control with an asynchronous wireless microphone**

Yiran Hou, Hao Yu, Chuang Shi, Huiyong Li

11:40–12:00 3–3–10

**A computation-efficient online secondary path modeling technique for modified FXLMS algorithm**

Junwei Ji, Dongyuan Shi, Woon-Seng Gan, Xiaoyi Shen, Zhengding Luo

12:00–12:20 3–3–11

**Study of filtered-x least mean square algorithm and its different variants for active noise control of complex real-world noises**

Arvind Kumar Sharma, Avijit Majee, Amrita Puri

13:20–15:00 Chairs: Takano Nishiura, Cheng-Yuan Chang

13:20–13:40 3–3–12

**A hybrid active noise cancellation algorithm for suppressing narrowband noise with the rapidly changing frequencies**

Jihea Lim, Young-Sup Lee

13:40–14:00 3–3–13

**A robust auxiliary noise power scheduling strategy for online secondary path modeling in active noise control systems**

Zhehua Duan, Ning Han

14:00–14:20 3–3–14

**An analysis of a feedback active noise control system using the remote microphone technique**

Li Shi, Haishan Zou, Xiaojun Qiu, Kai Chen

14:20–14:40 3–3–15

**CRNN-based spatial active noise control in spherical harmonics domain**

Gyanajyoti Routray, Siddesh Bharat Hazare, Priyadarshini Dwivedi, Rajesh M. Hegde

14:40–15:00 3–3–16

**Hybrid active noise control with auxiliary filter-based virtual sensing**

Shota Toyooka, Yoshinobu Kajikawa

## 10.2 Measurement & Control of Ship Noise

Venue 4  
Rm 102A

9:00–10:00 Chairs: Hikaru Kamiirisa, Chifang Chen

9:00–9:20 3–4–1

**Review and discussion of recent publications on underwater noise from shipping**

Hikaru Kamiirisa, Björn Windén

9:20–9:40 3–4–2

**CFD prediction of ship propeller-induced underwater radiated noise**

Keun Woo Shin, Joseph Praful Tomy, Stephan Berger, Ege Lundgren, Jens Ring Nielsen

9:40–10:00 3–4–3

**Verification of simplified underwater radiated noise estimation tool using Brown's formula**

Koichiro Shiraishi, Kenichi Kume, Daijiro Arakawa, Hikaru Kamiirisa

10:20–11:20 Chairs: Chifang Chen, Hikaru Kamiirisa

10:20–10:40 3–4–4

**Validation of estimated underwater radiated noise propagation from a ship using the parabolic equation method by underwater sound measurements in actual sea**

Masahiro Sakai, Yamato Iwashima, Toshio Tsuchiya, Naoya Umeda

10:40–11:00 3–4–5

**A novel lubrication model for water-lubricated stern-tube bearing**

Juncheng Gu, Hongxing Hua

11:00–11:20 3–4–6

**Simulation result of the effects of radiation noise from long-distance ships on marine mammals**

Chika Yamada, Toshio Tsuchio, Etsuro Shimizu, Masahiro Sakai

**10.3 Effect of Noise on Aquatic Animals & Noise Exposure Criteria**

Venue 4  
Rm 102A

11:20–12:20 Chairs: Satoko Kimura, Brandon Southall

11:20–11:40 3–4–7

**Going to scale: Broadening marine mammal noise exposure criteria for behavioral responses**

Brandon L. Southall

11:40–12:00 3–4–8

**A review of the effect of various type of artificial sounds to odontocetes**

Tomonari Akamatsu

12:00–12:20 3–4–9

**Measurements of wild finless porpoise (*Neophocaena asiaeorientalis sunameri*) on-axis burst-pulse sound**

Mayu Ogawa, Satoko S. Kimura

13:20–14:40 Chairs: Brandon Southall, Satoko Kimura

13:20–13:40 3–4–10

**A small-scale pile impact test for demonstrating the coupling between structural vibration and underwater noise generation**

Ana Carolina Azevedo Vasconcelos, Sabine Heijnen, Bart Holtzer, Alejandro Marcos Aragón, Dingena Schott, Jovana Jovanova

13:40–14:00 3–4–11

**Underwater radiated noise from a submerged cylinder: measurements in far and near field conditions**

Matthieu Decaux, Florian Hugues, Quentin Leclère, Laurent Maxit, Valentin Meyer, Cédric Carbonell

14:00–14:20 3–4–12

**Investigation of the acoustic properties of underwater rainfall noise measured by a bottom-mounted hydrophone and its application to deep learning to classify and estimate rainfall**

DongWook Kim, Dae Hyeok Lee, Jee Woong Choi

14:20–14:40 3–4–13

**A guidance on measurement and evaluation methods for underwater sounds focusing on offshore windfarms**

Tomonari Akamatsu, Yoshiaki Aida, Motonobu Imasato, Sayuri Matsumoto, Yasuhiko Endo, Takashi Kamoshida, Yukihiro Kida, Takao Sawa, Mitsuyasu Deguchi, Takuya Shimura, Shingo Sakamoto, Shigeaki Takeoka, Tetsuro Takekoshi, Takenobu Tsuchiya, Yuka Mishima, Yoshinori Miyamoto, Kazuyoshi Mori

**07.1 Aircraft Interior Noise**

Venue 5  
Rm 102B

8:20–10:00 Chairs: Sebastian Ghinet, Nouredine Atalla

8:20–8:40 3–5–1

**The impact of accelerometer location and frequency weightings on the prediction of pleasantness ratings for vertical whole-body vibrations on an aircraft seat bench**

Stephan Töpken, Louis Krause, Steven van de Par

8:40–9:00 3–5–2

**Overview of concept designs and results of the new acoustic insulation meta-material for aerospace (NAIMMTA) project**

Sebastian Ghinet, Patrick Bouche, Thomas Padois, Olivier Doutres, Tenon Charly Kone, Raymond Panneton, Nouredine Atalla

9:00–9:20 3–5–3

**Sound attenuation analysis of a honeycomb structure with extended necks**

Zacharie Laly, Christopher Mechefske, Sebastian Ghinet, Behnam Ashrafi, Charly T. Kone, Nouredine Atalla

9:20–9:40 3–5–4

**Numerical study on honeycomb membrane-type acoustic metamaterial with added mass**

Zacharie Laly, Christopher Mechefske, Sebastian Ghinet, Behnam Ashrafi, Charly T. Kone

9:40–10:00 3–5–5

**Overview of Onera acoustic active control activities in helicopter cabin**

Frank Simon

10:20–12:20 Chairs: Sebastian Ghinet, Nouredine Atalla

10:20–10:40 3–5–6

**Engineering process for eVTOLs interior sound predictions**

Rabah Hadjit, Weimin Thor, Chadwyck Musser, Taiki Tsukada, Massimiliano Calloni

10:40–11:00 3–5–7

**Broadband low frequency noise attenuation using thin acoustic metamaterials for aircraft cabin noise mitigation**

Tenon Charly Kone, Sebastian Ghinet, Raymond Panneton, Anant Grewal

11:00–11:20 3–5–8

**Numerical prediction of the sound transmission loss of double panel configurations with acoustic structured and poroelastic materials**

Tenon Charly Kone, Sebastian Ghinet, Raymond Panneton, Anant Grewal

11:20–11:40 3–5–9

**Comparison of different noise sources for the simulative cabin noise assessment of an electrically propelled regional aircraft**

Yannik Hüpel, Christopher Blech, Andrea Franco, Jan Werner Delfs, Bastian Kirsch, Sabine C. Langer

11:40–12:00 3–5–10

**Analysis of Helmholtz resonator wall elasticity effects on the performance of periodic acoustic metamaterial**

Zacharie Laly, Christopher Mechefske, Sebastian Ghinet, Behnam Ashrafi, Charly T. Kone

12:00–12:20 3–5–11

**Numerical analysis and measurement techniques for aircraft cabin noise using JAXA's Jet-FTB "HISHO"**

Takashi Takahashi, Hiroki Ura, Kensuke Hayashi

## 07.6 Supersonic Aircraft Noise

Venue 5  
Rm 102B

13:20–14:40 Chairs: Masashi Kanamori, Robert Jaron

13:20–13:40 3–5–12

**A hybrid analysis of Mach cutoff noise using nonlinear acoustics and finite-difference time-domain method**

Takao Tsuchiya, Masashi Kanamori

13:40–14:00 3–5–13

**Acoustic propagation analysis of sonic boom at atmospheric variation during 10-year flight**

Rei Iura, Takahiro Ukai, Hiroshi Yamashita, Bastian Kern, Takashi Misaka, Shigeru Obayashi

14:00–14:20 3–5–14

**Jet noise prediction benchmark for landing and takeoff noise of supersonic aircraft**

Robert Jaron, Matti Gräbert, Remco Habing, Mark-Jan van der Meulen, Maxime Huet, Ingrid LeGriffon, Francesco Petrosino, Mattia Barbarino, Katharina Lefarth, Oleksandr Zaporozhets

14:20–14:40 3–5–15

**Predicting take-off noise, sonic boom, and landing noise of supersonic transport aircraft concepts**

Jochen Kirz, Susanne Bartels, Lothar Bertsch, Ahmet Günay Can, Tobias Dietl, Roland Ewert, Matti Gräbert, Robert Jaron, Bernd Liebhardt, Michel Nöding, Martin Plohr, Samuel Schnell

**01.2 Experiments in Flow-induced Noise & Vibration**

Venue 6  
Rm 103

8:40–10:20 Chairs: Hiromitsu Hamakawa, Hiroshi Yokoyama

8:40–9:00 3–6–1

**An experimental study on evolution of vortex structures in perforated cavity structures driven by acoustic waves**

Yuchao Tang, Peng Wang, Yingzheng Liu

9:00–9:20 3–6–2

**On abnormal noise generated from steam gas heater**

Kunihiko Ishihara, Keisuke Hayashi

9:20–9:40 3–6–3

**On the multiple tones in trailing edge noise of an aerofoil at low-to-moderate Reynolds number flows**

Xiangtian Li, Peng Zhou, Xin Zhang, Wangqiao Chen, Siyang Zhong, Xun Huang

9:40–10:00 3–6–4

**Enhancing the noise reduction capability of the trailing edge serration at incidence using serration extension**

Shivam Sundeeep, Sinforiano Cantos, Peng Zhou, Siyang Zhong

10:00–10:20 3–6–5

**Reduction of aerodynamic noise radiated from rectangular cylinders in cross flow**

Natsuki Ishida, Masaya Higuchi, Hiromitsu Hamakawa, Eru Kurihara

**01.3 Rotor & Turbomachinery Noise**

Venue 6  
Rm 103

10:40–12:20 Chairs: Kazuya Kusano, Siyang Zhong

10:40–11:00 3–6–6

**Direct aeroacoustic simulation of a cross-flow fan with Helmholtz resonator using lattice Boltzmann method**

Atsushi Imada, Kimiya Takeuchi, Kazuya Kusano, Masato Furukawa, Kenichi Sakoda, Tomoya Fukui, Kisho Hatakenaka

11:00–11:20 3–6–7

**Analysis of unsteady flow and aerodynamic noise characteristics of a turbocharger compressor at near surge condition**

Chen Liu, Xu Zhan, Xinyu Zhang, Yipeng Cao, Yang Liu

11:20–11:40 3–6–8

**Numerical analysis of unsteady flow induced vibration and noise of compressor volute in a marine engine turbocharger**

Chen Liu, Lei Liu, Yang Liu, Fangyan Jiang, Haojin Liu

11:40–12:00 3–6–9

**Evaluation of noise emissions of a ducted fan on a test rig**

Jan Koppelberg, Lukas Stuhldreier, Robin Liegert, Niklas Lehrmann, Peter Jeschke

12:00–12:20 3–6–10

**Numerical study on the haystack phenomenon of turbulence ingestion noise**

Mingyu Shao, Hanbo Jiang, Xun Huang

13:20–15:00 Chairs: Kazuya Kusano, Siyang Zhong

13:20–13:40 3–6–11

**Contra-rotating rotor noise reduction methods**

Michael J. Kingan, Riul Jung, Ryan S. McKay

13:40–14:00 3–6–12

**An investigation of the noise characteristics of a small-scale rotor in axial descent**

Yuhong Li Xiangtian Li, Peng Zhou, Xin Zhang, Xun Huang

14:00–14:20 3–6–13

**Experimental investigation on the aeroacoustics of coaxial rotors**

Zhida Ma, Guangsheng Liu, Han Wu, Peng Zhou, Xin Zhang, Siyang Zhong, Puyuan Wang, Guocheng Zhou, Bao Chen

14:20–14:40 3–6–14

**Assessment and mitigation of the rotor noise for future urban air mobility vehicles**

Han Wu, Wangqiao Chen, Peng Zhou, Xin Zhang, Xun Huang, Puyuan Wang, Guocheng Zhou, Bao Chen

14:40–15:00 3–6–15

**Experimental investigation of unmanned air vehicle rotor aeroacoustics using benchmark geometries**

Pawel Kekus-Kumor, Adam Sieradzki



9:00–10:00 Chairs: Wan–Ho Cho, Yasutaka Nakajima

9:00–9:20 3–7–1

**Machine fault diagnostics based on data reassembly for a deep neural network trained by imbalanced acoustical recordings**

You-Siang Chen, Yi-Hsuan Lin, Mingsian R. Bai

9:20–9:40 3–7–2

**Engine knocking detection using time-varying specific loudness and microphone array**

Yasutaka Nakajima, Takamitsu Yasaka, Chiaki Nishidome, Etsunori Mouri, Kenjiro Shinohara

9:40–10:00 3–7–3

**Using hydrophone measurements to monitor incipient cavitation in variable displacement pendulum-slider pumps**

Mattia Battarra, Caterina Natali, Davide Gambetti, Alessandro Blum, Emiliano Mucchi

10:20–12:00 Chairs: Wan–Ho Cho, Yasutaka Nakajima

10:20–10:40 3–7–4

**Vibration analysis based on video data for buildings and structures**

Benjamin Vonrhein, Philip Höhna

10:40–11:00 3–7–5

**Sound field visualization system by MVDR beamforming with augmented reality and point clouds**

Atsuto Inoue, Wataru Teraoka, Yasuhiro Oikawa, Takahiro Satou, Yasuyuki Iwane, Masahito Kobayashi

11:00–11:20 3–7–6

**3D vibration modes estimation of complex-shaped structure by phase-based motion magnification and DIC method**

Narae Kim, Junhong Park

11:20–11:40 3–7–7

**Modelling and analysis for the dynamic behavior of 6-DOF motion platform used for simulating aerospace mechanical environment**

Longyu Ma, Zhizhou Chen, Haitao Jing, Zhexiao Ye, Zhiying Yang, Junwei Shi, Xiaolong Ma

11:40–12:00 3–7–8

**Evolving infrasound measurement and growing infrasound monitoring network**

Ryouichi Nishimura, Masa-yuki Yamamoto, Takayuki Otsu, Takuma Oi, Taira Itoh

13:20–15:00 Chairs: Yoshikazu Hagiwara, Daniela Toledo Helboe

13:20–13:40 3–7–9

**Measurement of radiated sound directivity of moving sources at low Mach numbers**

Yusuke Makino, Yasushi Takano, Mariko Akutsu, Toki Uda

13:40–14:00 3–7–10

**Experimental evaluation of characteristics for high-speed moving source**

Mariko Akutsu, Toki Uda, Yasuhiro Oikawa

14:00–14:20 3–7–11

**Measurement of acoustic signals to characterize household appliance based on sound power and directivity analysis**

Tawhidul Islam Khan, Luqman Hakim, Nazmush Sakib, Md Abdur Rahman

14:20–14:40 3–7–12

**Measuring directivity of half-inch measurement microphones**

Thiago Antonio Bacelar Milhomem

14:40–15:00 3–7–13

**Consideration on the uncertainty of audiometer calibration and pure tone audiometry**

Wan-Ho Cho, Sung-Soo Jung

### 04.3 Numerical Techniques in Acoustics & Vibration

Venue 8  
Rm 105

8:40–10:00 Chairs: Takeshi Okuzono, Naohisa Inoue

8:40–9:00 3–8–1

**Admittance boundary conditions and sound pressure field estimation of vibro-acoustic systems using an extended Kalman filter and parametric model order reduction**

Yinshan Cai, Sjoerd van Ophem, Wim Desmet, Elke Deckers

9:00–9:20 3–8–2

**Boundary treatments for the finite element analysis of shell vibration fields of architectural structures extracted with edge truncations**

Naohisa Inoue, Da Cao, Tetsuya Sakuma

9:20–9:40 3–8–3

**Dynamics of a helical spring involving intermittent frictional contact with an oscillating barrier**

Marisa Nagata, Akira Saito

9:40–10:00 3–8–4

**Uncertain sound transmission loss of composite laminated plates with embedded viscoelastic damping layer**

Xiaosong Zhu, Ningjuan Dong, Lijuan Jiao, Hui Zheng

10:20–11:20 Chairs: Takeshi Okuzono, Naohisa Inoue

10:20–10:40 3–8–5

**Acoustic simulation using a frequency domain FEM with air absorption**

Takeshi Okuzono, Takumi Yoshida

10:40–11:00 3–8–6

**A high-order explicit time-domain FEM using 15-node tetrahedral elements for room acoustics modeling: Basic performance**

Takumi Yoshida, Takeshi Okuzono, Kimihiro Sakagami

11:00–11:20 3–8–7

**Optimum design of TMDs for reduction of floor vibration using evolutionary computation**

Yoza Araki, Norio Taguchi, Kiyoshi Masuda

## 04.5 Sound Propagation Modeling & Simulation

Venue 8  
Rm 105

11:20–12:20 Chairs: Toru Otsuru, Nazli Che Din

11:20–11:40 3–8–8

**Modification of ISO9613-2 for long propagation distances**

Mattias Trimpop

11:40–12:00 3–8–9

**Applying time-resolved noise maps to assess the impact of road-traffic measures on wake-up reactions in urban environments**

Tobias S. Müller, A. Nabikhani, Arne Henning

12:00–12:20 3–8–10

**Open-source software to calculate industrial, railway, and road traffic noise**

Rob van Loon, Arnaud Kok

13:20–15:00 Chairs: Toru Otsuru, Nazli Che Din

13:20–13:40 3–8–11

**Sound radiation from a cylindrical shell in an underwater waveguide**

Jamie Kha, Mahmoud Karimi, Laurent Maxit, Alex Skvortsov, Ray Kirby

13:40–14:00 3–8–12

**Simulating combustion-induced noise from a gas-fired water heater**

Arvind Jay, Ramana Kappagantu

14:00–14:20 3–8–13

**A standardized approach to identify nonlinearity in fighter jet noise during ground run-ups**

Guido Billot, Benoît G. Marinus, Xavier Expeels, Kristof Harri, Francis Moiny

14:20–14:40 3–8–14

**Acoustic propagation simulation of closed cavity with obstacles based on finite volume method**

Jie Guo, Songting Xiao, Xinyu Zhang

14:40–15:00 3–8–15

**Visualization of scattered sound field by enclosing microphone array based on sparse equivalent source method**

Ryosuke Onizawa, Izumi Tsunokuni, Yusuke Ikeda

**06.3 Tire & Road Noise**

Venue 9  
Rm 201A

8:40–10:20 Chairs: Ulf Sandberg, Yoshinori Saito

8:40–9:00 3–9–1

**Experimental investigation of road surface parameters affecting tire/road noise**

Hiroshi Koike, Kosuke Ushiro

9:00–9:20 3–9–2

**Latest development of low noise road surfacing in Hong Kong-application on local roads with different road characteristics**

Kei Yuet Chan, Chee Kwan Lee, Sai Wing Tsang

9:20–9:40 3–9–3

**Verification of the possibility of air-void recovery in RSBS double-layer low-noise porous asphalt pavement**

Byungchae Kim, Suwhan Sung, Hyunjin Kim

9:40–10:00 3–9–4

**On site acoustical characterization of a removable urban pavement with functionalized surface**

Julien Cesbron, Lise Rouy, Vincent Gary, Joël Lelong, Philippe Klein, Adrien Le Bellec, Éric Gennesseaux, Thierry Sedran

10:00–10:20 3–9–5

**Review of Japanese PERS pavements by Yokohama and Nipponroad in Japan: Our challenge and withdrawal**

Hitoshi Fujita, Katsunori Izawa

10:40–12:20 Chairs: Randolph C. K. Leung, Hitoshi Fujita

10:40–11:00 3–9–6

**Research and application of combined noise reduction method by using noise reducing pavement and noise barrier**

Mingliang Li, Yingtao Li, Minmin Yuan, Wei Zhou, Jun Li, Yaqun Zu

11:00–11:20 3–9–7

**Influence of tyre construction parameters on cavity noise amplification and its impact on electric vehicles**

Mihar Mukesh Mavji Ved, Bharatkumar Makwana

11:20–11:40 3–9–8

**Mechanism of tire / road noise emission and reduction technology**

Yoshinori Saito

11:40–12:00 3–9–9

**Study of tire radiation noise focusing on structural vibration and tread pattern**

Atsushi Kitahara, Tokumasa Akashi, Keita Yumii

12:00–12:20 3–9–10

**Airless tires in the LEON-T project: How can they reduce tire/road noise emission**

Ulf Sandberg

**15.1 Psychological & Physiological Evaluation of Product Noise**

Venue 9  
Rm 201A

13:20–15:00 Chairs: Sung–Hwan Shin, Genta Yamauchi

13:20–13:40 3–9–11

**Psychological and physiological evaluations of time-varying noises produced by air conditioners**

Yoshiharu Soeta, Ei Onogawa

13:40–14:00 3–9–12

**Subjective response test of auralized brushless direct current motor-propeller system noise**

Jaeheon Jeong, Jeongwoo Ko, Wonhee Lee, Soogab Lee

14:00–14:20 3–9–13

**Annoyance prediction of civil aircraft cabin noise based on generalized additive models**

Jun Zhang, Kean Chen, Wenhui Lai, Yunyun Deng, Huanqi Zhao

14:20–14:40 3–9–14

**The Zwicker's psychoacoustic annoyance models for noise-induced discomfort in the electric vehicle cabin**

Zhenjing Miao, Yu Huang, Li Yan, Weikang Jiang

14:40–15:00 3–9–15

**Evaluation of psychoacoustic parameters on internal combustion engine vehicle and electric vehicle: Case study of armored vehicle**

Ajeng Nazla Nabila, R. Sugeng Joko Sarwono, Anugrah Sabdono Sudarsono,

Ni Putu Amanda Nitidara, Keysha Wellviestu Zakri

8:40–10:00 Chairs: Xin Zhang, Gaku Minorikawa

8:40–9:00 3–10–1

**An efficient hybrid aeroacoustic method to predict the noise of a ducted coaxial-rotor UAV**

Zhiheng Zhao, Weijie Chen, Cheng Yang

9:00–9:20 3–10–2

**A computational aeroacoustic study of a multi-rotor powered urban air mobility vehicle**

Yuhong Li, Zhida Ma, Peng Zhou, Siyang Zhong, Xun Huang

9:20–9:40 3–10–3

**Noise-aware UAS flight path planning based on virtual flight simulation**

Qichen Tan, Hongsen Bao, Peng Zhou, Xin Zhang, Hong Kam Lo, Siyang Zhong

9:40–10:00 3–10–4

**A deep learning approach to optimize airfoil shape for reduced trailing edge noise in urban air mobility rotors**

Wonhee Lee, Soogab Lee

10:20–12:00 Chairs: Xin Zhang, Gaku Minorikawa

10:20–10:40 3–10–5

**Noise measurement of a quadrotor drone in an anechoic chamber**

Zhida Ma, Han Wu, Jiaqi Mao, Guangsheng Liu, Peng Zhou, Siyang Zhong

10:40–11:00 3–10–6

**Development of a UAV test stand**

Jared Schmal, D. W. Herrin, Daniel Fernández Comesaña

11:00–11:20 3–10–7

**Quadcopter sound characterization using a UAV test stand**

Jared Schmal, D. W. Herrin, Daniel Fernández Comesaña

11:20–11:40 3–10–8

**Broadband noise emission by a low-Mach low-Reynolds number propeller ingesting a boundary layer**

Sebastien Guerin, Tobias Lade, Leandro Castelucci, Ismaeel Zaman

11:40–12:00 3–10–9

**Change in community annoyance at a vertiport by applying different approach/ departure paths**

Michael Bauer

### 11.3 Sound Absorbers & Diffusers

Venue 10  
Rm 201B

13:20–15:00 Chairs: Takumi Yoshida, Heow Pueh Lee

13:20–13:40 3–10–10

#### **Sound absorption using sonic crystals with coupled Helmholtz resonators**

Kian-Meng Lim, Heow Pueh Lee

13:40–14:00 3–10–11

#### **The effective sound absorption contributed by added occupants in classrooms**

Young-Ji Choi

14:00–14:20 3–10–12

#### **Machine learning assisted design of acoustic metamaterials with broadband soundabsorbing and superior mechanical performance**

Zhenqian Xiao, Penglin Gao, Dongwei Wang, Xiao He, Yegao Qu, Linzhi Wu

14:20–14:40 3–10–13

#### **Sound absorption performance analysis of perforated panel resonator with tube bundles based on independent adjustment impedance**

Zhongjian Mei, Huawei Yang, Xiaodong Li, Yadong Lyu, Jun Yang

14:40–15:00 3–10–14

#### **Development of acoustic material with inline cavity structure for design of operators' cabins in mineral processing plants**

Nihar Ranjan Sahu, Bibhuti Bhusan Mandal

### 17.0 Noise Policy & Management: General

Venue 11  
Rm 202

8:20–10:00 Chairs: Shigenori Yokoshima, Truls Gjestland

8:20–8:40 3–11–1

#### **Newly proposed Swiss transportation noise limits in comparison with recent WHO recommendations**

Mark Brink, Jean-Marc Wunderli

8:40–9:00 3–11–2

**Withdrawn**

9:00–9:20 3–11–3

#### **Noise regulations in Japan**

Kensuke Mizuhara, Tetsuya Ozaki, Daisuke Shoji, Yasunori Tatsuta, Yusuke Fujii

9:20–9:40 3–11–4

**Trends of study in Japan based on “Environmental Noise Guidelines for European Region (2018)”**

Ayumi Shiotani, Keiji Yagawa, Toshihiko Matsui

9:40–10:00 3–11–5

**Planning for a quieter environment in Hong Kong: Construction noise management plan**

Benson Yau Hang Lee, Flora Kit Mei Lin, Tommy Kit Wing Cheng, Chee Kwan Lee, Terence Sai Wing Tsang

**15.4 Sound Design Based on Psychoacoustics**

Venue 11  
Rm 202

10:20–12:20 Chairs: Stephan Töpken, Shunsuke Ishimitsu

10:20–10:40 3–11–6

**Contextual event-based sound quality metrics**

Roland Sottek, Thiago Lobato, Wade R. Bray, André Fiebi

10:40–11:00 3–11–7

**Perceptual dimensions of fan sounds with different tonal characteristics**

Eike Claaßen, Stephan Töpken, Steven van de Par

11:00–11:20 3–11–8

**Clarification of frequency bands affecting attentional mechanisms using event-related potentials**

Yuki Kameyama, Shunsuke Ishimitsu, Keisuke Kotaka, Yasuto Fujii

11:20–11:40 3–11–9

**Can an artificially generated sound design improve the subjective evaluation of a vacuum cleaner noise? Results of a listening test with two vacuum cleaners**

Benjamin Johannes Mueller, Linn Braunmiller, Josephine Lehmann, Michael Singer, Michaela Socher, Noemi Herget

11:40–12:00 3–11–10

**The contribution of selected auditory sensations to the prediction of preference judgements for consonant and dissonant sounds**

Anna Rieger, Steven van de Par, Hans-Peter Rabl, Arne Oetjen

12:00–12:20 3–11–11

**Design of alert sound for electric vehicle based on fluctuation strength for amplitude fluctuation**

Nozomiko Yasui, Masanobu Miura



13:20–14:40 Chairs: Shigenori Yokoshima, Truls Gjestland

13:20–13:40 3–11–12

**How to ensure reliable noise calculations with Cnossos-EU**

Leo Heggem Hauge, Karen Brastad Evensen, Herold Olsen

13:40–14:00 3–11–13

**Challenges in predicting and managing construction noise impacts in urban environments. Case studies from Sydney, Australia**

Jeffrey Parnell

14:00–14:20 3–11–14

**The link between noise emission data, product safety and noise risk assessments**

Fabian Heisterkamp, Georg Brockt, Erik Romanus

14:20–14:40 3–11–15

**Using acoustic camera technology on inspection of noisy vehicles in Taiwan**

Yi-Hui Hsieh, Wei-Chong Chang, Pei-Hsiou Ding, Meng-Yu Tsai

8:40–10:00 Chairs: Koji Kato, Zhengqing Liu

8:40–9:00 3–12–1

**Sound insulation design of vehicle side window glass based on acoustic black holes**

Xian Wu, Mingyang Liu, Zhiwei Zhu, Shengjie Qin, Jianwang Shao

9:00–9:20 3–12–2

**Acoustic analysis and experimental validation of acoustic metamaterial**

Tadashi Nagami, Takayuki Miyakawa, Toshio Enomoto

9:20–9:40 3–12–3

**Experimental study of applying plant-derived materials to sound-absorbing structures for cabin noise reduction of electric vehicles**

Sachito Nakano, Sunao Tomita, Makoto Segi, Takuya Nishimura

9:40–10:00 3–12–4

**Theoretical analysis of conversion process of tire tread vibration to road noise exciting force**

Masao Ishihama

10:20–12:00 Chairs: Jinhui Xu, Takashi Yamamoto

10:20–10:40 3–12–5

**Stochastic modeling of porous sound absorbing materials using homogenization method and machine learning**

Yosuke Komatsu, Takashi Yamamoto

10:40–11:00 3–12–6

**Predicting the effect of microstructural variations in porous sound absorbers on their sound absorption performance using the perturbation method**

Hidetoshi Takahashi, Yosuke Komatsu, Takashi Yamamoto, Keisuke Yamakawa, Daiji Katsura, Hideyuki Yukawa

11:00–11:20 3–12–7

**Analysis of noise level due to heavy vehicle traffics in the area of cement plant**

Mukhtar Tahir Syarkawi, Wudi Darul Putra, Ansarullah

11:20–11:40 3–12–8

**FE analysis of porous material cover for automotive parts**

Yoshio Kurosawa, Ji Chengyao, Tsuyoshi Yamashita, Tetsuya Ozaki, Naoyuki Nakaizumi, Yuki Fujita, Manabu Takahashi

11:40–12:00 3–12–9

**The research of the acoustic perceptibility of silent electrified vehicles and acoustic vehicle alert system (AVAS)**

Anton Subbotkin, Alexey Stepanyuk, Alexandr Tyurin, Timofei Maksimenko

13:20–15:00 Chairs: Takashi Yamamoto, Jinhui Xu

13:20–13:40 3–12–10

**Experimental study on improving the noise and vibration characteristics of electric brake systems using order analysis**

Jeongwoo Woo, Yeon June Kang, Byung Jun Kim

13:40–14:00 3–12–11

**Mathematical modelling of friction induced high frequency noise and vibration mechanism in vehicle brake systems through experimental data**

Özgün Balci, Akif Yavuz, Muammer Özkan, Osman Taha Sen

14:00–14:20 3–12–12

**Deep learning-based motor prognostics for electric power steering systems**

Gyuwon Kim, Jongick Won, Doheon Lee

14:20–14:40 3–12–13

**Experimental study on the relationship between combustion and noise and vibration in a gasoline engine**

Hironao Sato, Masahiro Oba, Takashi Hiromoto, Kiyofumi Sato, Toshiyuki Sonobe, Satoru Hayakawa, Koji Morikawa, Yasuo Moriyoshi, Noriaki Sekine

14:40–15:00 3–12–14

**Static performance analysis of gas foil thrust bearings under inclined thrust disc considering the slip flow effect**

Shuguang Zuo, Wenping Zong, Huan Li, Xudong Wu

## **11.4 Additive Manufacturing for Acoustic Applications**

Venue 13  
Rm 301B

8:20–10:20 Chairs: Shinsuke Nakanishi, Yoshinori Takahashi

8:20–8:40 3–13–1

**Practical guidance on the additive manufacturing of acoustic materials**

Agnieszka Ciochon, John Kennedy

8:40–9:00 3–13–2

**Evaluation test of circular acoustic reflector based on number theory prototyped made utilizing additive manufacturing**

Yoshinori Takahashi, Isao Makino

9:00–9:20 3–13–3

**Sound absorption of resonators or perforated panels with multiple folded long tubes crammed in small module by additive manufacturing**

Shinsuke Nakanishi

9:20–9:40 3–13–4

**Additive manufacturing of membrane-type acoustic metamaterials**

William Johnston, Anthony Ciletti, Bhisham Sharma

9:40–10:00 3–13–5

**Additively manufactured rigid-flexible metamaterials for advanced sound control**

Zhaohang Zhang, Dmitry Krushinsky, Anastasiia O. Krushynska

10:00–10:20 3–13–6

**Experimental and theoretical basic research on sound absorption characteristics of foam materials with and without membrane**

Shuichi Sakamoto, Takamasa Satoh, Katsuhiko Tasaki, Kaito Tanabe

10:40–12:20 Chairs: Masahiro Toyoda, Iwan Prasetiyo

10:40–11:00 3–13–7

### **Modeling of a flexible perforated membrane backed by granular materials**

Zhuang Mo, Guochenhao Song, Tongyang Shi, J. Stuart Bolton

11:00–11:20 3–13–8

### **Vibration of microperforated plate with spatial distribution of multiple-sized perforations**

Lucie Gallerand, Mathias Legrand, Thomas Dupont, Philippe Leclair

11:20–11:40 3–13–9

### **Investigation on acoustical performances of micro-perforated panel with soft boundary backing cavity**

Radhiyah Ulfah Pratiwi, Iwan Prasetiyo, M Kemal Agusta

11:40–12:00 3–13–10

### **Micro-perforated mufflers based on the acoustic black hole effect**

Teresa Bravo, Cedric Maury

12:00–12:20 3–13–11

### **Optimization of micro-perforated panel absorber backed with parallel-arranged cavities of different depths**

Yuchen Zhao, Hequn Min

13:20–15:00 Chairs: Masahiro Toyoda, Iwan Prasetiyo

13:20–13:40 3–13–12

### **Acoustic absorption of the over-the-rotor liner applied to a ducted fan**

Peidong Zhao, Cheng Yang

13:40–14:00 3–13–13

### **Causal-based optimisation of micro-perforated treatments**

Cedric Maury, Teresa Bravo

14:00–14:20 3–13–14

### **Acoustics performance of compact micro-perforated panel absorber with grazing flow**

Ying Li, Yatsze Cho

14:20–14:40 3–13–15

### **Experimental investigation of the effect of absorption material on the non-linear properties of perforated plates**

Niloofer Sayyad Khodashenas

14:40–15:00 3–13–16

**Uncertainties and inaccuracies of micro-perforated and micro-slit panel absorbers in multiple layers**

Ziqi Chen, Ning Xiang

**12.9 Acoustics in Indoor Spaces**

Venue 14  
Rm 302

8:20–10:00 Chairs: Toshiki Hanyu, Ning Xiang

8:20–8:40 3–14–1

**Relation between sound absorption and speech intelligibility in room, part 1: Theoretical investigation**

Ryoko Hirose, Tetsuya Sakuma

8:40–9:00 3–14–2

**Relation between sound absorption and speech intelligibility in room, part 2: Case study based on geometric simulation**

Keji Chen, Ryoko Hirose, Tetsuya Sakuma

9:00–9:20 3–14–3

**In-situ measurement method of speech privacy focusing on statistics of acoustic features of speech and background noise**

Hayato Sato, Takuya Nishimoto, Yuga Konishi

9:20–9:40 3–14–4

**Experimental studies on the effect of ceiling materials on the sound environment of underpass concourse using the station simulator**

Miki Yonemura, Shinichi Sakamoto, Hideo Tomizawa, Yasuhiro Ishiwata, Shiniji Nakazawa, Yuko Arai, Masayoshi Hamaguchi, Akihisa Takahashi

9:40–10:00 3–14–5

**The effect of furniture on room acoustic parameters and its dependence on different suspended ceilings' sound absorptive properties**

Huong Nguyen, Erling Nilsson

**12.7 Acoustics of Education Spaces**

Venue 14  
Rm 302

10:20–12:20 Chairs: Saki Noguchi, Naoko Evans

10:20–10:40 3–14–6

**Classroom transformation for better education: Part 1 - A systematic review**

Nazli Che Din, Abdul Wafi Razali, Musli Nizam Yahya, Raha Sulaiman, Asrul Sani Abdul Razak

10:40–11:00 3–14–7

**Classroom transformation for better education: Part 2 - A preliminary study on acoustic design strategies for hybrid learning classrooms**

Abdul Wafi Razali, Nazli Che Din, Musli Nizam Yahya, Raha Sulaiman, Asrul Sani Abdul Razak

11:00–11:20 3–14–8

**Study on noise and vibration when the train passes for nursery schools located under the elevated railway**

Takuya Okaniwa, Ryuta Tomita

11:20–11:40 3–14–9

**Assessment of acoustic performance of classrooms in Ireland**

Eoghan Heffernan, Eoin A. King

11:40–12:00 3–14–10

**Correlation of teacher's voice level with the speech comprehension and fatigue degree of teachers**

Chan-Hoon, Haan, Jakin, Lee

12:00–12:20 3–14–11

**A questionnaire survey on the prevalence of self-reported voice disorders in school teachers, and classroom noise in Japan**

Naoko Evans, Miki Kaneko, Taiki Shigematsu, Hirokazu Sakamoto, Ken Kiyono

13:20–15:00 Chairs: Saki Noguchi, Naoko Evans

13:20–13:40 3–14–12

**A field experiment on the effect of sound absorption installed to a highly reverberant kindergarten classroom: A second report**

Keiji Kawai, Yuuki Matsufuji, Megumi Tsuru, Midori Ishizawa

13:40–14:00 3–14–13

**Hand-made sound absorber using familiar materials for nursery facilities**

Emi Toyoda, Satoshi Sugie

14:00–14:20 3–14–14

**The need for auditory-friendly classroom environment for children with autism spectrum disorder**

Hidetoshi Takahashi, Kanako Ueno

14:20–14:40 3–14–15

**Research and sound quality analysis of little theaters in Guangdong universities**

JiaWei Zhu, HaiTao Sun

14:40–15:00 3–14–16

**Development of a continuous classroom signal-to-noise ratio measurement system**

Benjamin Yen, C. T. Justine Hui, Esther Bergin, Eleesa Jensen, Suzanne C. Purdy, William Keith, Yusuke Hioka, James Whitlock, George Dodd

**14.4 Physiological & Emotional Responses to Environment Sound**

Venue 15  
Rm 303

8:20–10:20 Chairs: Massimiliano Masullo, Ming Yang

8:20–8:40 3–15–1

**Effects of thermal-acoustic interaction on comfort under office behaviors - taking air-conditioning noise as an example**

Xin Wen, Qi Meng, Da Yang, Mengmeng Li

8:40–9:00 3–15–2

**Study on the effects of sound factors and their association with the psychological evaluation of thermal comforts**

Satomi Ikami, Shinji Yoshida, Jaeyoung Heo

9:00–9:20 3–15–3

**The sound environment as moderator of taste perception in fruit juice drinking experience**

Noor Fajrina Farah Istiani, Massimiliano Masullo, Gennaro Ruggiero

9:20–9:40 3–15–4

**Environmental noise and electrodermal activity: measurements and limits of living lab experiments**

Massimiliano Masullo, Roxana Adina Toma, Juan Miguel Navarro Ruiz, Jorge Hernandez Bellot, Luigi Maffei

9:40–10:00 3–15–5

**Interactive soundscape design in enhancing perceived safety in urban spaces at night**

Wenxue Zhang, Qi Meng, Mengmeng Li, Na Li

10:00–10:20 3–15–6

**Sound event detection utilizing spectro-temporal receptive field**

Deokki Min, Hyeonuk Nam, Yong-Hwa Park

**14.6 Response to Noise & Vibration**

Venue 15  
Rm 303

10:40–12:20 Chairs: Yasunao Matsumoto, Tatiana Alvares–Sanches

10:40–11:00 3–15–7

**Assessment of noise and vibration annoyance and other physical factors of working conditions on vessels by means surveys – a research method**

Dariusz Pleban, Piotr Kowalski, Jacek Zajac

11:00–11:20 3–15–8

**Effects of railway-induced noise and vibration on sleep disturbance in detached houses**

Shigenori Yokoshima, Takashi Morihara, Yasunao Matsumoto

11:20–11:40 3–15–9

**Experimental study on effects of sound on vibratory sensations of horizontal vibration**

Hiroshi Matsuda, Nobuo Machida

11:40–12:00 3–15–10

**A comparison of subjective responses to simultaneous traffic-induced vibration and noise in buildings between Japanese and Vietnamese participants**

Nguyen Thanh Tung, Yasunao Matsumoto, Takashi Morihara, Shigenori Yokoshima, Kentaro Hayashi

12:00–12:20 3–15–11

**Experimental study on reading disturbance by combining two-axis vibration and noise**

Takashi Morihara, Yasunao Matsumoto, Shigenori Yokoshima, Kentaro Hayashi

13:20–15:00 Chairs: Yasunao Matsumoto, Tatiana Alvares-Sanches

13:20–13:40 3–15–12

**Development of workplace vibration risk assessment (VRA) based on noise exposure and hearing conservation for occupational safety and health monitoring in Malaysia**

Abdul Hamid Khair, Husna Khairiyah, Abdul Jalil, Nawal Aswan, Md Rezali, Khairil Anas

13:40–14:00 3–15–13

**An investigation of the contribution of vibration duration on subjective response to horizontal building vibration**

Kentaro Hayashi, Yasunao Matsumoto, Shigenori Yokoshima, Toyohiko Higashida

14:00–14:20 3–15–14

**Study on the correspondence between vibration level and vibration evaluation by residents in real houses through one day**

Yuki Sato, Ryuta Tomita, Reina Aoki

14:20–14:40 3–15–15

**Study on vibration measurement and sensory evaluation of combined vibration for detached houses**

Toru Matsuda, Ryuta Tomita

14:40–15:00 3–15–16

**Effect of deflection on evaluation of walking vibration of long-span timber floor from the viewpoint of habitability**

Yuhei Koyama, Yutaka Yokoyama, Shinsuke Nishitani, Shintaro Fukuda



8:20–10:20 Chairs: Sunao Hara, Semiha Yilmazer

8:20–8:40 3–16–1

**E-PANNs: Sound recognition using efficient pre-trained audio neural networks**

Arshdeep Singh, Haohe Liu, Mark D. Plumbley

8:40–9:00 3–16–2

**Automated noise recognition and classification system based on artificial intelligence**

Denis Poulin, Thierry Noel

9:00–9:20 3–16–3

**A conceptual framework for the practical use of predictive models and Soundscape  
Indices: Goals, constraints, and applications**

Andrew Mitchell, Francesco Aletta, Tin Oberman, Mercede Erfanian, Jian Kang

9:20–9:40 3–16–4

**Predictions for sound events and soundscape impressions from environmental sound  
using deep neural networks**

Sunao Hara, Masanobu Abe

9:40–10:00 3–16–5

**Effect of masker selection schemes on the perceived affective quality of  
soundscapes: A pilot study**

Zhen-Ting Ong, Kenneth Ooi, Bhan Lam, Trevor Wong, Woon-Seng Gan,  
Karn N. Watcharasupat

10:00–10:20 3–16–6

**Preliminary investigation of the short-term in situ performance of an automatic  
masker selection system**

Bhan Lam, Zhen-Ting Ong, Kenneth Ooi, Wen-Hui Ong, Trevor Wong, Woon-Seng Gan,  
Karn N. Watcharasupat

10:40–12:20 Chairs: Takeshi Nakaichi, Jenny Selander

10:40–11:00 3–16–7

**Acoustical environments in the textile industry facilities: A case study of Malatya  
Province, Türkiye**

Muammer Yaman, Cüneyt Kurtay, Gülsu Ulukavak Harputlugil

11:00–11:20 3–16–8

**Effects of noise on the hearing of intensive care unit nurses**

Song Ziwei, Pyoung Jik Lee, Bin Li, Fuyuan Fei, Thomas Hampton

11:20–11:40 3–16–9

**Survey of undesirable noises in an industrial clean room**

Daisuke Yamashita, Kazuaki Harashima, Aoi Takeda, Naru Sato, Hiromitsu Umayahara, Takeshi Nakaichi, Ichiro Higashikubo

11:40–12:00 3–16–10

**Earplug fit-testing system applying pure-tone audiometer**

Sakae Yokoyama, Tomohiro Kobayashi, Aoi Takeda, Takeshi Nakaichi

12:00–12:20 3–16–11

**Vibroacoustic simulations of asymmetric tapered duct mimicking cochlear hydrodynamics**

Vikas Kumar Lakhmani, Rahul Ramdas, Sripriya Ramamoorthy

**16.4 Soundscape Preservation**

Venue 16  
Rm 304

13:20–15:00 Chairs: Yoshio Tsuchida, Semiha Yilmazer

13:20–13:40 3–16–12

**Attempt to hold a soundscape contest for young people**

Sayoko Takano, Yoshio Tsuchida

13:40–14:00 3–16–13

**Soundscape conservation policy focusing on active listening: An examination based on the case of the Enshu-nada Sea of Japan**

Kazuya Minoura, Shinya Daimon, Katsushi Kaneko

14:00–14:20 3–16–14

**Auralization: An experimental approach to understand the soundscape of the past**

Michael Isnaeni Djimantoro, Widjaja Martokusumo, Heru W. Poerbo, Joko Sarwono

14:20–14:40 3–16–15

**The relationship between acoustic characteristics and landscape elements with different hydrodynamic environment in Jiuzhaigou World Heritage Site, China**

Xiaoqing Xu, Baojing Pu, Jie Du

14:40–15:00 3–16–16

**Cultural soundscape as intangible or tangible cultural heritage**

Patricia Pahlevi Noviandri, Michael I. Djimantoro, Eggi Septianto, Widjaja Martokusumo

# **Program (Poster)**

**August 21, 22**  
**(Monday, Tuesday)**



**August 21 (Monday)**

10:20–11:40 Chair: Toru Yamazaki

1 – P – 1**Numerical investigation of communicating turbulent boundary layers through porous media**

Thomas P. Hunter, Nguyen Anh Khoa Doan, Francesco Avallone, Daniele Ragni

1 – P – 2**Global optimization of underwater vehicle hull shape on flow resistance**

Ren Hua Peng, Zhong Kun Jin, Guo Feng Bai

1 – P – 3**Experimental investigation of aerodynamic sound radiated from flow around an airfoil placed in the turbulent flow generated by active turbulence generator**

Noriaki Kobayashi, Yasumasa Suzuki, Chisachi Kato

1 – P – 4**Disease detection using machine learning techniques in time–frequency domain**

Yuki Matoba, Osamu Mikami, Daisuke Tanaka

1 – P – 5**Estimation of Japanese word intelligibility by automatic speech recognition with noise adaptation**

Masaki Hattori, Kazuhiro Kondo

1 – P – 6**Demodulated sound enhancement based on virtual multi-boosted amplitude modulation with parametric array loudspeaker**

Yoto Ikezaki, Yuting Geng, Masato Nakayama, Takanobu Nishiura

1 – P – 7**Dome-shaped ultrasonic jammer for speech privacy protection**

Noriyuki Hayasaka, Kazuhiro Kondo

1 – P – 8**Auditory masking based on automatic chord progressions using modulation conditions of critical bandwidth in diatonic chords for dental treatment sounds**

Takuya Hayashi, Toru Takahashi, Takanobu Nishiura, Masato Nakayama

1 – P – 9**Non-intrusive speech intelligibility prediction method for reverberant speech using neural network-based frequency segmentation and masking front-end**

Kazushi Nakazawa, Kazuhiro Kondo

1 - P - 10

**Quasi-real-time estimation of a loudspeaker direction from sound pressure level ratio among four channels**

Ryusei Tsuda, Tomoru Awatani, Masato Nakayama, Toru Takahashi

1 - P - 11

**A basic study on a method for sound source localization using distributed acoustic measurement equipment**

Itsuki Ikemi, Kazunori Harada, Akiko Sugahara, Yasuhiro Hiraguri

1 - P - 12

**Subjective evaluation of source distance in dynamic 2. 5D local sound field synthesis**

Takashi Asano, Ryota Matsumoto, Yusuke Ikeda, Yasuhiro Oikawa

1 - P - 13

**Sound field reproduction based on physical-model-based pressure matching with frequency-dependent variable control regions**

Ryota Matsumoto, Izumi Tsunokuni, Yukika Suzuki, Yusuke Ikeda

1 - P - 14

**Calibration of otoacoustic emission analyzer in accordance with IEC 60645-6:2022**

Chi-ho Au, Kwok-keung Tung, Hoi-shan Lam

1 - P - 15

**Singular spectral analysis-based interpolation for missing segments of speech signals extracted from videos captured by dual rolling-shutter cameras**

Hayata Nakano, Yuting Geng, Kenta Iwai, Takanobu Nishiura

1 - P - 16

**An energy method for non-uniform cross-sectional thermoacoustic cavity with impedance ends**

Xue Xing, Bingjie Ma, Shunan Wang, Xiao Han, Zhigang Wang

1 - P - 17

**Finite element analysis of sound fields in the corridors of the hospital ward: Investigation on installing patterns of sound absorbing materials**

Yuto Kinjo, Reiji Tomiku, Noriko Okamoto, Toru Otsuru

1 - P - 18

**A basic study on presentation of improvement effect of sound environments by use of computational simulation**

Noriko Okamoto, Reiji Tomiku, Toru Otsuru, Kaho Ito, Arata Yoshida

1 - P - 19

**Vibration and noise analysis of a rectangular plate embedded with two-dimensional acoustic black holes based on Comsol**

Jiayu Gu, Xiaofei Du, Xiaojuan Sun, Qing Gu

1 –P–20

**Active noise control performance in the high-frequency range**

Seoung-Yeon Han, Sung-Hwan Shin, Chan-Hee Jeon, Dong Kyu Lew, Agustinus Oey, Jiho Chang, Jangwon Lee, Chang-Kook Chae

1 –P–21

**Active control of outgoing noise from the inside of a room at its opening**

Young-Sup Lee, Jihea Lim

1 –P–22

**Vibration attenuation band tuning by active stiffness control of local resonators of metamaterials**

Yupei Jian, Yincheng Chen, Guobiao Hu, Lihua Tang, Kean Aw

1 –P–23

**Investigations on relationship between vibration characteristics and shapes of effect cymbals with finite element method**

Kohei Izawa, Yuting Geng, Kenta Iwai, Takanobu Nishiura

1 –P–24

**1D convolutional neural network-based signal tracking algorithm with feature extraction and system diagnosis**

Dongwoo Hong, Byeongil Kim

1 –P–25

**An efficient narrowband FxLMS algorithm for a 3-axis active mount**

Junyeong Heo, Seungmin Shin, Jaebin Cha, Seorim Hwang, Youngcheol Park, Kyu-chul Jung, Sung-wan Son

1 –P–26

**Research on the active noise control technology for the reduction of the air conditioner noise in a vehicle cabin**

Koki Shige, Naoyuki Takeda, Osamu Terashima

1 –P–27

**Active noise control of air conditioning system noise**

Orhun Okcu, Kanghyun An, Sangkwon Lee

1 –P–28

**Active vibration control for reduction of interior noise caused by R-MDPS**

Kang Hyeon An, Sang Kwon Lee, Soo Hyun Shin, Dae Won Jang

1 –P–29

**Experimental evaluation of feedforward active noise control system with optical laser microphone and proportional-integral-differential filter**

Shota Naiki, Kenta Iwai, Takanobu Nishiura, Yoshiharu Soeta

**August 21 (Monday)**

15:20–16:40 Chair: Takatoshi Yokota

1 – P – 30**An experimental approach for analysing pantograph noise contribution**

Heemin Noh, Sungho Yoon, Jiyoung Hong

1 – P – 31**Durability of the noise-reduction performance of the PMSMA and CRSMA pavements – a case study in Hong Kong**

Bin Yang, Zhen Leng, Minmin Yuan, Wing-tat Hung

1 – P – 32**On the relationship between the vibration characteristics of the automobile wheel and generated road noise in the vehicle cabin**

Sho Kobayashi, Ryo Kiyotaki, Zhe Li, Osamu Terashima

1 – P – 33**Quantification of noise levels for the flying drones in accordance with operating condition**

Dong-Chae Park, Ok-Cheol Ahn, Jun-Young Kim, Yong-Hee Kim, Sang-Ho Kim, Seung-Soo Lee

1 – P – 34**Investigation of physiological responses on drone noise in a laboratory condition**

Ga-Young Kim, Dae-Gwan Won, Yong-Hee Kim, Sang-Eun Jeon, Sang-Ho Kim, Seung-Soo Lee

1 – P – 35**Subjective responses on drone noise with immersive reproduction tool**

Sang-Eun Jeon, Ga-Young Kim, Dae-Gwan Won, Yong-Hee Kim, Sang-Ho Kim, Seung-Soo Lee

1 – P – 36**Study on the acoustic properties of light-weight PU-GF composites by content of glass fiber for automotive interior trim parts**

Jang Chang Wool, Jang Seok Park

1 – P – 37**Study on acoustic properties of ultra-low-density polyurethane with nano-cellulose**

Kyoung-min Choi, Jang-seok Park, Se-min Oh, Hunyoung Jung, Jungho Ryu

1 – P – 38**The effect of aluminum body on acoustic characteristics of vehicle**

Jungwha Jung, Seung Lee, Hyungkyu Mo, Pilgeun Jun



1 – P – 39

**Vehicle seat surface real-time control system with linear actuator to reduce vertical impact**

Zhe Li, Ryo Kiyotaki, Sho Kobayashi, Osamu Terashima

1 – P – 40

**Study on combustion noise control of marine diesel engine based on experiment data**

Bingjie Ma, Shunan Wang, Zhigang Wang, Xue Xing, Jianping Shen

1 – P – 41

**Study on the effect of semi-active control method matching for truck cab and seat suspension on driver comfort**

Xiaofeng Zhang, Xiandong Liu, Canhang Sun

1 – P – 42

**Experimental characterization of road roughness input for tyre dynamics simulations**

Ivano La Paglia, Luca Rapino, Francesco Ripamonti, Roberto Corradi, Simone Baro

1 – P – 43

**FE-based simulation of radiated noise for a rotating tire**

Ilsik Kim, HyunUk Kim, YongHun Kim

1 – P – 44

**Study of low-frequency noise suppression effect inside acoustic cavities by applying piezoelectric nonlinear energy sink**

Jianwang Shao, Bingxin Wu, Qimeng Luo, Huihong Zhao, Xian Wu

1 – P – 45

**Underwater acoustic signal enhancement based on iterative phase gradient technique in the distorted towed array**

Wenxiang Nie, Qisong Wu, Liang An, Fujian Yu, Ye Zhang

1 – P – 46

**High-resolution DOA estimation in the hydrophone array shape with uncertainty based on dynamic compressed sensing**

Liang Cheng, Qisong Wu, Fujian Yu, Ye Zhang

1 – P – 47

**Underwater positioning analysis and system establishment of the towed underwater hydrophone array system**

Chao-Jung Wu, Chiao-Ming Peng, Jian-Wu Lai, Li-Chang Chuang, Wen-Rong Yang, Tzu-Wei Wang, Chia-Ping Tsou, Chi-Fang Chen

1 – P – 48

**Snapping shrimp noise detection methods based on linear prediction analysis**

Soo Hyun Park, Jinuk Park, Jungpyo Hong

**August 22 (Tuesday)**

10:20–11:40 Chair: Yosuke Yasuda

2 – P – 1**Sound absorption analysis of carbon steel varied in density and microstructures**

Mardin H, Kusno Kamil, Ahmad Amri, Faisal Habib, Muhammad Rizal

2 – P – 2**Experimental study on the widening of the sound isolation characteristics of light weight sound isolation structure using inflated membrane with air**

Tomoaki Kaise, Satoshi Inoue

2 – P – 3**Review on current applications of metamaterial in Hong Kong noise control and its potential application in construction sites**

Stephen Wai Tung Chong, Silver Cheuk Kiu Chan, Edward Siu Leung Chan, Joe Cho Shing Leung, Chee Kwan Lee, Terence Sai Wing Tsang

2 – P – 4**Low frequency sensitivity enhancement of MEMS microphone using acoustic metamaterial**

Jiwon Huh, Jedo Kim

2 – P – 5**The influence of structural changes and defects on noise mitigation properties of the periodic structures based on coupled Helmholtz resonators**

Aleksandra Pavliuk, Mariia Krasikova, Sergey Krasikov, Anton Melnikov, Yuri Baloshin, David A. Powell, Steffen Marburg, Andrey Bogdanov

2 – P – 6**Experimental study on magnetic stiffness characteristics of electromagnets in intelligently adjustable acoustic metamaterials**

Junjuan Zhao, Min Yang, Liying Zhu, Yueyue Wang, Wenjiang Wang, Tuo Xing, Fang Wang, Weimin Xiao, Xianhui Li

2 – P – 7**Acoustic metamaterials for broadband soundproofing and ventilation**

Inho Lee, Gwanho Yoon

2 – P – 8**Acoustic properties of structure with negative stiffness under random excitation**

Nie Jingkai, Fan Chao, He Qiang, Tian Yi, Hu Sheng, Wang Wenjiang, Zhao Junjuan

2 -P-9

**Optimal design for a perforated panel absorber combined with Helmholtz-resonance and plate vibration**

Nozomu Fujimoto, Akira Sanada, Suguru Takata

2 -P-10

**Numerical investigation on the sound scattering characteristics of amorphous structures by using Voronoi tessellation**

Kouki Hamatani, Akioko Sugahara, Yasuhiro Hiraguri

2 -P-11

**A fundamental study on the sound insulation characteristics of gyroid**

Takumi Yano, Akiko Sugahara, Yasuhiro Hiraguri

2 -P-12

**Effect of small concaves surface on the acoustical characteristics of chicken feather panel**

Ansarullah Fahaaruddin, Kusno Kamil, Asniawaty Kusno, Abdullah Basalamah

2 -P-13

**Investigation of sound direction sense by effect of sound source height for voice evacuation guidance system in VR space**

Seitaro Aida, Ayumu Osumi, Youichi Ito

2 -P-14

**Performance of floor mats for heavy-weight impact noise reduction in a 210 mm-thick bare slab apartment houses**

Jun-Oh Yeon, Soon-Seong Moon, Yong-Hee Kim

2 -P-15

**Numerical investigation on the natural frequency of RC slab reinforced with cambered steel beam for reducing heavy-weight impact noise**

Sang-Yun Lee, TaeSoo Kim, Sungchan Lee, Sang-su Ha

2 -P-16

**Strengthening slab stiffness to reduce heavy-weight impact noise on the floor**

Sungchan Lee, Sang-su Ha, TaeSoo Kim

2 -P-17

**Analysis of just noticeable difference and annoyance by octave band of rubber ball impact sound using auditory perception experiment**

Yeon-Su Ha, Sang-Joon Lee, Hyo-Jin Lee, Myung-Jun Kim

2 -P-18

**Fantastic INMD – the past and the future**

Silver Cheuk Kiu Chan, Stephen Wai Tung Chong, Ken Yat ken Lam, Joe Cho Shing Leung, Chee Kwan Lee, Terence Sai Wing Tsang

2 -P-19

**Ventilation metasurfaces for omnidirectional broadband proofing**

Ruizhi Dong, Dongxing Mao, Xu Wang, Yong Li

2 -P-20

**Sound insulation performances of the wall profiles using autoclaved lightweight concrete block**

Ok-Cheol Ahn, Yong-Hee Kim, Seong-Hoon Kee

2 -P-21

**A literature review of floor impact noise characteristics in wooden apartment buildings using cross-laminated timber slab**

Dae-Gwan Won, Yong-Hee Kim

2 -P-22

**Influence of dimensional and connection characteristics of CLT building elements on predictive calculations**

Antonino Di Bella, Luca Barbaresi, Vincenzo Pettoni Possenti

2 -P-23

**Comparative analysis of the acoustical performances of modular and ordinary classrooms**

Jakin Lee, Seung-Min Lee, Chan-Hoon Haan

2 -P-24

**Study on sound environment optimization strategy of high-density urban secondary schools**

Xiaoyu He, Hongwei Wang

2 -P-25

**The study of the acoustic environment of remote work spaces: Characteristics and suitability of work**

Runa Shinkawa, Yoshio Tsuchida

2 -P-26

**Relationship between sound environments and worker's impression evaluation in open-plan offices Part 1: Development of the survey system and summary of the survey results**

Kengo Togashi, Takumi Araki, Akiko Sugahara, Yasuhiro Nagasawa, Yasuhiro Hiraguri, Kazunori Harada, Yukinobu Iwakiri

2 -P-27

**Relationship between sound environments and worker's impression evaluation in open-plan offices Part 2: Analysis of sound environment and impression evaluation**

Takumi Araki, Akiko Sugahara, Yasuhiro Nagasawa, Yasuhiro Hiraguri, Kengo Togashi, Kazunori Harada, Yukinobu Iwakiri

2 -P-28

**Simulation for predicting in the hospital noise control**

Yueyue Wang, Junjuan Zhao, Fang Wang, Wenjiang Wang, Liying Zhu, Xianhui Li

2 -P-29

**Proposal of reverberation time to match the visual aspect of the architectural space displayed in VR using panoramic photographs**

Ayumi Ishikawa, Tetsu Aoki

2 -P-30

**Use of item response theory (IRT) in subjective assessment of concert halls**

Salvador Cerdá, Carlos Abellán, Jaume Segura, Alicia Giménez, Miguel Arana, Rosa M. Cibrián

**August 22 (Tuesday)**

15:20–16:40 Chair: Koji Nagahata

2 – P–31**A statistical analysis of robust cicada noise level**

Leo Misono, Kenji Muto

2 – P–32**Designing decision-making support algorithms for noise and vibration in digital environmental impact assessment**

Kyoungmin Kim, Byungkwon Lee, Taeho Park, Young Min Park, Junyeong An, Hyungjin Jeon, Hyosung Sun

2 – P–33**Reducing outdoor noise in an apartment complex through building arrangement**

Yun-Hee Cho, Jang-Won Lee, Yong-Hee Kim

2 – P–34**Low-frequency sound absorption of thin-plate acoustic metamaterials with buckling beam**

Tuo Xing, Erjing Han, Xianhui Li, Junjuan Zhao, Xiaoling Gai, Xiwen Guan, Fang Wang

2 – P–35**Effect of occlusion effects by bone-conduction sound on speech perception assessed by monosyllable articulation test and confusion in phoneme perception**

Asuka Miwa, Sho Otsuka, Seiji Nakagawa

2 – P–36**Effects of size and hardness of pinna on cartilage conduction hearing: Comparison between auricular hematoma and normal subjects**

Akane Tamura, Irwansyah, Sho Otsuka, Seiji Nakagawa

2 – P–37**Frequency-discrimination and speech-perception characteristics of bone-conducted sound presented to the facial parts**

Ko Uemura, Sho Otsuka, Seiji Nakagawa

2 – P–38**The effect of amplitude-modulation methods and speaker gender on monosyllable articulation by distantly-presented bone-conducted ultrasound**

Naoya Takahashi, Sho Otsuka, Seiji Nakagawa

2 - P-39

**Degradation of speech reception performance in competing sounds in middle-aged adults and its factor**

Mai Yuasa, Sho Otsuka, Seiji Nakagawa

2 - P-40

**Effects of the preference for acoustic stimuli on sleep quality**

Shota Maki, Sho Otsuka, Seiji Nakagawa

2 - P-41

**Influence of traffic noise on residents' sleep in different residential areas**

Yue Wu, Jinglun Ma, Jingyi Mu, Shanshan Zhang

2 - P-42

**On a recording method for ambient sounds with a confidential speech**

Yumi Koyama, Jun Toyotani, Makoto Morinaga, Hyojin Lee, Yasushi Shimizu

2 - P-43

**Emotion recognition from sound events based on facial expression recognition**

Junjie Li, Jianxin Peng

2 - P-44

**Spatiotemporal principal component analysis for event-related potentials in three oddball paradigms under meaningful noise**

Takahiro Tamesue

2 - P-45

**Effects of orienting attention to a specific frequency on medial olivocochlear reflex - A study of dependence on target frequencies -**

Shoma Kikuchi, Yuki Ishizaka, Sho Otsuka, Seiji Nakagawa

2 - P-46

**Relationship between speech perception and cortical temporal information processing in noise**

Shigeki Saikan, Sho Otsuka, Seiji Nakagawa

2 - P-47

**Comparison of the effects of mental fatigue on medial olivocochlear reflex and cortical activity**

Kandai Uchiyama, Sho Otsuka, Seiji Nakagawa

2 - P-48

**Computational model for predicting sound quality metrics using loudness model based on gammatone/gammachirp auditory filterbank and its applications**

Takuto Isoyama, Shunsuke Kidani, Masashi Unoki

2 -P-49

**Influence of visual information on the perception of environmental sounds**

Takane Terashima, Yasunobu Tokunaga

2 -P-50

**Reproduction and experience of a classic Japanese-style room and sound environment**

Manabu Ishihara

2 -P-51

**Study of soundscapes in heritage festivals: the “Fallas” of Valencia, “Festa de la Mare de Déu d’Algemesi” and the “Morosy Cristianos” festival of Villena (Alicante)**

Alicia Giménez-Pérez, Miguel Arana-Burgui, Rosa Cibrián, Salvador Cerdá-Jordá, Jaime Segura-García

2 -P-52

**Acoustics and psychoacoustics study of fireworks displays in two different environments: ‘Fallas’ in Valencia and ‘Sanfermines’ in Pamplona (Spain)**

Miguel Arana, Alicia Gimenez, Rosa Cibrian, Salvador Cerda-Jorda, Jaime Segura-Garcia

2 -P-53

**Implementing construction noise mitigation management framework to achieve quiet building demolition in urban environment of Hong Kong: A case study on demolition of a multi-storey carpark building**

Ka-long Karen Leong, Mei-chi Wong, Kwun-ting Chris Kwok, Chor-kuen Alfred Wong, Tszwai Jason Ng, Wai-keung John Wong



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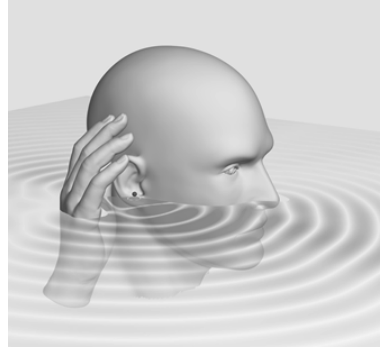
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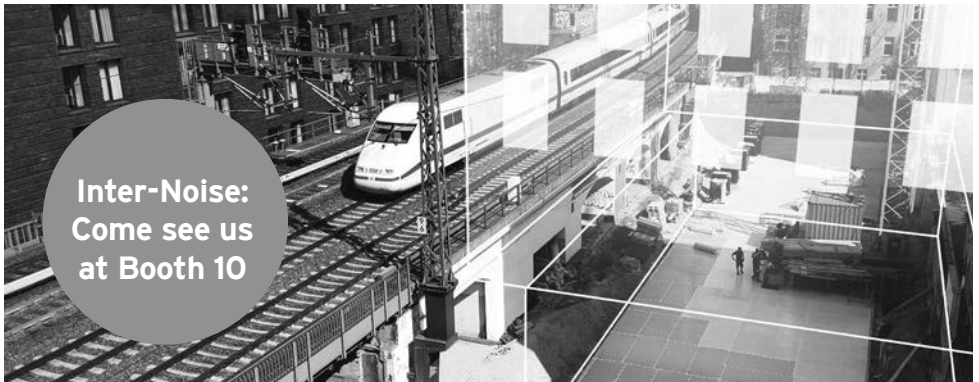
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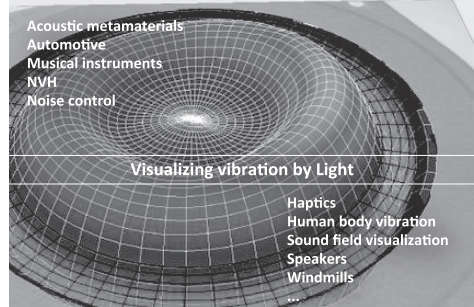
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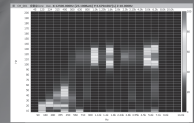
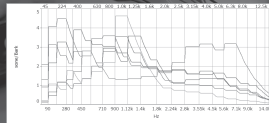


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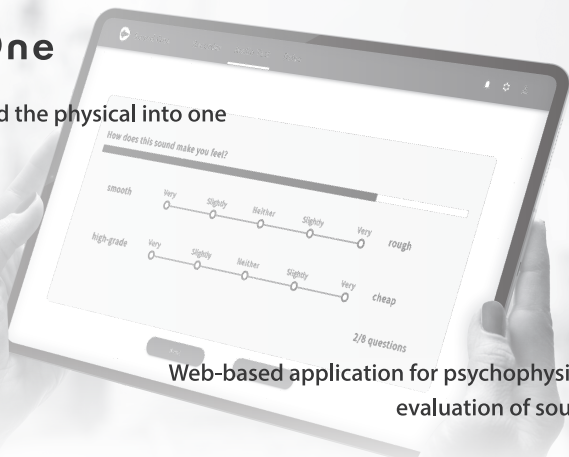


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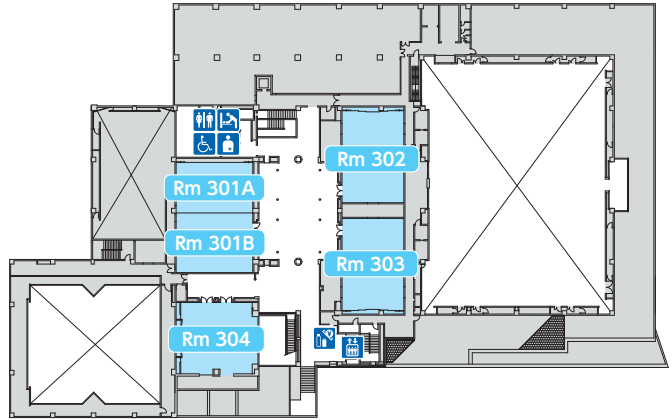
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3f



2f



1f

