Universidad Austral de Chile

Conocimiento y Naturaleza





2o Simposio de Acústica Arquitectónica – $\mathcal{SAA}$ 2021

24 de Junio de 2021
09:50 a 14:00 (hora Chilena)
Virtual (Zoom)
Organizado por www.acusticauach.cl

Este simposio virtual tiene como objetivo discutir aspectos prácticos y de investigación en Acústica Arquitectónica. El programa incluye charlas en español e inglés de invitados nacionales e internacionales. El simposio es abierto al público y es organizado por el Instituto de Acústica de la Facultad de Ciencias de la Ingeniería de la Universidad Austral de Chile (www.acusticauach.cl).

Expositores

- J. Picaut, "I-Simpa: the short story of the first open source room acoustics software", UMRAE, Université Gustave Eiffel, IFSTTAR, CEREMA (Francia)
- E. Brandão, "On the in situ measurement of sound absorbers", Universidad Federal de Santa Maria (Brasil)
- N. Jiménez, "Advanced control of sound reflections: from twisting to holograms and subwavelength resonances", nstituto de Instrumentación para Imagen Molecular, CSIC & Universitat Politècnica de València (España)
- A. Alcaíno, "Diseño acústico de recintos polifuncionales", AADG SpA (Chile)

Registración

Registración gratuita en la siguiente página

https://www.eventbrite.co.uk/e/2o-simposio-sobre-acustica-arquitectonica-saa-2021-tickets-156448929961

Contacto

Dr. Rodolfo Venegas
Instituto de Acústica
Universidad Austral de Chile
rodolfo.venegas@uach.cl

AcústicaUACh
www.acusticauach.cl

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24 de Junio de 2021
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PROGRAMA *SAA* 2021

09:50 – 10:00	Apertura / Opening	R. Venegas
10:00 – 11:00	I-Simpa: the short story of the first open source room acoustics software	J. Picaut
11:00 – 11:40	On the in situ measurement of sound absorbers	E. Brandão
11:40 – 12:00	Receso / Break	
12:00 – 12:40	Advanced control of sound reflections: from twisting to holograms and sub-wavelength resonances	N. Jiménez
12:40 – 13:20	Diseño acústico de recintos polifuncionales	A. Alcaíno
13:20 – 13:30	Cierre / Closure	R. Venegas

El horario corresponde a hora Chilena / Chilean time.

Utilizar el enlace a continuación para unirse al simposio a partir de las 09:50 am (hora Chilena) del 24/06/2021

Enlace de conexión / Connection link
https://reuna.zoom.us/j/84372638810?pwd=SFBaUGQ1YVhoM3BSUW1CTVpidnVLUT09
Passcode: 517629

Comité organizador
Dr. Rodolfo Venegas & Gabriel Núñez
Instituto de Acústica
Universidad Austral de Chile

Expositores $\mathcal{SAA}$ 2021



Judicaël Picaut

I-Simpa: the short story of the first open source room acoustics software

UMRAE, Université Gustave Eiffel, IFSTTAR, CEREMA (Francia)

Resumen

The story of I-Simpa started just 20 years ago, during a research work consisting in developing a Monte-Carlo method, based on sound particles, to predict the sound level distribution inside a street. More precisely, the first code was just intended to validate a theoretical and analytical approach based on transport/diffusion equations. Twenty years later, I-Simpa is a free and open source software for room acoustics, with more than 20,000 downloads, and used by a large community of users. This talk will therefore review the history of I-Simpa, and will then focus on its community and collaborative ambition.

Reseña biográfica

Dr. Judicaël Picaut is Senior Researcher at the Université Gustave Eiffel, where he heads the Environmental Acoustics Research Unit (UMRAE). For more than 20 years, he has been carrying out and leading research in connection with the analytical and numerical modelling of acoustic propagation in complex spaces (architectural and urban acoustics), the study of propagative effects (façade diffusion, diffusion by fittings, meteorological effects...), noise mapping in the environment (modelling and sensors). He is one of the founders of the Noise-Planet.org project, and has been at the origin of several open-source tools (NoiseCapture, NoiseModelling, I-Simpa).

La charla será dada en Inglés / This talk will be given in English

Expositores $\mathcal{SAA}$ 2021



Eric Brandão
On the in situ measurement of sound absorbers
Universidad Federal de Santa Maria (Brasil)

Resumen
The estimation of acoustical absorption of samples is a topic of general interest for several fields in acoustics and this talk will discuss in situ measurement techniques. First, a historical perspective will be given focusing on measurement methods based on a small number of sensors. In the later part of the presentation, the application of array signal processing to the in situ absorption measurement will be introduced. A simulation study about the measurement of finite samples will be presented, with the estimation of the absorbent properties of materials based on the wave number spectrum estimation. The inclusion of evanescent waves into the sound field model leads to a more complete description of the sound field, which tends to be beneficial to the measurement of smaller samples.

Reseña biográfica
Eric Brandão is an Electrical Engineer with a PhD in Acoustics, focused on the measurement of sound absorbers. He is currently an Associate Professor at the Federal University of Santa Maria, in the south of Brazil. He teaches in the acoustical engineering undergraduate course and in postgraduate programs. His research focuses on the development and improvement of sound absorption and scattering measurement techniques and on computational room acoustics.

La charla será dada en Inglés / This talk will be given in English

Expositores $\mathcal{SAA}$ 2021



Noé Jiménez
"Advanced control of sound reflections: from twisting to holograms and subwavelength resonances",
nstituto de Instrumentación para Imagen Molecular, CSIC & Universitat Politècnica de València
(España)

Resumen

Optical holograms can modulate light wavefronts to generate visible images. In the same way, acoustic images can also be synthesized by holograms, shaping the areas where mechanical waves present a high amplitude, and areas where the media is at rest. In this talk, we will present the recent advances of acoustic holograms and metamaterials to control the reflected field in room acoustics. First, we present an approach to reduce the thickness of traditional sound diffusers using metamaterials. By tuning the resonance and the local absorption of the structure, broadband and efficient sound diffusion can be produced using panels 20 times thinner than traditional designs. The potential of structured materials to control acoustic reflections can be enhanced by designing spiraling panels that reflect acoustic vortices. These kind of twisting waves present phase dislocations at its axis, and waves, as a whirlpool, interfere destructively at this location. In this way, the specular component vanish and the scattering coefficient reaches very high values. Finally, recent proposals based on far-field holograms are presented to design scattering patterns on demand for specific applications.

Reseña biográfica

Noé Jiménez, received his Ph.D. degree from the Universitat Politècnica de València, (Spain) in 2015. Noé Jiménez is currently "Juan de la Cierva" post-doctoral fellow at Spanish Research Council. In 2015 he joined the CNRS (UMR6613, France) for a post-doctoral position to research on acoustic metamaterials where they developed perfect and broadband absorbers. He has been visiting researcher at Columbia University (NY, USA), and at the University of Salford (Manchester, UK), where he developed thin sound diffusers based on metamaterials. He works for the European Space Agency for noise reduction systems at the launch pad using sonic crystals and metamaterials. He was awarded by the Spanish Royal Society of Physics in 2019 for his scientific contribution to transcranial ultrasound propagation using holographic methods to treat neurological diseases. His research interests concern from fundamental research in acoustic waves in complex, structured media, and metamaterials, to focused ultrasound for biomedical applications.

La charla será dada en Español / This talk will be given in Spanish

Expositores $\mathcal{SAA}$ 2021



Andrés Alcaíno
Diseño acústico de recintos polifuncionales
AADG SpA (Chile)

Resumen
Esta charla indica una metodología de trabajo para afrontar un proyecto acústico integral, en edificios con programas múltiples, donde deben interactuar diferentes actividades profesionales y permitir su desarrollo paralelo, como por ejemplo un edificio gubernamental o un centro cultural. El emplazamiento, layout de diseño Arquitectónico, integración de especialidades y materialidades, son variables críticas en la selección, desarrollo y detalle de las soluciones constructivas, o de acabado interior, a proyectar. Se entregarán herramientas de discriminación de targets de diseño, tanto para el control de ruido y vibraciones, como para el confort interior. Para finalmente, revisar un par de ejemplos prácticos de proyectos ejecutados.

Reseña biográfica
Andrés Alcaíno es ingeniero Civil en Sonido y Acústica de la Universidad Tecnológica de Chile. Consultor Senior, director de proyectos para empresas privadas en Chile desde el año 2007. Comenzó como investigador en los laboratorios de Inmetro, Brasil, para luego desarrollar su carrera profesional ligado al diseño de sistemas de audio de gran escala, control de ruido y vibraciones, y acústica arquitectónica. En su experiencia profesional, se ha especializado en la acústica para la edificación, con proyectos emblemáticos para centros culturales, teatros, cines, centros comerciales, oficinas, hospitales, recintos deportivos, medios de comunicación y edificios gubernamentales. Ha realizado más de 200 proyectos en 9 países, con más de un millón de m^2 en diseños ejecutados. Es fundador y director de Acústica Audio Diseño y Gestión (AADG Spa), consultor externo para empresas de Chile, Costa Rica y México, y miembro del Colegio de Ingenieros Acústicos de Chile A.G.

La charla será dada en Español / This talk will be given in Spanish