

CONVENTION REPORT

140TH

AES CONVENTION

Palais des Congrès Paris, France

June 4–7, 2016



Getting ready to take advantage of all the learning opportunities at the 140th

The audio industry recently celebrated all things audio at the Audio Engineering Society 140th International Convention, held June 4 through June 7 at the Palais des Congrès in Paris, France. With a 61% increase in attendee preregistration and a doubling of the exhibiting brands, AES Paris, chaired by Michael Williams, was 2016's largest professional audio event.

From the Opening Ceremonies, including Awards presentations and a keynote address by president elect of the AES, Alex U. Case, through the core AES convention fare of technical research papers, workshops and tutorials, the four days of the convention were packed full of opportunities to listen, learn and connect. Additionally, during the opening ceremonies, AES announced that the AES Europe convention will return to Berlin, Germany, in 2017 for the 142nd Convention and exhibition.

AES executive director Bob Moses commented, "We headed into the Paris convention with great expectations based on registration and exhibitor participation, along with the number and quality of technical presentations, special events, and sponsored presentations scheduled for the convention. The industry responded in a big way, breaking recent pre-registration records and extending the AES's reach into audio communities far and wide. By every measure, AES Paris exceeded our initial expectations. Kudos are due to convention chair Michael Williams and his entire committee."

OPENING CEREMONIES AND KEYNOTE

Opening the convention amidst strikes and the River Seine about to burst its banks, Bob Moses joked that bad weather had been arranged so people didn't feel so bad about being inside the convention center. He thanked the volunteers that had brought this event together so successfully, offering particular congratulations to Michael Williams and his wife Sue for their sterling efforts. In addition Moses called to mind the recently deceased Zenon Schoepe, who was sadly no longer able to run the



Bob Moses, executive director



John Krivit, president



The large crowd at the opening ceremony

Project Studio Expo that he had been pivotal in starting up. Registration for the 140th had already exceeded the recent all time high in Europe by 25% and over 100 companies were taking part in the exhibition, he said.

Welcoming delegates to the convention in the “city of lights and sound,” president John Krivit recalled the influential Parisian, E. L. Scott de Martinville, who had invented the earliest known sound recording device, the phonograph, in 1857. He would be astounded by the content of this convention, some 160 years later, said Krivit.

Adding his own welcome, Michael Williams suggested that the Palais des Congrès was more like home for the AES than anything else, having played host to its conventions many times in the past. It was good to be back, he said, and offered his warm thanks for the dedicated work of the convention committee. In particular he wanted to thank his wife Sue for her exceptionally supportive work leading up to the event, naming her as an honorary cochair of the convention.

Awards committee chair and past president, Sean Olive, was pleased to introduce a deserving list of awards recipients, a full list of which can be found in the side bar.

KEYNOTE

AES President-Elect Alex Case enthralled the attendees at the opening ceremony of AES Paris, in a keynote address with the theme of “Intuition, Rebellion, Courage, and Chance.” An accident in a 1960s recording studio had created distortion that ended up being used creatively, he said at the outset. Most mistakes should be fixed, of course, but occasionally the result is useful. Novelty alone, though, is not enough, suggested Case. Going further, various deliberate uses of distortion were mentioned, such as an instrumental in a song by Link Wray, which was banned in some radio markets for fear it might incite violence in the masses. The first commercial stomp box was introduced in 1965—another step forward. Equalizers were first introduced as fixed devices intended to compensate for circuit anomalies in transmission

systems, and it took a long time before such things were used for creative purposes.

1951 brought the first commercial EQ with controls, the Pultec EQP-1A, and EMI had an almost fully parametric EQ from 1951, used mainly for disk cutting. The latter never got into the



Alex Case on fortuitous accidents in the studio



Michael Williams, convention chair

AES AWARDS AT THE 140TH

FELLOWSHIP AWARD

is given to a member who has rendered conspicuous service or is recognized to have made a valuable contribution to the advancement in or dissemination of knowledge of audio engineering or in the promotion of its application in practice.

DAVE FISHER in recognition of his outstanding contributions to the field of audio education.

RALPH KESSLER in recognition of his outstanding contributions to the development of professional audio over a sustained number of years.

BRIAN C. J. MOORE in recognition of his significant contributions to the understanding of human auditory perception, particularly in relation to sound reproduction and hearing aids (award accepted by Francis Rumsey on behalf of Brian Moore).

ROZENN NICOL in recognition of her pioneering research in the field of binaural audio.

KAZUHO ONO in recognition of his conspicuous contributions to the development of high-quality professional-use microphones.

BOARD OF GOVERNORS AWARD

is given for outstanding contributions to the Audio Engineering Society.

DORTE HAMMERSHØI in recognition chairing the 58th International Conference in Aalborg, Denmark, in June, 2015 (award accepted by Sofus Birkedal Nielsen on behalf of Dorte Hammershøi)

BERT KRAAIJPOEL in recognition of his many years dedicated service to the Society, and in particular to the Netherlands AES Section.

CITATION AWARD

is given in recognition of services or accomplishments that do not fit into any other categories.

HUMBERTO TERAN for his outstanding contributions to the enhancement of classical music production in Latin America.

PAPER AWARDS

Best Peer-Reviewed Paper Award: “Phase Derivative Correction of Bandwidth-Extended Signals for Perceptual Audio Codecs,” Mikko-Ville Laitinen, Sascha Disch, Christopher Oates, Ville Pulkki, paper 9490.

Best Student Paper Award: “Plane Wave Identification with Circular Arrays by Means of a Finite Rate of Innovation Approach”. Falk-Martin Hoffmann, Filippo Maria Fazi, Philip Nelson. Paper 9521.

recording studio until 1967 when the Beatles were “allowed” to use it. Thinking about dynamics, the idea of using a noise gate on a snare drum was first used by Phil Collins on “In the Air Tonight.”

Case encouraged the crowd to use their intuition, be rebellious, and have the courage to take chances. Today, said Case, we have an art form “that never exists at one time until it’s mixed,” with sound processing options made commonplace by rebels of the past. “Be driven by what you hear,” he said, “be brave enough to figure out new sounds.”



John Krivit presents Fellowship Awards, from left, to Dave Fisher, Ralph Kessler, Brian Moore (Francis Rumsey accepting), and Rozenn Nicol.



Fellowship Award is presented to Kazuho Ono.



Board of Governors Awards are presented to Dorte Hammershøi (Sofus Birkedal Nielsen accepting, left) and Bert Kraaijpoel.



Humberto Teran's Citation Award was accepted by Michelle Desachy



Mikko-Ville Laitinen (left, best peer-reviewed paper) and Falk-Martin Hoffmann (best student paper) receive awards from editor Bozena Kostek and John Krivit.



140TH CONVENTION AWARDS PRESENTATION

PSE AND EXHIBITION

Exhibition bookings had doubled compared with last year to over 130 exhibiting brands, and registration was at a 21st century record for European AES conventions. The AES continued its outreach to unite the international audio community with the industry leaders, manufacturers, and innovators that shape the industry. The bustling exhibition floor area, boasting over 75 booths, was one of the most talked-about highlights of the convention, and the popular stands and demo rooms overflowed with gear from leading manufacturers showing new tools and technologies ready for the personal production space, stage, and studio.

In its continued mission to offer exclusive technical programs and events for audio professionals and students of all levels, the AES introduced the Professional Sound Expo (PSE), sponsored by Avid and Genelec, at the Paris Convention. As part of the offerings included with an Exhibits-Plus badge, and also open to All Access attendees, the PSE brought together industry leaders and manufacturers of the latest technologies to discuss a wide range of topics relevant to everyone working to maximize their professional skills and knowledge.

This edition of the Professional Sound Expo concentrated on revealing further insights into fundamental topics ranging

from microphones and acoustic treatments to measurement and audio quality control. Several presentations dealt with fundamentals of frequency, phase, and crosstalk, along with problems and solutions in sessions including “A High Quality Crosstalk Cancellation Loudspeaker,” “Active Velocity Acoustic Absorption for Low Frequencies,” and “The Importance of Controlling Phase and Damping Monitors.” A series of “Acoustic Room Treatment” sessions explored specific situations and tools for successfully outfitting a room for maximum listening efficiency.

Another popular series of presentations at recent AES conventions have been the “Mic to Monitor” sessions, sponsored by Prism Sound. These aim to answer questions such as what makes great gear “great,” what it takes to become a successful audio engineer, and how professionals tackle different aspects of their productions to create hit records. At this convention, further presentations each day, sponsored by AEA, invited attendees to immerse them-



Franck Ernould during the Professional Sound Expo



On the show floor the PSE attracted attentive audiences.

selves in a ribbon microphone demo and to view featured AEA Sessions series videos.

Additional specialized sessions throughout the PSE looked at important technical topics, including “Measurement Microphones,” “Measurement Uncertainty in Audio Testing,” and “Microphone Basics,” and the series also featured a session on using “Pro Tools in the Cloud.”

“As the program came together, it became apparent that the PSE for Paris encompasses a wealth of information—practical, actionable information—across a wide breadth of audio engineering topics,” commented Glenn Lorbecki, producer, engineer, musician, business owner and cochair of the Professional Sound Expo, along with Dave Lockwood. “We’re delighted that we were able to offer all attendees content of this quality in the Paris convention exhibition hall.”

IMMERSIVE AUDIO PROJECTIONS AND BINAURAL LISTENING

Immersive audio of all kinds was a primary theme at the 140th Convention, encompassing multichannel options over loudspeakers and binaural delivery over headphones. During three days of “Audio Projections” audio listening experiences in surround, multichannel, and 3D audio projection were offered by some of the foremost names in the industry.

Comprising a unique set of on-site listening environments purpose-built to showcase the latest developments, twelve different Audio Projections sessions were open to all attendees of the Paris

Convention. Taking place from 5–7pm on Saturday, Sunday, and Monday, the sessions kicked off with a headphone demo presentation entitled “Binaural Audio from Auro 3D,” presented by Wilfried Van Baelen and Bert Van Daele, followed by sessions including “3D Audio Projections presented by Dan Shores from Sono Luminus, USA,” “Binaural Audio Projections from the BBC,” and “3D Audio Projections by Morten Lindberg from 2L.”

Day Two brought sessions led by Radio France, including binaural audio sessions covering both the live production of electronic music for surround-sound reproduction, as well as binaural examples of their “Du cinéma pour vos oreilles,” public audio projections of dramas, concerts, and documentaries. Additionally, Wilfried Van Baelen and Bert Van Daele from Auro 3D returned to present a session on 3D audio featuring loudspeaker demos in 9.1, 11.1, and 13.1 multichannel formats.

Monday introduced four more unique sessions, beginning with “Binaural Audio from France Télévisions,” which explored new productions using binaural audio in the French media including an immersive documentary web series and a separate session offering 3D audio demos ranging from sports to an orchestral performance. “3D Audio from the Jurassic and Early Triassic” in Auromatic 3D, explored creation and production of biological recordings based on recent scientific findings, and concluded with “Contemporary Music in 3D Audio” by Hugo Romano Guimarães from Neu Records in Barcelona.

France occupies a leading role in the research and development of binaural listening (currently in the form of the BiLi project) due to both the remarkable research of Fellowship awardee Rozenn Nicol at Orange Labs (formerly France Telecom), and the growing demand for binaural listening in the audio and audiovisual market. During the technical program many of the groups participating in the BiLi project were present (Orange Labs, France Televisions, CNSMDP – Conservatoire de Paris, IRCAM, Radio France, Arkamys, Trinnov, a-volute, CNRS-LIMSI). One of the workshop rooms was completely equipped with headphones so attendees could hear the results first



Headphones were everywhere at the 140th.



A room equipped with numerous pairs of headphones enabled communal listening to binaural spatial audio demonstrations.

hand. Radio France, under the responsibility of Edwige Roncière and Hervé Desjardin, had also produced a remarkable amount of program material for both 5.1 multichannel and binaural sessions.

HEYSER LECTURE

Binaural audio expert Rozenn Nicol delivered the Richard C. Heyser Memorial Lecture on the first evening. The lecture, titled “The Immersive Audio Revolution: From Labs to Mass-Market,” addressed the major developments in spatial audio in recent years. Rozenn Nicol is a spatial audio research engineer at Orange Labs in France, working on the enhancement of telecommunication services through innovative 3D sound technologies such as binaural, WFS, and ambisonics. “‘Revolution’ is not too strong a word to apply to the growth of immersive audio, especially given the parallel virtual reality movement,” said Francis Rumsey, chair of the AES Technical Council. “Dr. Nicol was exceptionally well qualified to recount the path that has led us to the brink of that revolution, as well as offer insights on what the future will bring.”

Nicol pointed to the many developments in spatial audio over the past 25 years. After more than 50 years of stereophony, she said, new technologies such as Wave Field Synthesis, Higher Order Ambisonics, and Vector-Base Amplitude Panning were introduced, demonstrating the promise of an enhanced 3D audio experience, where virtual sound sources could be accurately synthesized in any direction. With the development of various loudspeaker formats for multichannel audio reproduction, increasing channel counts and placement schemes, including height channels, offer improvements in sonic immersion and sound spatialization. Rozenn introduced the burgeoning assortment of tools that is available for the capture, editing, coding, and reproduction of spatial audio. Because these developments require increasingly complex setups of loudspeakers, she said, immersive audio faces the risk



Top, Rozenn Nicol discusses the immersive audio revolution. Bottom, Technical Council officers present Rozenn with a certificate and a copy of Richard Heyser's anthology on Time Delay Spectrometry.

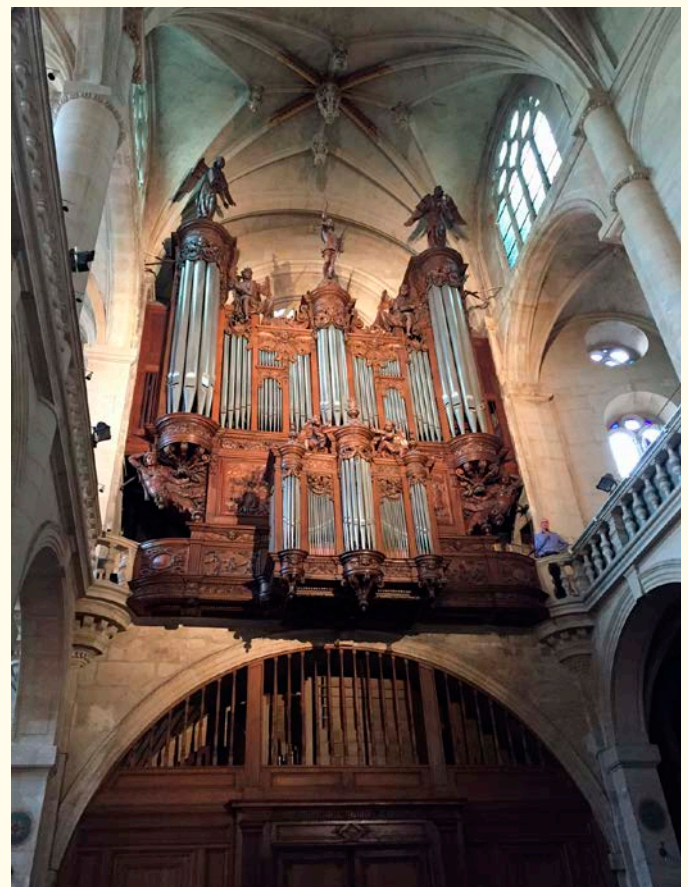
of being limited to movie theaters, amusement parks, and other public spaces. Fortunately, a new step was recently reached with the binaural adaptation of any multichannel audio format to headphone listening. Pioneering experiments by radio and television organizations (BBC, Radio France, France Télévisions) show that immersive audio is very close to achieving mass market penetration.

ORGAN CONCERT

Performing a concert together for the first time at an AES convention, organists Graham Blyth and Francis Rumsey took to the organ loft of the church of St Etienne du Mont, once home to the famous organist and composer Maurice Duruflé. The mighty Cavaillé-Coll organ, hanging ominously from the west wall of the church, gave delegates a taste of the power and majesty of undistorted natural sound from thousands of pipes ranging to the limits of the audio spectrum. Works included the “Variations de Concert” of Joseph Bonnet, which got the recital off to a rousing start, the jolly *Sortie* in E flat by Lefébure-Wély to conclude Rumsey's first half; Franck's *A minor Chorale*, and Messiaen's “*Dieu Parmi Nous*,” to round out Blyth's second half. The evening was pronounced a great success by the numerous delegates in the body of the church.

BANQUET

A sold-out banquet provided a wonderful evening's entertainment for many, held in the heart of Ile Ste Germain at Issy Les Moulineaux. The island in question, in the middle of the Seine, had



Francis Rumsey introduces the organ concert from the loft of the spectacular organ at St Etienne du Mont.

originally been used entirely for agriculture, after which it was urbanized and then almost entirely industrialized. Recently it was transformed into a beautiful island park, and it was in this setting that French seasonal specialties were enjoyed in a Napoleon III pavilion. Interesting musical entertainment was provided courtesy of Robert Hebrard, musicologist and pioneer in experimental instrument manufacture.

PAPERS AND ENGINEERING BRIEFS

The convention technical program included over one hundred presentations of technical research papers on a wide range of the latest advances in pro audio technology, measurement, practice, and applications. The preprints of these presentations are available as part of the AES E-Library collection of exclusive documents and media; the AES E-Library is the world's largest repository of professional audio research and development.



Doug Self explains recent amplifier developments during his E-Brief

Cochaired by an expert program committee made up of Thomas Görne, Wolfgang

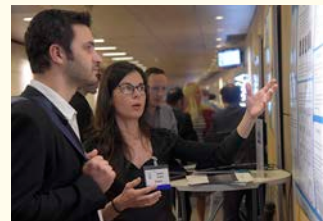
Klippel, Bergame Periaux, Robin Reumers, and Dejan Todorovic, the papers sessions, reflecting the convention as a whole, had a strong emphasis on immersive and spatial audio, alongside topics in signal processing, room acoustics, sound production, content management, perception, and other key themes.

Additionally a substantial number of engineering briefs were delivered by international participants, describing work in progress, practical engineering themes, and operational techniques. Posters were offered in the corridors outside the lecture rooms, where delegates could meet to discuss the work of the presenters. Quite a lot of these engineering briefs also dealt with binaural and 3D audio themes, including presentations on binaural mixing, height channel capture, and elevation control.

WORKSHOPS AND TUTORIALS

Under the coordination of cochairs Natanya Ford and Rob Toulson, a compelling program of workshops and tutorials was offered in Paris.

The tutorials program kicked off on Saturday, June 4, with a session on main microphone techniques for 2.0 and 5.1 presented by Helmut Wittek, followed by a presentation on binaural applications using Auro-3D over headphones. Sunday's tutorials covered a wide variety of topics, including optimizing recording studio acoustics on a budget, object-based mixing for Radio France,



Authors and demonstrators gather around their posters to explain their research to delegates. There was a chance to listen to headphone demos and experience virtual reality ideas presented over headsets.



Linda Gedemer explains the results of her research on preferred room responses in cinemas.

surround-sound production for live electronic music, and headphone virtualization and immersive sound technologies from New Audio Technology GmbH and Auro-3D. Monday brought binaural head recording for related HD video, immersive sound design using sound particles software, a new approach to "agile" game sound design that involves end-users in the design process, a historical overview of 100 years of condenser microphone design presented by Neumann, techniques for creating a 64-channel "acousmonium" in a 3D scene with the Unity5 development platform, and much more. On the final day was included techniques for 9.1 immersive audio, optimizing sampling and sample rate conversion, Audio Description (AD) sound design for making visual content more accessible to visually impaired people, audio forensics, creative vocal production



Nadja Wallaszkwits (L) and Bob Stuart (R) lead attentive audiences.



Lasse Nipkow (inset) and Bert van Daele explain immersive audio during 140th tutorials.



Members of the 140th Convention Committee: from left, back row, Magdalena Plewa, Rob Toulson, Philippe Labroue, Sonia Krstic, Michael Williams, Nadja Wallaszkovits, Umberto Zanghieri, and Thomas Görne; front row: Dejan Todorovic and Layan Thornton



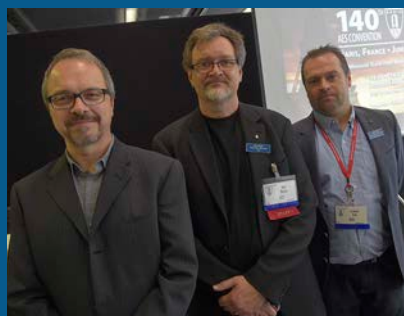
Convention advisers: Umberto Zanghieri, left, and Bill Foster



Facilities chairs: Layan Thornton and Nadja Wallaszkovits



Student and career events chairs: Magdalena Plewa and Kyle Snyder



PSE chair Glenn Lorbecki (left), with Bob Moses (executive director) and Graham Kirk (exhibition sales)

AES THANKS THE 140TH CONVENTION COMMITTEE

techniques, parametric spatial audio processing for heightened sound field realism, and additional tutorial sessions in immersive sound and psychoacoustics.

Workshops included a fascinating session chaired by Josh Reiss on the evaluation of high resolution audio, including panelists Bob Stuart, Bob Schulein, Thomas Sporer, and George Massenburg. There was also a highly topical session on immersive audio for virtual reality chaired by Gavin Kearney of York University in the UK. Following closely on the VR theme was Matthieu Parmentier's workshop on audio recording and productions for VR/360° applications, during which panelists from around the world looked into topics such as how to mix audio for these formats and how to render for things like headphones and VR glasses.

STUDENT EVENTS

Kyle Snyder together with Magdalena Plewa were responsible for bringing together the substantial student body present at the convention for a number of perennial events. The Student Delegate Assembly met on Tuesday morning to announce the candidates for the Vice Chair of Europe and International Regions, as well as to introduce the finalists in the various student competitions. A student party on the first night was hosted by Abbey Road Institute in Paris.

During the convention there was an opportunity for students to receive critiques on their recordings, moderated by Ian Corbett of Kansas City Community College. There were also two parts to the recording competition, judged by renowned international recording engineers, including studio and acoustic recording categories, sound for visual media, and a modern studio recording category that encompassed electronic music. A Student Design Exhibition showcased entries to the Student Design Competition in a poster and table-top format, enabling designers to have their projects seen by the professional community. The Education and Careers Fair took place on Monday over lunch time, and enabled companies looking for the brightest minds in the audio world to

find new talent, as well as schools, colleges and universities to offer information on study opportunities in different parts of the world.

TECHNICAL TOURS

The Paris Convention offered a host of Technical Tours, brought together by Philippe Labroue, offering attendees exclusive visits to some of the most renowned audio-related locales in the city. These guided tours focused on technology, acoustics, production, and professional audio history. Available tours included the Conservatoire National Supérieur de Musique et de Danse de Paris, Ink Production, Ferber Studios, Opéra Bastille, Muséec, Opéra Garnier, and Yellow Cab Studios.



Action at the Education and Careers Fair



Peter Cook leads the Regions and Sections Forum (left). David Scheirman (incoming president elect) makes a point at a committee meeting.



Members of the Board of Governors and AES officers met informally at the end of the final day of the convention.

TECHNICAL COUNCIL MEETINGS

Throughout the convention was held a series of meetings of the various AES Technical Committees, whose job it is to plan educational events such as workshops, tutorials and conferences, study the latest trends in their fields of expertise, propose standards activity, and awards. This activity was all brought together on the final day of the convention in a plenary meeting of the Technical Council, chaired by Francis Rumsey.

BEHIND THE SCENES

A huge amount of work goes on behind the scenes to make events like this a success. Particular mention should be made here of facilities cochair Layan Thornton and Nadja Wallaszkovits, volunteers chair Emily Clark, and convention advisors Bill Foster and Umberto Zanghieri. Their work, together with that of the

entire convention committee and the dedicated support of headquarters staff helped to bring about an event that will be remembered for success in the face of considerable challenges.

Editors note: papers from this convention can be downloaded from the AES E-Library at www.aes.org/e-lib.