CONVENTION REPORT

142ND

AES CONVENTION

Hotel Maritim
Berlin, Germany
May 20–23, 2017

Attendees register for the convention.

The city of Berlin, home to a vibrant electronic music scene, offered an ideal setting for the Society's 142nd Convention. Held between May 20th and 23rd at the Maritim Hotel, just to the south of the city center, the Berlin convention offered attendees a rich technical program with scientific paper presentations, workshops, and tutorials on critical trends and best practices, as well as technical tours to many of Berlin's historical sites, production studios, and broadcast facilities. The program was created by a committee of volunteers, cochaired by Nadja Wallaszkovits, chief audio engineer at Phonogrammarchiv, Austrian Academy of Sciences, and Sascha Spors from the University of Rostock.

"Organizing this event was an exciting challenge and a great experience," convention cochair Nadja Wallaszkovits. "We were very happy to see the convention well-received by attendees—it was the result of an outstanding team effort." Wallaszkovits and Spors praised the full AES Berlin committee for their dedicated labors. The committee included papers cochairs Jamie Angus and Thomas Sporer (who also served as convention treasurer), workshops cochairs Sascha Disch and Natanya Ford, facilities chair Jens Ahrens, student volunteers chairs Christoph Hold and Antonia Schwab, PSE chair Glenn Lorbecki, and technical tours chair André Maletz. "AES has been an important resource in all our careers," added Spors. "It feels good to give back to the community and help other people present their research and make connections."

Registration for the event peaked at 1800, with technical program attendance 20% higher than last year's record-setting convention in Paris, continuing a five-year growth trend. Participation was strong on the scientific research side, with 160 paper submissions to the technical program, and the presentations filling nearly every room available in the Maritim facility.

Stairs to the upper floor with demo rooms, meetings, and poster presentations

OPENING CEREMONIES

Opening the convention, AES executive director Bob Moses welcomed delegates to the city for the second time in recent years. Announcing partnerships with NAB and NAMM, Moses explained that the Society would be working alongside these organizations for east and west coast events in the USA during the coming year. He also pointed to the four international conferences coming up, as well as a European convention planned for Milan in 2018. Warm thanks were offered to the Berlin convention committee, whose hard work and dedication, entirely on a voluntary basis, had delivered a program of which all could be proud.

AES president Alex Case, added his own welcome saying that when you come to a convention you get to meet your colleagues in person. Understanding of new ideas is possible in a more thorough way, he suggested, in an age when electronic interaction only goes so deep. Case introduced convention cochair Nadja Wallaszkovits who reminded everyone that Berlin is a major center for electronic music and that André Maletz had put together a dedicated series of events on the theme. She encouraged visitors to use their time profitably to explore the latest developments. Cochair Sascha Spors pointed to highlights of the convention including the upcoming keynote and the Heyser

Bob Moses

Alex Case

Sascha Spors and Nadja Wallaszkovits

Attentive crowds watch the awards presentations.

AES AWARDS AT THE 142ND

SILVER MEDAL AWARD
WOLFGANG KLIPPEL in recognition of outstanding achievements in the understanding, modeling, and control of the behavior of loudspeaker and headphone transducers.

FELLOWSHIP AWARD
TAPIO LOKKI for bringing sensory evalution to research of concert hall acoustics.

BOARD OF GOVERNORS AWARD
PHILIP JACKSON for cochairing the 2016 International Conference on Sound Field Control.

MICHAEL WILLIAMS for chairing the 140th Convention.

DISTINGUISHED SERVICE AWARD
MARK YONGE in recognition of exceptional contributions to and management of AES standards.

PAPER AWARDS
Best Peer-Reviewed Paper Award: "An Analytical Approach for Optimizing the Curving of Line Source Arrays." Florian Straube, David Albenés Bonillo, Frank Schultz, and Stefan Weinzierl, paper 9699.

Best Student Paper Award: "Joint Parameter Optimization of Differentiated Discretization Schemes for Audio Circuits." François Germain and Kurt James Werner, paper 9751.

lecture to be given by Jörg Sennheiser. There would be 25 papers session and 9 engineering brief sessions, as well as an innovative organ concert in which jazz themes would meet classical music. Spors particularly thanked members of the convention committee for their work in putting together the event, as well as the 40 to 50 student volunteers from Hamburg and Berlin.

AWARDS

Awards chair and past president John Krivit introduced a strong line up of awardees to be honored by the Society. The Fellowship Award was presented to Tapio Lokki for bringing sensory evaluation to research of concert hall acoustics. Board of Governors Awards were given to Philip Jackson (cochair of the 2016 Sound Field Control conference) and Michael Williams (chair of the 140th Convention). Marking his retirement as standards manager, Mark Yonge received the Distinguished Service Award in recognition of exceptional contributions to and management of AES standards. In recognition of outstanding achievements in the understanding, modeling, and control of the behavior of loudspeaker and headphone transducers, Wolfgang Klippel received the prestigious Silver Medal Award.

KEYNOTE

Keynote speaker Alex Arteaga's presentation on "auditory architecture" aimed to bring together phenomenology, aesthetic practices, and engineering. Arteaga referred to the German term Klangumwelt, essentially "sound environment," wondering about the relationship of this to Schaeffer's concept of soundscapes and public spaces. Klangumwelt, he suggested, is enacted through hearing

Silver Medal presented by Alex Case, left, to Wolfgang Klippel.

Fellowship presented to Tapio Lokki (Juha Backman accepting).

Board of Governors Award presented to Philip Jackson.

Board of Governors Award presented to Michael Williams.

Distinguished Service Award presented to Mark Yonge.

Thomas Sporer, left, presents the Best Paper Award to Frank Schultz.

Jamie Angus, right presents the Best Student Paper Award to François German.

142ND CONVENTION AWARDS PRESENTATION

Alex Arteaga talks about auditory architecture during his keynote.

and listening in a space, emerging out of subjective and objective agencies. Klangumwelten are enactivist and phenomenological, it was proposed. Arteaga proceeded to offer a terminology for understanding and analyzing the perception of sonic architecture.

PSE AND EXHIBITION

A compelling exhibition featured some 60 exhibitors, sponsors, and demo rooms. Genelec and Eventide offered special demo rooms with a hands-on opportunity to experience in an intimate setting the world launch of Genelec's The Ones expanded triaxial loudspeaker line and Eventide's preview of the soon-to-be-released H9000, a networked, multichannel, multi-effects unit. A highlight of the exhibit floor was the standing-room-only Professional Sound Expo (PSE), with 22 educational sessions moderated by Glenn Lorbecki, who stated, "The Professional Sound Expo at AES Berlin was impressive, judging by the number of people who showed up eager to learn from our all-star presenters. The audiences were pretty evenly split between professionals and students, and they absorbed state-of-the-industry tips and technologies from some of the most highly qualified professionals in their fields. I was honored to host the PSE for the third consecutive convention, and look forward to seeing everyone at 143 in NYC."

Attendees learn about the latest techniques during packed PSE sessions.

VIP launch of Genelec's The Ones in their demo room at the Maritim.

SPECIAL EVENTS

Among the line-up of special events, open to all attendees, were two sessions dedicated to "Berlin: Center of Electronic Music Production, Mixing, Sound Design, and the Community," organized by André Maletz. Since the 1980s Berlin has grown to become the center of electronic music. It developed into a vivid environment with clubs, studios, festivals, communities, companies, and much more, where artists, musicians, DJs, and music business people want to be. The first part highlighted aspects of this scene, their relevance to and impact on professional audio, with contributions from expert panelists including David Miles Huber, Jan-Michael Kühn, Richard Roloff, Andreas Schneider, and Brian Smith. During the second part Martin Eyerer and David Miles Huber looked at "The Sound and The Mix," discussing practical approaches in sound design and mixing of electronic music, challenges in differentiation and getting high-end audio results. "Is there a Berlin way?" they asked.

The panel discusses Berlin's electronic music scene.

During this convention's Heyser Memorial Lecture, distinguished invited speaker Jörg Sennheiser spoke about the evolution of sound reproduction in relation to human perception. We do not perceive reality directly in multimedia, he pointed out, but via the various media. The senses may override or amplify each other, and what we perceive is not merely a simple sum of the inputs—perception does not follow simple engineering laws, one might say. Hearing on its own, for example, is different to hearing combined with other senses, said Sennheiser, giving the famous example of someone seen speaking one syllable while we heard another. The visual image strongly biased the syllable actually heard. Basic perceptual effects combine to give rise to "audio emotions," he said. Reviewing the company's history, Sennheiser pointed to the famous HD414 open headphone introduced in 1968, which defied all predictions about the sales quantities.

Middle: Heyser Lecturer Jörg Sennheiser is presented with a certificate by the Technical Council officers.
Lower: Heyser lecturers past and present: fron left, Jens Blauert, Jörg Sennheiser, and Karlheinz Brandenburg

The remainder of the lecture was spent introducing his company's AMBEO technology, an approach to developing products enabling an immersive audio workflow. Sennheiser described various possible implementations, including sports broadcast, automotive, and virtual/augmented reality. A smart headset removes the occlusion effect of typical in-ear headphones and captures binaural audio.

Pleasant weather and good company made for an enjoyable convention banquet following the Heyser lecture, held on board a restaurant ship, the Van Loon, moored in an urban harbor on a part of the city's river.

On the Monday afternoon, attendees were treated to "Loudness War II: The Streaming Battle," courtesy of loudness guru Florian Camerer, with panelists Leslie Gaston-Bird, Eelco Grimm, and Matthieu Parmentier. Major pop music releases have suffered from the loudness war for almost two decades, it was said. Now that music streaming has overtaken CDs as the primary platform for music sales, there is a big opportunity to end this "war" because the audio of streaming services can be normalized in one central location. As soon as all music is played at an equal level, it makes no sense to issue loud masters anymore and the loudness war ends. Eelco Grimm cooperates with streaming service Tidal to design an optimal loudness-leveling algorithm that does not harm the artistic intentions and opens the door to high sound quality for all major artists. Among other panel contributions Eelco presented the results of his research into all 4.3 million albums in the Tidal database, plus a subjective test. Discussion focused on two questions—can album normalization also be used successfully outside the album context, and which target level should be chosen?

Francis Rumsey at the console in St Matthias, and (inset) Francis and Sigrid Erbe-Sporer before the concert.

ORGAN CONCERT

AES conventions have entertained delegates with an organ concert for many years, but at the 142nd in Berlin there was a new twist involving classical themes morphing into jazz style on one of the city's finest pipe organs. Francis Rumsey was joined by Sigrid Erbe-Sporer for a program that included Mozart's Fantasia in F minor and Widor's Finale from the 6th Organ Symphony in the first half. Switching to jazz style for the second half, Sigrid started with "Mozart Changes" composed by Zolt Gárdonyi, which starts in classical style and gradually shifts into jazz mode. She continued with the "Suite Jazzique" of Johannes Matthias Michel, inspired by the well-known "Suite Gothique" of Leon Boellmann.

The organ at St. Matthias was built in 1958 by the firm of Romanus Seifert & Son. From 1972–4 it was enlarged by Seifert to become what was then the largest organ in Berlin, containing 109 ranks and 74 stops. In 1993 it was subject to a general overhaul during the church renovation and a new console was built by Stockmann. Thanks to recent additions in 2008–9 it now has an extensive combination system and a few more ranks, bringing the specification to 111 ranks and 76 stops, arranged on four manuals and pedal.

PAPERS AND ENGINEERING BRIEFS

Chaired by Jamie Angus and Thomas Sporer, the papers and engineering briefs program had received an exceptionally large number of submissions this time. Twenty-five papers sessions and 9 engineering brief sessions provided a forum for the world's audio researchers and developers to share the results of their most recent work. Presentations took place in two of the many meeting rooms, and also around a busy poster area in the upstairs concourse, around which people gathered to discuss aspects of presenters' work, perhaps hearing some examples on a laptop and headphones.

Among the dominant themes for sessions at the 142nd was transducer design, including an interesting paper from engineers at Genelec about the acoustic design of minimum diffraction coaxial loudspeakers with integrated waveguides. This explained a lot of the technical background behind the loudspeakers they were launching at this convention. Spatial audio sessions included a lot of papers on binaural technology, particularly concerning individualization of responses, externalization, and head tracking. There was also detailed coverage of object-based and ambisonic spatial audio, includ-

Jade Raine Clarke talks about elevation effects to Jeff Levision during a poster session.

In his paper presentation Richard King asks whether we can tell the difference between real and artificial ambience.

Exploring virtual worlds at ebrief poster presentation.

ing a paper from Matthias Frank and Franz Zotter on the perceptual sweet area for ambisonic reproduction. Channel-based spatial audio papers led into a session on sound zones, a hot topic that concerns ways of controlling the sound field in such a way that listeners can experience different levels or content depending on where they are located.

Audio coding is less of a prominent topic these days than it used to be, with most of the fundamental research having been done, but a couple of interesting papers here included one on whether codec artifacts might be more audible with some spoken languages than others. It seems to have more to do with whether the listeners are native speakers of the language than with what language is spoken. There were a lot of papers on listening tests and psychoacoustics, including another episode in Sean Olive and colleagues' study of in-ear headphone quality, this time concerning the influence of program material on sound quality ratings. While the program material had no significant effect on such ratings, some items produced more discriminating and reliable results.

You can find the full listing of the abstracts of all the papers and ebriefs presented at the 142nd Convention starting on p. 663 in this issue of the *Journal*.

WORKSHOPS AND TUTORIALS

Organized by Sascha Disch and Natanya Ford, 23 workshops and 25 tutorials were offered in an ambitious program over the four days of the convention. Among the tutorials was an interesting introduction to audio and video over IP standards, given by Andreas Hildebrand and Kevin Gross, during which work by the SMPTE Joint Task Force on Network Media was shown in relation to the AES67 standard for audio communications.

During an introduction to audio forensics, presented in association with that technical committee, Eddy Brixen explained that the work of forensic audio is a serious business, with the outcome

Mastering panel: from left, Jonathan Wyner, Mandy Parnell, Eric Boulanger, and Marc Ebermann

Umberto Zanghieri explains the history of digital signal processors for audio during a tutorial.

Chris Struck goes into the design and verification of headphones.

possibly sending someone to prison. He showed various aspects of such work, including the everyday bread-and-butter of cleaning up recordings and providing transcriptions. Tom Ammerman and Bob Schulein presented a session on creating audio for VR applications. Audio production tools including binaural and ambisonic microphone systems, with and without motion capture, were presented and demonstrated. Their tutorial included how to create high-quality content with professional workflows using common tools and DAWs. Lidwine Ho and Matthieu Parmentier offered a session on object-based audio for broadcasters, an important topic in the fast-evolving world of radio production. There was also a fascinating introduction provided by Nuno Fonseca entitled "All You Need to Know about 3D Audio."

Workshops kicked off with two sessions on mastering presented by Jonathan Wyner and panelists Mandy Parnell, Eric Boulanger, and Michael Romanowski. Both mastering workflows and the future of mastering were looked into, comparing self-mastering-while-mixing to more traditional approaches involving a professional mastering facility. There was also strong coverage of recording and mixing for different immersive formats, in a session with Stefan Bock in the chair. Capturing sound for 3D VR was explored by Hyunkook Lee,

looking into techniques including First-Order Ambisonics, Higher-Order Ambisonics, Equal Segment Microphone Array, as well as some of the currently available proprietary techniques. Myoung Woo Nam took people into new territory with a session on sound design for mobile devices, looking at auditory icons and universal languages for auditory interaction.

STUDENT EVENTS

The student program at conventions has grown into a large and successful operation led by the Education Committee and the Student Delegate Assembly (SDA). Kyle Snyder had worked hard with the SDA to put together a complete track of events including on career development. Student recording critiques and competitions form a large part of this activity, during which students can get feedback on their work or be judged on the results. A distinguished panel of judges participates in critiquing finalists of each category in an interactive presentation and discussion. The top three finalists in each category, as identified by the judges, present a short summary of their production intentions and the key recording and mix techniques used to realize their goals. They then play their projects for all who attend. Meritorious awards were presented at the closing Student Delegate Assembly meeting on Tuesday afternoon. The competition was a great chance for students to hear the work of colleagues at other educational institutions. Everyone learned from the judges' comments, even those who didn't make it to the finals, and it was a good chance to meet other students and faculty.

Another highlight was the Student Design Exhibition. The session was free and open to all convention attendees and was an opportunity for aspiring student hardware and software engineers

Kyle Snyder (center), with members of the Student Delegate Assembly

Antonia Schwab, left, and Claret Canelon offer information about HAW Hamburg during the Education and Career Fair.

Members of the 142nd Convention Committee: from left, Thomas Sporer, Sascha Spors, Natanya Ford, Nadja Wallaszkovits, Sascha Disch, Antonia Schwab, Jens Ahrens, André Maletz, and Christoph Hold.

Papers chairs: Jamie Angus, left, and Thomas Sporer

AES THANKS THE 142ND CONVENTION COMMITTEE

Professional Sound Expo chair: Glenn Lorbecki

Student and career events chair: Kyle Snyder

Student volunteers gather outside the Maritim.

Attendees get ready to head off for one of the many technical tours.

to have their projects seen by the AES design community. It was an invaluable career-building event and a chance for companies to identify their next employees.

TECHNICAL TOURS

For those with the time and inclination to get out of the convention venue and into the surrounding area, technical tours are an excellent way of seeing the local audio scene. André Maletz had assembled a diverse tour program that included operational facilities, manufacturers, and museums. First off the blocks was a tour to Berlin's Museum of Communications, whose permanent exhibition offered vivid insights into the origins, development, and future of the information society. A series of attractive temporary exhibitions showcased the many different aspects of communication. This was followed by a select tour of Emil Berliner Studios, named after the inventor of the gramophone, being among the most renowned recording studios for acoustic music. It is one of those rare studios in the world that offer direct-to-disc recordings. Be it purely a vinyl production or a supplement to a CD production, the whole signal path from microphone to the cutting needle is completely analog.

Further tours included a trip to Freudenhaus Studios and to Tegeler Audio Manufaktur, home to developer Michael Krusch. Hedd Audio, builder of monitor loudspeakers and employer of the "Air Motion Transformer" principle, proved to be a valuable outing, as did visits to StageTec and Riverside Studios. The SAE Institute Berlin offers "state-of-the-art" equipment and rooms, with studios, movie suites, workstations, and more. During the tour visitors had the chance to follow Peter Maier explaining the very special acoustical treatment of the studios. The Electronic Studio of TU Berlin, subject of another tour, focuses on electroacoustic music and sound art. It was founded in 1953 and supports education of audio engineers and composers. The Electronic Studio has one room with a 12-channel playback-system and another one with eight-channel systems and wavefield synthesis. Funkhaus Studios gave delegates a chance to encounter rooms originally conceived as different acoustic spaces for radio production, including foley accessories such as doors and special floors. These rooms are now mainly used for music production.

TECHNICAL COUNCIL, STANDARDS AND COMMITTEE MEETINGS

An AES Convention would not be complete without the series of

Standards Committee meetings, where the industry's leading systems and product engineers come together to chart a course for interoperability in the market place. This was the opportunity for outgoing Standards Manager Mark Yonge to hand over the reins to his successor, Richard Cabot.

In addition, the series of AES Technical Council meetings bring together the leaders in each audio field to discuss trends, bring together the results of study groups, and develop themes for upcoming convention and conference events. A full program of these meetings took place in Berlin, culminating in a plenary committee meeting on the last day chaired by Francis Rumsey.

The convention was also a chance for a number of the key AES standing committees to get together in order to deal with pressing business.

With a successful 142nd Convention now receding, the AES and its volunteer community is turning its attention to next year's European AES convention, planned for Milan, Italy, in spring 2018.

Francis Rumsey (center) chairs a meeting of the Technical Council, with Christoph Musialik (left), Bob Schulein, and Jürgen Herre (right).

Jan Abildgaard Pedersen, center, chairs a meeting of the Conference Policy Committee.

From left, outgoing Standards Manager Mark Yonge, Standards Committee chair Bruce Olson, and new Standards Manager Rich Cabot

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

The AES Board of Governors meets at the end of the convention.