

AES 31st INTERNATIONAL

New Directions in High London, UK



Josh Reiss
conference chair



Mark Sandler
Centre for Digital Music



The AES 31st International Conference *New Directions in High Resolution Audio* was held in London, June 25–27. This conference, hosted by the Centre for Digital Music at Queen Mary, University of London, was concerned with the promotion and delivery of high resolution audio, by maintaining quality throughout the recording and playback chain with current and future technologies. It aimed to provide a place for the exchange of news, issues, and results, by bringing together researchers, developers, educators, students, and

professional users working in fields that contribute to high resolution audio. It also served as a discussion forum, provided introductory and in-depth information in specific domains, and showcased current and future products.

The technical program was full and varied. The conference committee received 35 submissions, of which 21 were accepted for oral presentation and 9 for poster presentation. The schedule was arranged into sessions each dealing with particular aspects of the recording and playback chain, such as recording, processing, delivery, perception, and restoration. It covered design, implementation, and testing of high resolution audio equipment, such as A/D and D/A convert-

CONFERENCE

Resolution Audio

June 25–27, 2007



Peter Craven
keynote speaker



Wieslaw Woszczyk
AES president

ers, microphones, loudspeakers, and power amplifiers. It also encompassed high resolution audio system design and testing, including surround sound and ambisonics, formats, standards, and subjective testing.

But, of course, high resolution audio must be heard to be understood and to be appreciated. Thus, integral elements of this conference were the demonstrations, exhibitions, and recordings that were presented in addition to the technical papers. There were two wonderful locations for these demonstrations. The Listening Room is a state-of-the-art facility for the demonstration of high resolution audio technologies. It has been acoustically isolated and has sloped

walls in order to deal with acoustic reflections, and to compensate for the listening room acoustics. The Augmented Human Interaction (AHI) laboratory was also used for some demonstrations and for playback of hi-res recordings. Between the two, listeners had plenty of opportunities to discover not just the underlying technology of high resolution audio, but also how hi-res can be used to enrich the listening experience. Exhibitions were also available throughout the conference and included demos of high resolution products and equipment from Oxford Digital, Rohde & Schwarz, and Sound Tools.

Introductory remarks on the first day were given by ➤

Authors



Gavin Kearney



Sverre Holm



David Moore



Noboru Harada



Neil Harris
Best Professional Paper



Robert Sazdov



Antony Nasce



Ines Hafizovic
Best Student Paper



Steven Harris



Sungmok Hwang



Martin Schneider



Deidre O'Regan



Wen Zhang



Ivar Løkken



Raymond Belchior



Enrique Perez Gonzalez



Ian Knopke



Bruce Wiggins

Josh Reiss, conference chair, Mark Sandler, head of the Centre for Digital Music, and Wieslaw Woszczyk, president of the AES. The technical sessions on Monday included several contributions with significant subjective evaluation components, such as work presented by Wieslaw Woszczyk on digital audio system replication of an analog system, studies of spatialization techniques presented by Gavin Kearney, and analysis of audio quality in DAB Digital Radio, presented by Sverre Holm.

Also on Monday, the Listening Room featured a demonstration by Linn Audio of sound quality in various formats, ranging from 88.2 kHz and 24 bits, through to CD quality and mp3. The differences were clearly audible and this demonstration proved to be a topic of discussion throughout the conference. In the AHI lab, there were demonstrations of original recordings of high resolution audio by both students and professionals. Mark Waldrep and Brandie Lane jointly won awards for best professional recording, and Robert Sazdov and Thomas Geiger also tied for best student recording. In the afternoon there was a panel session on "Scope and Practicality of High Resolution Tools for Modern Recorded Music Production," chaired by George Massenburg. This panel—Jeff Levison, Peter Easty, and Claude Cellier—highlighted the rapidly changing landscape of the recording industry and the need for the high resolution audio community to respond and adapt to these changes. This was followed by a reception near the conference venue in the evening with refreshments and a performance of Persian music.

On Tuesday, the Listening Room featured a demonstration by John Bamford of Meridian Audio and a discussion of the failings of DVD-Audio to become commercially successful and how future formats can avoid these problems. The AHI lab featured a morning demonstration of Periphony by Mike Skeet and afternoon demonstrations of "3-dimensional Stereo Sound Reproduction" by Bill Dyer of Digital Audio Systems. Among the highlights of the technical sessions that day, was the paper "System Configuration for High Quality Audio Capturing in a Large Microphone Array," whose presenter and first author, Ines Hafizovic of the University of Oslo, won the award for best student paper. The afternoon panel session "Design Issues in High Quality Integrated Audio Systems," chaired by Vicki Melchior with panelists Steven Harris, John Atkinson, John Dawson, and Philip Hobbs, generated stimulating debate involving both audience and panelists. In the evening attendees enjoyed a pleasant boat ride up the River Thames for the conference banquet held at the Trafalgar Tavern, a lovely riverside pub in Greenwich.

Wednesday morning commenced with the keynote talk "Resolution—Who Needs It?" by Peter Craven, who is well-known throughout the audio engineering community for his contributions to ambisonics, dither theory, data compression, and other fields that have made a tremendous impact on high resolution technologies. Wednesday also saw the presentation of Neil Harris's paper, "Achieving Real Bandwidth Beyond 20 kHz with a Loudspeaker System," which won the award for best professional paper. In the Listening Room, Mark Waldrep demonstrated the latest high resolution DVD-Audio surround recordings from the AIX Records catalog. This was followed in the afternoon by Craig Bell of

PANEL DISCUSSIONS



Scope and Practicality of High Resolution Tools for Modern Recorded Music Production: from left, George Massenburg, chair, Claude Cellier, Peter Easty, and Jeff Levison.



Design Issues in High Quality Integrated Audio Systems: from left, Vicki Melchior, chair, Steven Harris, John Atkinson, John Dawson, and Philip Hobbs.



Future in High Resolution Audio: from left, Malcolm Hawksford, chair, Josh Reiss (foreground), Peter Craven, George Massenburg, John Atkinson, and John Dawson.

Zetex Semiconductor giving practical demonstrations of direct digital feedback amplifier performance. In the AHI Lab, Jeff Levison presented an interesting and varied selection of ambisonic and surround sound recordings.

The conference ended with a final panel session,

“Achievements, Challenges, and the Future in High Resolution Audio,” chaired by Malcolm Hawksford, with panelists Peter Craven, George Massenburg, John Atkinson, and John Dawson. This last panel ended the conference on a high note. It both reflected back on the conference and looked ➡

DEMOS

- 1 Sound Tools
- 2 Rohde & Schwarz
- 3 Oxford Digital
- 4 Bill Dyer, Digital Audio Systems
- 5 Philip Hobbs, Linn
- 6 John Bamford, Meridian
- 7 Jeff Levison





Vicki Melchior, sessions chair, and Malcolm Hawksford, papers chair



From left, Becky Stewart coordinated best recording and papers competitions, Brandie Lane (center) and Mark Waldrep (missed photo) shared the award for best professional recording, Thomas Geiger (2nd from left) and Robert Sazdov (2nd from right) shared the award for best student recording, and Roger Furness, AES executive director.



Attendees walk along the bank of the River Thames in Greenwich to the conference banquet at Trafalgar Tavern.

to the future. After the conference, on Thursday, the Centre for Digital Music put on a concert to which all conference attendees were invited.

Many people contributed to making this conference a success. Foremost among them are Malcolm Hawksford, papers chair, and Vicki Melchior, sessions chair. They had the initial idea for the conference and have kept that vision throughout. Malcolm structured the proceedings and the technical program and Vicki organized all the panels and demonstrations; along with Josh Reiss, conference chair, they reviewed all submitted papers. Enrique Perez was the technical coordinator and oversaw all technical requirements for demonstrations, exhibits, and presenters' special

requirements. Betty Woessner designed the website, program guide, and dealt with many administrative issues. Becky Stewart handled the best recording and paper competitions, oversaw set-up of the AHI Lab, and promoted the conference widely to the audio engineering student community. Gyorgy Fazekas coordinated sponsorships (Oxford Digital, Rohde & Schwarz, and PAS Monitors), and oversaw set-up of the exhibits and posters sessions. Mark Sandler, who runs the Centre for Digital Music, was highly supportive and ensured that the committee had all the necessary resources to run a successful conference.

Editor's note: CD-ROM of the conference papers can be purchased online at <www.aes.org/publications/conf.cfm>.