



Conference Program

All sessions take place in AUSTIN PEARCE LECTURE THEATRE unless otherwise indicated.

<p>Monday, July 18 11:00</p> <p>OPENING ADDRESS AND KEYNOTE</p> <p>Sound Field Control: A Brief History —<i>Philip Nelson</i>, University of Southampton, Southampton, UK (Keynote)</p> <p style="text-align: right;">12:20</p> <p>PAPER SESSION 1: SOUND ZONES</p> <p>1-1 Planarity-Based Sound Field Optimization for Multi-Listener Spatial Audio—<i>Philip Coleman, Philip Jackson</i>, University of Surrey, Guildford, Surrey, UK</p> <p>1-2 Generalized Singular Value Decomposition for Personalized Audio Using Loudspeaker Array— <i>Philippe-Aubert Gauthier</i>,^{1,2} <i>Yann Pasco</i>,^{1,2} <i>Alain Berry</i>^{1,2} ¹GAUS, Groupe d'Acoustique de l'Université de Sherbrooke, Université de Sherbrooke, Sherbrooke, Canada ²CIRMMT, Centre for Interdisciplinary Research in Music, Media and Technology, McGill University, Montréal, Canada</p> <p style="text-align: right;">13:00</p> <p>LUNCH</p> <p style="text-align: right;">14:00</p> <p>PAPER SESSION 1: SOUND ZONES (CONTD.)</p> <p>1-3 Improvement of Personal Sound Zones by Individual Delay Compensation—<i>Markus Christoph, Matthias Kronlachner</i>, Harman/Becker Automotive Systems GmbH, Straubing, Germany</p> <p>1-4 Robust Personal Audio Reproduction Based on Acoustic Transfer Function Modelling—<i>Qiaoxi Zhu</i>,¹ <i>Philip Coleman</i>,² <i>Ming Wu</i>,¹ <i>Jun Yang</i>¹ ¹Institute of Acoustics, Chinese Academy of Sciences, Beijing, China ²University of Surrey, Guildford, Surrey, UK</p> <p style="text-align: right;">14:40</p> <p>INVITED TALK</p> <p>Ultrasonic Manipulation—Tweezers and Tractor Beams— <i>Bruce Drinkwater</i>, University of Bristol, Bristol, UK</p>	<p style="text-align: right;">15:00</p> <p>BREAK</p> <p style="text-align: right;">15:20</p> <p>SPONSOR TALK: COMHEAR INC.</p> <p style="text-align: right;">15:40</p> <p>WORKSHOP 1</p> <p>Creative Applications of Sound Field Control Chair: Gavin Kearney Panel: Peter Lennox, Peter Otto (tbc), Bruce Wiggins, Tony Myatt</p> <p style="text-align: right;">16:40</p> <p>BREAK</p> <p style="text-align: right;">17:20</p> <p>PAPER SESSION 2: HIGH-ORDER AMBISONICS & MODE MATCHING TECHNIQUES</p> <p>2-1 Efficient Compression and Transportation of Scene-Based Audio for Television Broadcast—<i>Deep Sen, Nils Peters, Moo Young Kim, Martin Morrell</i>, Qualcomm Multimedia R&D, San Diego, CA, USA</p> <p>2-2 Presenting Spatial Sound to Moving Listeners Using High-Order Ambisonics—<i>Jorge Trevino, Shuichi Sakamoto, Yōiti Suzuki</i>, Tohoku University, Sendai, Japan</p> <p>2-3 AmbiFreeverb 2—Development of a 3D Ambisonic Reverb with Spatial Warping and Variable Scattering— <i>Bruce Wiggins, Mark Dring</i>, University of Derby, Derby, UK</p> <p style="text-align: right;">18:20</p> <p>BREAK</p> <p style="text-align: right;">19:30</p> <p>BUFFET DINNER AND PERFORMANCE PATS STUDIO</p> <p>'Longinye Swamp Sequence'—soundfields from Amboseli National Park. Performance presentation with introductory talk by Prof Tony Myatt.</p>
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Tuesday, July 19 09:00

KEYNOTE

The Psychoacoustics of Reverberation—*Steven van de Par*, University of Oldenburg, Oldenburg, Germany (**Keynote**)

10:00

BREAK

10:20

PAPER SESSION 3: PSYCHOACOUSTICS

- 3-1 Height Loudspeaker Position and its Influence on Listeners' Hedonic Responses**—*Sungyoung Kim*,¹ *Mark Indelicato*,¹ *Imamura Hidetaka*,² *Hideo Miyazaki*³
¹Rochester Institute of Technology, Rochester, NY, USA
²Tokyo University of the Arts, Tokyo, Japan
³Yamaha Corporation, Hamamatsu, Japan
- 3-2 Perceptually Motivated 3D Diffuse Field Upmixing**—*Hyunkook Lee*, University of Huddersfield, Huddersfield, UK
- 3-3 The Perception of Auditory Height in Individualized and Non-Individualized Dynamic Cross-Talk Cancellation**—*Gavin Kearney*, University of York, York, UK
- 3-4 Dynamic CTC with and without Compensation of Early Reflections**—*Michael Kohnen*, *Jonas Stienen*, *Lukas Aspöck*, *Michael Vorländer*, RWTH Aachen University, Aachen, Germany

11:40

INTRODUCTION TO DEMONSTRATIONS AND POSTERS

12:00

LUNCH PATS STUDIO

POSTERS PATS STUDIO

- P-1 Validation of Sound Field Duplication for Device Testing**—*Glenn Dickins*,^{1,2} *Prasanga Samarasinghe*,² *Thushara Abhayapala*²
¹Dolby Laboratories, McMahons Pt., Australia
²The Australian National University, Canberra, Australia
- P-2 Sound Zones: On Performance Prediction of Contrast Control Methods**—*Martin Bo Møller*,^{1,2} *Martin Olsen*³
¹Aalborg University, Aalborg, Denmark
²Bang & Olufsen A/S, Struer, Denmark
³Harman Lifestyle Division, Struer, Denmark
- P-3 Personal Sound Zones: The Significance of Loudspeaker Driver Nonlinear Distortion**—*Xiaohui Ma*,^{1,2} *Patrick J. Hegarty*,¹ *Jan Abildgaard Pedersen*,¹ *Lars G. Johansen*,² *Jakob Juul Larsen*²
¹Dynaudio A/S, Skanderborg, Denmark
²Aarhus University, Aarhus N, Denmark
- P-4 Performance Comparison of Filters Designed in Time and Frequency Domains for Personal Audio**—*Homín Ryu*, *Semyung Wang*, *Kihyun Kim*, Gwangju Institute of Science and Technology, Gwangju, Korea

DEMONSTRATIONS PATS STUDIO

- D-1 Bridging Near and Far Acoustical Fields; A Hybrid Systems Approach to Improved Dimensionality in Multi-Listener Spaces**—*Peter Otto*, *Eric Hamdan*
- D-2 Planarity-Based Sound Field Control and Robust Personal Audio**—*Philip Coleman*, *Qiaoxi Zhu*
- D-3 Demonstration of a spherical source with 32 loudspeakers**, *Angelo Farina*
- D-4 Listener Position Adaptive Loudspeaker Array for Binaural Audio and Personal Audio Reproduction**—*Marcos F. Simón Gálvez*

- D-5 Listener Position Adaptive Object-Based Stereo**—*Dylan Menzies*
- D-6 Personal Sound Zones Using a Compact Hemi-Cylindrical Loudspeaker Array**—*Falk-Martin Hoffmann*
- D-7 Cross-Talk Cancellation for Headrest Sound Reproduction**—*Charlie House*
- D-8 The Effect of Acoustic Crosstalk on Phantom Image Elevation Over Headphones**—*Hyunkook Lee*
- D-9 Ultrasonic Levitation**—*Bruce Drinkwater*
- D-10 Audio Upmixing Using Single-Channel Source Separation**—*Gerard Roma*

14:40

PAPER SESSION 4: SOUND FIELD CONTROL THEORIES 1

- 4-1 Sound Field Control With Hemi-Cylindrical Loudspeaker Arrays**—*Falk-Martin Hoffmann*,¹ *Filippo Fazi*,¹ *Simone Fontana*²
¹University of Southampton, Southampton, UK
²Huawei European Research Centre, Munich, Germany
- 4-2 Cross-Talk Cancellation and Equalization for Headrest Sound Reproduction**—*Stephen Elliott*, *Charlie House*, *Jordan Cheer*, *Marcos F. Simón-Gálvez*, University of Southampton, Southampton, UK
- 4-3 Comparison of Listener-Centric Sound Field Reproduction Methods in a Convex Optimization Framework**—*Andreas Franck*, *Filippo Maria Fazi*, University of Southampton, Southampton, UK
- 4-4 Time Domain Description of Spatial Modes of 2D and 3D Free-Space Greens Functions**—*Mark Poletti*,¹ *Thushara D. Abhayapala*,² *Paul D. Teal*³
¹Callaghan Innovation, Lower Hutt, New Zealand
²The Australian National University, Canberra, Australia
³Victoria University of Wellington, Wellington, New Zealand

16:00

BREAK

16:40

PAPER SESSION 5: SOUND FIELD CONTROL THEORIES 2

- 5-1 Source-Location-Informed Sound Field Recording and Reproduction: A Generalization to Arrays of Arbitrary Geometry**—*Shoichi Koyama*, Graduate School of Information Science and Technology, The University of Tokyo, Japan
- 5-2 Sound Source Modelling and Synthesis by the Equivalent Source Method for Reproducing the Spatial Radiation Characteristics**—*Wan-Ho Cho*, Korea Research Institute of Standards and Science, Daejeon, Korea
- 5-3 Listener-Adaptive Filtering Strategies for Personal Audio Reproduction over Loudspeaker Arrays**—*Marcos Felipe Simón Gálvez*, *Filippo Maria Fazi*, University of Southampton, Southampton, UK
- 5-4 Discussing the Applicability of Sound Field Techniques for Larger Audience Entertainment**—*Glenn Dickins*,^{1,2} *Peter Lemox*³
¹Dolby Laboratories, McMahons Pt., Australia
²The Australian National University, Canberra, Australia
³University of Derby, Derby, UK

18:00

BREAK

19:30

**CONFERENCE DINNER
GUILDFORD CATHEDRAL REFECTORY**

Wednesday, July 20 09:00

KEYNOTE

Differential Microphone Arrays—*Gary Elko*, mh acoustics LLC, Summit, NJ, USA (**Keynote**)

10:00

BREAK

10:20

PAPER SESSION 6: MICROPHONE ARRAYS FOR SOUND FIELD CAPTURING

6-1 A Qualitative Analysis of Frequency Dependencies in Ambisonics Decoding Related to Spherical Microphone Array Recording—*Jens Meyer, Gary Elko*, mh acoustics, Summit, NJ, USA

6-2 Microphone Arrays for Vertical Imaging and Three-Dimensional Capture of Acoustic Instruments—*Bryan Martin*,^{1,2,3} *Richard King*,^{1,2} *Wieslaw Woszczyk*¹
¹McGill University, Quebec, Canada
²Centre for Interdisciplinary Research in Music Media and Technology (CIRMMT), Montreal, Quebec, Canada
³Enhanced Reality Audio Group (ERA), Montreal, Quebec, Canada

6-3 Comparing Ambisonic Microphones: Part 1—*Enda Bates*,¹ *Marcin Gorzel*,² *Luke Ferguson*,¹ *Hugh O'Dwyer*,¹ *Francis M. Boland*¹
¹Trinity College Dublin, Dublin, Ireland
²Google, Dublin, Ireland

11:20

BREAK

12:00

WORKSHOP 2

Linking Sound Field Capture to Sound Field Reproduction
 Chair: Philip Coleman
 Panel: Jens Meyer, Hyunkook Lee, Glenn Dickins, Angelo Farina

13:00

LUNCH

14:00

PAPER SESSION 7: EMERGING TECHNIQUES AND APPLICATIONS WITH ARRAY TRANSDUCERS

7-1 Bridging Near and Far Acoustic Fields: A Hybrid System Approach to Improved Dimensionality in Multi-Listener Spaces—*Eric Hamdan, Andrew Allen, Raphael Melgar, Peter Otto*, Qualcomm Institute, University of California San Diego, CA, USA

7-2 Measuring Spatial MIMO Impulse Responses in Rooms Employing Spherical Transducer Arrays—*Angelo Farina, Lorenzo Chiesi*, University of Parma, Parma, Italy

7-3 A Self-Configurable, Wireless Audio System with User-Tracking Ability—*Jung-Woo Choi, Jungju Jee*, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea

7-4 Reshaping of Room Impulse Responses over Wireless Acoustic Networks—*Gema Piñero, Juan Estreder, Francisco Martínez-Zaldívar, María de Diego, Miguel Ferrer*, Polytechnic University of Valencia, Valencia, Spain

15:20

CLOSING REMARKS

SPONSORS

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