

145th Audio Engineering Society Convention 2018

New York, New York, USA
17 - 20 October 2018

Volume 1 of 2

ISBN: 978-1-5108-7473-2

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2018) by the Audio Engineering Society
All rights reserved.

Printed by Curran Associates, Inc. (2019)

For permission requests, please contact the Audio Engineering Society
at the address below.

Audio Engineering Society
International Headquarters
551 Fifth Ave., Suite 1225
New York, NY 10176
USA

Phone: +1 212 661 8528

www.aes.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

VOLUME 1

A HEAD-RELATED TRANSFER FUNCTION DATABASE CONSOLIDATION TOOL FOR HIGH VARIANCE MACHINE LEARNING ALGORITHMS	1
<i>B. Tsui, G. Kearney</i>	
SOUNDFIELDS : A MIXED REALITY SPATIAL AUDIO GAME FOR CHILDREN WITH AUTISM SPECTRUM DISORDER	6
<i>D. Johnston, H. Egermann, G. Kearney</i>	
STUDIO FOR IMMERSIVE MEDIA RESEARCH AND PRODUCTION: IMMERSIVE AUDIO LAB AT HAW HAMBURG	11
<i>P. Kessling, T. Gorne</i>	
EVALUATION OF BINAURAL RENDERERS IN VIRTUAL REALITY ENVIRONMENTS: PLATFORM AND EXAMPLES	15
<i>T. Robotham, O. Rummukainen, J. Herre, E. Habets</i>	
RAPID HRTF MEASUREMENT IN A LOUDSPEAKER DOME	20
<i>N. Chevalier, P. Majdak, E. Wilk, T. Gorne</i>	
SURVEY OF MEDIA DEVICE OWNERSHIP, MEDIA SERVICE USAGE AND GROUP MEDIA CONSUMPTION IN UK HOUSEHOLDS	24
<i>C. Cieciora, R. Mason, P. Coleman, M. Paradis</i>	
A PERCEPTUAL SPECTRAL DIFFERENCE MODEL FOR BINAURAL SIGNALS	29
<i>C. Armstrong, T. McKenzie, D. Murphy, G. Kearney</i>	
LOUDNESS METERING IN SOUND REINFORCEMENT: UTILITIES AND PRACTICAL CONSIDERATIONS	34
<i>C. Benitez</i>	
STREAMLINED 3D SOUND DESIGN: THE CAPTURE AND COMPOSITION OF A SOUND FIELD	37
<i>W. Woszczyk, P. Geluso</i>	
INTERACTIVE RECORDED MUSIC: PAST, PRESENT AND FUTURE	45
<i>J. Paterson, R. Toulson</i>	
PRODUCING AUDIO DRAMA CONTENT FOR AN ARRAY OF ORCHESTRATED PERSONAL DEVICES	50
<i>J. Francombe, J. Woodcock, R. Hughes, K. Hentschel, E. Whitmore, A. Churnside</i>	
MICROPHONE POSITIONS IN ACOUSTIC FIELD RECONSTRUCTION: ROBUSTNESS ANALYSIS AND OPTIMIZATION	55
<i>Y. Shen, Z. Liu, Y. Shen, N. Xiang</i>	
CREATING OBJECT-BASED STIMULI TO EXPLORE MEDIA DEVICE ORCHESTRATION REPRODUCTION TECHNIQUES	59
<i>C. Cieciora, R. Mason, P. Coleman, M. Paradis</i>	
PRACTICAL RECORDING TECHNIQUES FOR MUSIC PRODUCTION WITH SIX-DEGREES OF FREEDOM VIRTUAL REALITY	64
<i>D. Mendez, C. Armstrong, J. Stubbs, M. Stiles, G. Kearney</i>	
A DAW-BASED INTERACTIVE TOOL FOR PERCEPTUAL SPATIAL AUDIO EVALUATION	69
<i>T. Rudzki, D. Murphy, G. Kearney</i>	
STATIONARY MUSIC FROM USERS' VIEWPOINT IN VR APPLICATIONS	72
<i>S. Kim, S. Sridhar</i>	
IMPLEMENTATION OF 4-PI REVERBERATION EFFECTS IN IMMERSIVE SOUND CONTENTS. - BALANCE OF OBJECT-BASED TRACKS AND CHANNEL-BASED TRACKS	77
<i>A. Matsuo, R. Tsuchikura, M. Takino, M. Nakahara</i>	
DEVELOPMENT OF A 4-PI SAMPLING REVERBERATOR, VSVERB. - SOURCE REDUCTION	82
<i>M. Nakahara, A. Omoto, Y. Nagatomo</i>	
IN-EAR HEADPHONE SYSTEM WITH PIEZOELECTRIC MEMS DRIVER	87
<i>A. Mannchen, F. Stoppel, D. Beer, F. Niekiel, B. Wagner</i>	
DESCRIPTION OF THE SINGLE NOTE DATABASE SNDB	92
<i>E. Feichtner, B. Edler</i>	
CONCURRENT VOICE-BASED MULTIPLE INFORMATION COMMUNICATION: A STUDY REPORT OF PROFILE-BASED USERS' INTERACTION	97
<i>M. Fazal, S. Ferguson, M. Karim, A. Johnston</i>	
WHY CAN YOU HEAR A DIFFERENCE BETWEEN POURING HOT AND COLD WATER? AN INVESTIGATION OF TEMPERATURE DEPENDENCE IN PSYCHOACOUSTICS	102
<i>H. Peng, J. Reiss</i>	
INTRODUCTION TO ACOUSTIC MESHES IN AUDIO APPLICATIONS	109
<i>J. McIntosh</i>	
CREATIVE APPROACH TO AUDIO IN CORPORATE BRAND EXPERIENCES	113
<i>A. Mayo, N. Blum, L. Roussel</i>	
SUBSPACE-BASED HRTF SYNTHESIS FROM SPARSE DATA: A JOINT PCA AND ML-BASED APPROACH	117
<i>S. Bharitkar, T. Mauer, T. Wells, D. Berfanger</i>	

AUDIO APPLICATION PROGRAMMING INTERFACE FOR MIXED REALITY	127
<i>R. Audfray, J.-M. Jot, S. Dicker</i>	
ACCESSIBLE OBJECT-BASED AUDIO USING HIERARCHICAL NARRATIVE IMPORTANCE METADATA	132
<i>L. Ward, B. Shirley, J. Francombe</i>	
#####A DANTETM POWERED MODULAR MICROPHONE ARRAY SYSTEM.....	137
<i>M. Pezzoli, L. Comanducci, J. Waltz, A. Agnello, L. Bondi, A. Canclini, A. Sarti</i>	
LOW-COMPLEXITY NON-LINEAR LOUDSPEAKER PROTECTION	142
<i>D. Sinev</i>	
MODELING POINT-SOURCE LOUDSPEAKER ARRAYS IN AFMG'S EASE, FOCUS 3, AND GLLVIEWER PROGRAMS	146
<i>D. Keele, H. Sarvis</i>	
INFLUENCE OF HORN'S SURFACE TEMPERATURE ON ITS DIRECTIVITY CONTROL	161
<i>D. Levine, P. Calza, M. Cola, P. Martignon, L. Chisari</i>	
NOISE REDUCTION FOR RANDOMIZED SPEECH AND AUDIO CODING IN WASNS	166
<i>J. Fischer, T. Backstrom</i>	
ADAPTIVE BALLISTICS CONTROL OF DYNAMIC RANGE COMPRESSION FOR PERCUSSIVE TRACKS	171
<i>D. Moffat, M. Sandler</i>	
A DEVICE FOR MEASURING AUDITORY BRAINSTEM RESPONSES TO AUDIO.....	176
<i>P. Ody, A. Czyzewski, A. Sroczynski, B. Kostek</i>	
MEASURING AND EVALUATING EXCESS NOISE IN RESISTORS.....	181
<i>B. LaMacchia, B. Swanson</i>	
A NEW COMPACT 3D REPRODUCTION SYSTEM: THE TETRA-SPEAKER.....	195
<i>P. Songmuang</i>	
MUSIC STREAMING PLATFORMS - QUALITY AND TECHNICAL COMPARISON	199
<i>P. Malecki, D. Czopek, K. Sochaczewska</i>	
DEVELOPMENT OF AMBISONIC MICROPHONE DESIGN TOOLS – PART 1	204
<i>C. Middlicott, B. Wiggins</i>	
INTRODUCING A DATASET OF GUITAR AMPLIFIER SOUNDS FOR NONLINEAR EMULATION BENCHMARKING.....	210
<i>T. Schmitz, J.-J. Embrechts</i>	
IMPROVED PSYCHOACOUSTIC MODEL FOR EFFICIENT PERCEPTUAL AUDIO CODECS	214
<i>S. Disch, S. Par, A. Niedermeier, E. Perez, A. Cerberio, B. Edler</i>	
ON THE INFLUENCE OF CULTURAL DIFFERENCES ON THE PERCEPTION OF AUDIO CODING ARTIFACTS IN MUSIC	224
<i>S. Dick, J. Zhang, Q. Yili, N. Schinkel-Bielefeld, A. Leschanowsky, F. Nagel</i>	
PERCEPTION OF PHASE CHANGES IN THE CONTEXT OF MUSICAL AUDIO SOURCE SEPARATION	234
<i>C. Kim, E. Grais, R. Mason, M. Plumbley</i>	
METHOD FOR QUANTITATIVE EVALUATION OF AUDITORY PERCEPTION OF NONLINEAR DISTORTION: PART II – METRIC FOR MUSIC SIGNAL TONALITY AND ITS IMPACT ON SUBJECTIVE PERCEPTION OF DISTORTIONS	243
<i>M. Pahomov, V. Rozhnov</i>	
DEVELOPING A METHOD FOR THE SUBJECTIVE EVALUATION OF SMARTPHONE MUSIC PLAYBACK.....	251
<i>E. McMullin, V. Suha, Y. Li, W. Saba, P. Brunet</i>	
INVESTIGATION INTO THE EFFECTS OF SUBJECTIVE TEST INTERFACE CHOICE ON THE VALIDITY OF RESULTS	261
<i>N. Jillings, B. Man, R. Stables, J. Reiss</i>	
MUSICAL INSTRUMENT SYNTHESIS AND MORPHING IN MULTIDIMENSIONAL LATENT SPACE USING VARIATIONAL, CONVOLUTIONAL RECURRENT AUTOENCODERS	268
<i>E. Cakir, T. Virtanen</i>	
MUSIC ENHANCEMENT BY A NOVEL CNN ARCHITECTURE.....	277
<i>A. Porov, E. Oh, K. Choo, H. Sung, J. Jeong, K. Osipov, H. Francois</i>	
THE NEW DYNAMICS PROCESSING EFFECT IN ANDROID OPEN SOURCE PROJECT	285
<i>R. Garcia</i>	
ON THE PHYSIOLOGICAL VALIDITY OF THE GROUP DELAY RESPONSE OF ALL-POLE VOCAL TRACT MODELING	295
<i>A. Ferreira</i>	
CHARACTERIZING THE EFFECT ON LINEAR AND HARMONIC DISTORTIONS OF AC BIAS AND INPUT LEVELS WHEN RECORDING TO ANALOG TAPE.....	310
<i>T. Mitchell, C. Bennett</i>	
MICROPHONE COMPARISON FOR SNARE DRUM RECORDING.....	318
<i>M. Cheshire, J. Hockman, R. Stables</i>	
AUTOMATIC MIXING OF MULTITRACK MATERIAL USING MODIFIED LOUDNESS MODELS	326
<i>S. Fenton</i>	
DOUBLE-MS DECODING WITH DIFFUSE SOUND CONTROL	333
<i>A. Favrot, C. Faller, H. Wittek</i>	
A REAL-TIME SYSTEM FOR THE MEASUREMENT OF PERCEIVED PUNCH	342
<i>A. Parker, S. Fenton, H. Lee</i>	

ALGORITHM TO DETERMINE DOWNMIXING COEFFICIENTS FROM SPECIFIC MULTICHANNEL FORMAT TO REPRODUCTION FORMAT WITH A SMALLER NUMBER OF CHANNELS	348
<i>H. Kubo, S. Oode, T. Sugimoto, S. Kitajima, A. Ito, T. Komori, K. Ono</i>	
SUBJECTIVE EVALUATION OF STEREO-9.1 UPMIXING ALGORITHMS USING PERCEPTUAL BAND ALLOCATION	358
<i>S. Kim</i>	
NUMERICAL OPTIMIZATION STRATEGIES FOR ACOUSTIC ELEMENTS IN LOUDSPEAKER DESIGN	368
<i>A. Bezzola</i>	
AN ACOUSTIC MODEL OF THE TAPPED HORN LOUDSPEAKER	380
<i>M. Berzborn, M. Smithers</i>	
A SURVEY AND ANALYSIS OF CONSUMER AND PROFESSIONAL HEADPHONES BASED ON THEIR OBJECTIVE AND SUBJECTIVE PERFORMANCES	386
<i>S. Olive, O. Khonsaripour, T. Welti</i>	
MINIMIZING COSTS IN AUDIO DEVICES THROUGH EFFICIENT END-OF-LINE TESTING	399
<i>W. Klippel</i>	
HORN DRIVER BASED ON ANNULAR DIAPHRAGM AND SIDE-FIRING COMPRESSION CHAMBER	410
<i>A. Voishvillo</i>	
ON THE EFFICIENCY OF FLOWN VS. GROUND-STACKED SUBWOOFER CONFIGURATIONS	420
<i>E. Corteel, H. Coste-Dombre, C. Combet, Y. Horyn, F. Montignies</i>	
A PSEUDOINVERSE TECHNIQUE FOR THE PRESSURE-MATCHING BEAMFORMING METHOD	430
<i>T. Afghah, E. Patros, M. Puckette</i>	
ANALOG CIRCUITS AND PORT-HAMILTONIAN REALIZABILITY ISSUES: A RESOLUTION METHOD FOR SIMULATIONS VIA EQUIVALENT COMPONENTS	437
<i>J. Najnudel, T. Helie, H. Boutin, D. Roze, T. Maniguet, S. Vaiedelich</i>	
PRACTICAL REALIZATION OF DUAL-SHELVING FILTER USING PROPORTIONAL PARAMETRIC EQUALIZERS	444
<i>R. Audfray, J.-M. Jot, S. Dicker</i>	
MEASURING AUDIO WHEN CLOCKS DIFFER	451
<i>M. Martin, J. Datta, X. Zhou</i>	
REDUCING MUSICAL NOISE IN TRANSFORM BASED AUDIO CODECS	461
<i>E. Nemer, J. Thompson, T. Kalker</i>	
STATISTICAL AND ANALYTICAL APPROACH TO SYSTEM ALIGNMENT	469
<i>J. Sierra, J. Kamrava, P. Espinosa, J. Arneson, P. Kohut</i>	
ON THE INTERDEPENDENCE OF LOUDSPEAKER MOTOR NONLINEARITIES	479
<i>F. Agerkvist, F. Heuchel</i>	
COMPARISON OF DYNAMIC DRIVER CURRENT FEEDBACK METHODS	489
<i>J. Backman</i>	
NONLINEAR OPTIMIZATION OF SOUND FIELD CONTROL AT LOW FREQUENCIES PRODUCED BY LOUDSPEAKERS IN ROOMS	502
<i>A. Celestinos, P. Brunet, G. Kubota</i>	
EVALUATION OF EFFICIENCY AND VOLTAGE SENSITIVITY IN HORN DRIVERS	512
<i>A. Voishvillo, B. McLaughlin</i>	
CHARACTERIZATION OF NONLINEAR PORT PARAMETERS IN LOUDSPEAKER MODELING	522
<i>D. Button, R. Lambert, P. Brunet, J. Bunning</i>	
REPRODUCING LOW FREQUENCY SPACIOUSNESS AND ENVELOPMENT IN LISTENING ROOMS	532
<i>D. Griesinger</i>	
EVALUATION OF IMPLEMENTATIONS OF THE EBU R128 LOUDNESS MEASUREMENT	538
<i>B. Man</i>	
HYPER-COMPRESSION IN MUSIC PRODUCTION: TESTING THE “LOUDER IS BETTER” PARADIGM	548
<i>R. Taylor</i>	

VOLUME 2

THE EFFECT OF PINNAE CUES ON LEAD-SIGNAL LOCALIZATION IN ELEVATED, LOWERED, AND DIAGONAL LOUDSPEAKER CONFIGURATIONS	561
<i>W. Bulla, P. Mayo</i>	
PERCEPTUAL AUDIO EVALUATION OF MEDIA DEVICE ORCHESTRATION USING THE MULTI-STIMULUS IDEAL PROFILE METHOD	571
<i>A. Wilson, T. Cox, N. Zacharov, C. Pike</i>	
ESTIMATION OF MVDR BEAMFORMING WEIGHTS BASED ON DEEP NEURAL NETWORK	581
<i>M. Jo, G. Lee, J. Moon, C. Cho, H. Kim</i>	
A STATISTICAL METRIC FOR STABILITY IN INSTRUMENTAL VIBRATO	585
<i>S. Smith, M. Bocko</i>	
MACHINE LEARNING APPLIED TO ASPIRATED AND NON-ASPIRATED ALLOPHONE CLASSIFICATION – AN APPROACH BASED ON AUDIO “FINGERPRINTING”	591
<i>M. Piotrowska, G. Korvel, A. Kurowski, B. Kostek, A. Czyzewski</i>	
COMBINING THE SIGNALS OF SOUND SOURCES SEPARATED FROM DIFFERENT NODES AFTER A PAIRING PROCESS USING A STFT-BASED GCC-PHAT	598
<i>C. Clares-Crespo, J. Garcia-Gomez, A. Fernandez-Toloba, R. Gil-Pita, M. Rosa-Zurera, M. Utrilla-Manso</i>	

REVERBERATION MODELED AS A RANDOM ENSEMBLE OF IMAGES	607
<i>S. McGovern</i>	
ON THE ACCURACY OF AUDIENCE IMPLEMENTATIONS IN ACOUSTIC COMPUTER MODELLING	618
<i>R. Hammond, A. Hill, P. Mapp</i>	
HIGH-RESOLUTION HORIZONTAL ARRAYS FOR SOUND STAGES AND ROOM ACOUSTICS - CONCEPTS AND BENEFITS	627
<i>C. Bradter, K. Ju</i>	
THE SOUND DIFFUSION SIMULATION SOFTWARE BASING ON FINITE-DIFFERENCE TIME-DOMAIN METHOD	639
<i>K. Piotrowski, A. Pilch</i>	
IMPRESSION OF SPATIALLY DISTRIBUTED REVERBERATION IN MULTI-CHANNEL AUDIO REPRODUCTION	647
<i>S. Agrawal, J. Braasch</i>	
FROM SPATIAL RECORDING TO IMMERSIVE REPRODUCTION – DESIGN & IMPLEMENTATION OF A 3DOF AUDIO-VISUAL VR SYSTEM	657
<i>M. Kentgens, S. Kuhl, C. Antweiler, P. Jax</i>	
REQUIRED BIT RATE OF MPEG-4 AAC FOR 22.2 MULTICHANNEL SOUND CONTRIBUTION AND DISTRIBUTION	667
<i>S. Kitajima, T. Sugimoto, S. Oode, T. Komori, J. Urano</i>	
EFFECT OF BINAURAL DIFFERENCE IN LOUDSPEAKER DIRECTIVITY ON SPATIAL AUDIO PROCESSING	675
<i>D. Noh, O. Walker</i>	
THE IMPACT OF COMPRESSOR BALLISTICS ON THE PERCEIVED STYLE OF MUSIC	684
<i>G. Bromham, D. Moffat, M. Barthelet, G. Fazekas</i>	
ACTIVE MULTICHANNEL AUDIO DOWNMIX	691
<i>A. Karapetyan, F. Fleischmann, J. Plogsties</i>	
MICROPHONE ARRAY GEOMETRY FOR TWO DIMENSIONAL BROADBAND SOUND FIELD RECORDING	701
<i>W.-H. Liao, Y. Mitsufuji, K. Osako, K. Ohkuri</i>	
RISK OF SOUND-INDUCED HEARING DISORDERS FOR AUDIO POST PRODUCTION ENGINEERS: A PRELIMINARY STUDY	711
<i>L. Sinnott, B. Weinstein</i>	
OPTIMAL EXCITER ARRAY PLACEMENT FOR FLAT-PANEL LOUDSPEAKERS BASED ON A SINGLE- MODE, PARALLEL-DRIVE LAYOUT	721
<i>D. Anderson, M. Heilemann, M. Bocko</i>	
SOLAR POWERED AUTONOMOUS NODE FOR WIRELESS ACOUSTIC SENSOR NETWORKS BASED ON ARM CORTEX M4	727
<i>A. Fernandez-Toloba, H. Sanchez-Hevia, R. Espino-SanJose, C. Clares-Crespo, J. Garcia-Gomez, R. Gil-Pita</i>	
VIBRATIONAL CONTRAST CONTROL FOR LOCAL SOUND SOURCE RENDERING ON FLAT PANEL LOUDSPEAKERS	733
<i>Z. Li, P. Luo, C. Zheng, X. Li</i>	
QUANTIFYING LISTENER PREFERENCE OF FLAT-PANEL LOUDSPEAKERS	742
<i>M. Heilemann, D. Anderson, S. Roessner, M. Bocko</i>	
VIRTUAL VENUES—AN ALL-PASS-BASED TIME-VARIANT ARTIFICIAL REVERBERATION SYSTEM FOR AUTOMOTIVE APPLICATIONS	751
<i>F. Turckheim, A. Knesebeck, T. Munch</i>	
AUDIO PORTRAITURE – THE SOUND OF IDENTITY, AN INDIGENOUS ARTISTIC ENQUIRY	758
<i>M. Sheehan</i>	
PRECISION MAXIMIZATION IN ANGER DETECTION IN INTERACTIVE VOICE RESPONSE SYSTEMS	766
<i>I. Mohino-Herranz, C. Llerena-Aguilar, J. Garcia-Gomez, M. Utrilla-Manso, M. Rosa-Zurera</i>	
AUTOMATIC GUITAR TABLATURE TRANSCRIPTION FROM AUDIO USING INHARMONICITY REGRESSION AND BAYESIAN CLASSIFICATION	774
<i>J. Michelson, T. Sullivan, R. Stern</i>	
HARMONIC DRUM DESIGN BASED ON MULTI-OBJECTIVE SHAPE OPTIMIZATION	783
<i>A. Szwajcowski, A. Pilch</i>	
TROUBLESHOOTING RESOURCE RESERVATION IN AUDIO VIDEO BRIDGING NETWORKS	791
<i>C. Kuhr, A. Carot</i>	
A STEPPED ACOUSTIC TRANSMISSION LINE MODEL OF INTERFERENCE TUBES FOR MICROPHONES	800
<i>F. Bigoni, F. Agerkvist, E. Brixen</i>	
IMPROVING AUDIO PERFORMANCE OF MICROPHONES USING A NOVEL APPROACH TO GENERATING 48 VOLT PHANTOM POWERING	810
<i>J. Kist, D. Foley</i>	
CHALLENGES AND BEST PRACTICES FOR MICROPHONE END-OF-LINE TESTING	818
<i>G. Schmidle, M. Beach, B. MacMillan</i>	
SHOTGUN MICROPHONE WITH HIGH DIRECTIVITY BY EXTRA-LONG ACOUSTIC TUBE AND DIGITAL NOISE REDUCTION	828
<i>Y. Sasaki, K. Ono</i>	
HIGH POWER DENSITY FOR CLASS-D AUDIO POWER AMPLIFIERS, EQUIPPED WITH EGANFETS	835
<i>A. Petersen, N. Iversen, M. Andersen</i>	

ESTIMATION OF THE HEADPHONE “OPENNESS” BASED ON MEASUREMENTS OF PRESSURE DIVISION RATIO, HEADPHONE SELECTION CRITERION AND ACOUSTIC IMPEDANCE CURVE	845
<i>R. Schlieper, S. Li, S. Preihs, J. Peissig</i>	
AUDIO FORENSIC GUNSHOT ANALYSIS AND MULTILATERATION	854
<i>R. Maher, E. Hoerr</i>	
SPEECH CLASSIFICATION FOR ACOUSTIC SOURCE LOCALIZATION AND TRACKING APPLICATIONS USING CONVOLUTIONAL NEURAL NETWORKS	863
<i>J. Ziegler, A. Koch, A. Schilling</i>	
SUPERVISED SOURCE LOCALIZATION USING SPOT MICROPHONES	871
<i>M. Calvo, M. Valero, E. Habets</i>	
MULTICHANNEL FUSION AND AUDIO-BASED FEATURES FOR ACOUSTIC EVENT CLASSIFICATION	881
<i>D. Krause, K. Kowalczyk</i>	
A QUIET ZONE SYSTEM, OPTIMIZED FOR LARGE OUTDOOR EVENTS, BASED ON MULTICHANNEL FXLMS ANC	889
<i>D. Plewe, F. Agerkvist, J. Brunsog</i>	
ADVANCEMENTS IN PROPAGATION DELAY ESTIMATION OF ACOUSTIC SIGNALS IN AN AUDIENCE SERVICE FOR LIVE EVENTS	899
<i>M. Nophut, R. Hupke, S. Preihs, J. Peissig</i>	
PERCEPTUAL EVALUATION OF AN AUGMENTED AUDIENCE SERVICE UNDER REALISTIC LIVE CONDITIONS	906
<i>R. Hupke, M. Nophut, S. Preihs, J. Peissig</i>	
SOUND FIELD CONTROL FOR REDUCTION OF NOISE FROM OUTDOOR CONCERTS	914
<i>F. Heuchel, D. Nozal, F. Agerkvist, J. Brunsog</i>	
ANALYSIS OF PIANO DUO TEMPO CHANGES IN VARYING CONVOLUTION REVERBERATION CONDITIONS	922
<i>J. Weaver, M. Barthelet, E. Chew</i>	
PERFORMANCE AND INSTALLATION CRITERIA FOR ASSISTIVE LISTENING SYSTEMS	930
<i>P. Mapp</i>	
PERCEPTION OF STEREO NOISE BURSTS WITH CONTROLLED INTERCHANNEL COHERENCE	938
<i>S. Crawford, M. Heilemann, M. Bocko</i>	
ANALYSIS OF THE PERFORMANCE OF EVOLVED FREQUENCY LOG-ENERGY COEFFICIENTS IN HEARING AIDS FOR DIFFERENT COST CONSTRAINTS AND SCENARIOS	948
<i>J. Garcia-Gomez, I. Mohino-Herranz, C. Clares-Crespo, A. Fernandez-Toloba, R. Gil-Pita</i>	
EVALUATION OF ADDITIONAL VIRTUAL SOUND SOURCES IN A 9.1 LOUDSPEAKER CONFIGURATION	956
<i>S. Kim, S. Sridhar</i>	
NOTICEABLE RATE OF CONTINUOUS CHANGE OF INTENSITY FOR NATURALISTIC MUSIC LISTENING IN ATTENTIVE AND INATTENTIVE AUDIENCES	964
<i>Y. Adler</i>	
ENVIRONMENT REPLICATION WITH BINAURAL RECORDING: THREE-DIMENSIONAL (3-D) QUADRANT AND ELEVATION LOCALIZATION ACCURACY	968
<i>J. Erichsen, W. Bulla</i>	
LOCALIZATION OF ELEVATED VIRTUAL SOURCES USING FOUR HRTF DATASETS	975
<i>P. Flanagan, J. Calle</i>	
DEVELOPMENT AND EVALUATION OF AN AUDIO SIGNAL PROCESSING EDUCATIONAL TOOL TO SUPPORT SOMATOSENSORY SINGING CONTROL	984
<i>E. Angelakis, G. Kosteletos, A. Andreopoulou, A. Georgaki</i>	
FUTURE EDUCATIONAL GOALS FOR AUDIO RECORDING AND PRODUCTION (ARP) PROGRAMS: A DECADE OF SUPPORTING RESEARCH	994
<i>D. Bielmeier</i>	
CASE STUDY: AN INTERDISCIPLINARY AUDIO CURRICULUM	1006
<i>E. Lankford, A. Schwartz</i>	
SPATIAL AUDIO CODING WITH BACKWARD-ADAPTIVE SINGULAR VALUE DECOMPOSITION	1012
<i>S. Zamani, K. Rose</i>	
VIRTUAL SOURCE REPRODUCTION USING TWO RIGID CIRCULAR LOUDSPEAKER ARRAYS	1019
<i>Y. Ren, Y. Haneda</i>	
DESIGN AND IMPLEMENTATION OF A BINAURAL REPRODUCTION CONTROLLER APPLYING OUTPUT TRACKING CONTROL	1031
<i>A. Ito, K. Matsui, K. Ono, H. Hattori, T. Suenaga, K. Iwauchi, S. Adachi</i>	
HORIZONTAL BINAURAL SIGNAL GENERATION AT SEMI-ARBITRARY POSITIONS USING A LINEAR MICROPHONE ARRAY	1039
<i>A. Yamazato, Y. Haneda</i>	
NEAR-FIELD COMPENSATED HIGHER-ORDER AMBISONICS USING A VIRTUAL SOURCE PANNING METHOD	1047
<i>T. Wei, J. Sang, C. Zheng, X. Li</i>	
SUBJECTIVE EVALUATION OF VIRTUAL ROOM AURALIZATION SYSTEM BASED ON THE AMBISONICS MATCHING PROJECTION DECODING METHOD	1055
<i>Z. Ge, Y. Qiao, S. Wang, X. Wu, T. Qu</i>	
A STUDY OF THE EFFECT OF HEAD ROTATION ON CROSS TALK CANCELLATION	1063
<i>M. Galvez, E. Hamdan, D. Menzies, F. Fazi</i>	

A PARAMETRIC SPATIAL AUDIO CODING METHOD BASED ON CONVOLUTIONAL NEURAL NETWORKS	1073
<i>Q. Huang, X. Wu, T. Qu</i>	
PREDICTION OF BINAURAL LATERALIZATION PERCEPTS FROM THE COHERENCE PROPERTIES OF THE ACOUSTIC WAVEFIELD	1080
<i>M. Bocko, S. Crawford, M. Heilemann</i>	
INFLUENCE OF VISUAL CONTENT ON THE PERCEIVED AUDIO QUALITY IN VIRTUAL REALITY	1090
<i>O. Rummukainen, J. Wang, Z. Li, T. Robotham, Z. Yan, Z. Li, X. Xie, F. Nagel, E. Habets</i>	
HRTF INDIVIDUALIZATION: A SURVEY	1100
<i>C. Guezenoc, R. Segquier</i>	
SPATIAL AUDITORY-VISUAL INTEGRATION: THE CASE OF BINAURAL SOUND ON A SMARTPHONE	1110
<i>J. Moreira, L. Gros, R. Nicol, I. Viaud-Delmon</i>	
ONLINE VS. OFFLINE MULTIPLE STIMULUS AUDIO QUALITY EVALUATION FOR VIRTUAL REALITY	1118
<i>T. Robotham, O. Rummukainen, J. Herre, E. Habets</i>	
Author Index	