

8th International Conference on Auditorium Acoustics 2011

Proceedings of the Institute of Acoustics

**Dublin, Ireland
20 – 22 May 2011**

ISBN: 978-1-61782-969-7

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© (2011) by the Institute of Acoustics
All rights reserved.

Printed by Curran Associates, Inc. (2011)

For permission requests, please contact the Institute of Acoustics
at the address below.

Institute of Acoustics
77A St. Peter's Street
St. Albans Hertfordshire
AL1 3BN
United Kingdom

Phone: +44(0) 1727 848195
Fax: +44(0) 1727 850553

ioa@ioa.org.uk

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

L'Aquila: a Post-Earthquake Cardboard Concert Hall	1
<i>Daniel Commins</i>	
The Acoustic Design of Wexford Opera House	9
<i>Jeremy Newton</i>	
Acoustic 1/10th Model Test On Concert Hall in Taiwan.....	15
<i>Albert Xu, Nicholas Gallaud</i>	
Uncertainties of Room Acoustical Measurements - Influence of the Exact Source and Receiver Position	23
<i>Ingo Witew, Michael Vorländer</i>	
Towards the Understanding of Acoustics of Auditoria in True In-Use Conditions- a Review and Outlook of Techniques For Occupied Room Acoustic Measurements	27
<i>Francis F Li</i>	
Small Changes in Opera House - Results in the Acoustical Parameters	N/A
<i>Jose Augusto Nepomuceno</i>	
Concert Hall Acoustics Assessment with Sensory Evaluation - Tools and Practices	35
<i>Tapio Lokki, Nick Zacharov</i>	
The Acoustic Requirements of the Irish Chamber Orchestra	45
<i>Chris Dilworth, Stephen Smyth</i>	
The Relationship Between Audience Engagement and the Ability to Perceive Pitch, Timbre, Azimuth and Envelopment of Multiple Sources	53
<i>David Griesinger</i>	
Subjective Evaluations of Acoustics in Jazz Clubs	63
<i>Alexandra Sotiropoulou, John Karayannis, John Tzouvakakis, Anastasia Savopoulou</i>	
More Combs.....	75
<i>Tor Halmrast</i>	
The Effect of Scattering Surfaces in Rectangular Concert Halls: a Scale Model Analysis.....	83
<i>Evan Green, Mike Barron, David Thompson</i>	
Perception of Scattered Sounds in Concert Halls	93
<i>Jin Y Jeon, Yong H Kim, Hyo J Yoo, Hanyang</i>	
Diffusion in Concert Halls Analysed as a Function of Time During the Decay Process	98
<i>Claus Lynge Christensen, Jens Holger Rindel</i>	
The Acoustic Design of the Conference Centre, Dublin	106
<i>Richard Muir</i>	
The Acoustic Design of Grand Canal Theatre, Dublin.....	112
<i>Jeremy Newton</i>	
The Room Acoustic Design of Guangzhou Opera House	117
<i>Peter Exton, Harold Marshall</i>	
Acoustic Control in Octagonal Geometry: a Case Study of the "Torri Dell'acqua" Auditorium	125
<i>Dario D'Orazio, Massimo Garai</i>	
An Acoustics Miracle of "Tonhalle St Gallen" Has Been Produced, But the Criterion of Gade On Stage Has Failed Before and After the Refurbishment of the Hall.....	133
<i>Higinio Arau Puchades, Arau Acustica</i>	
Rayleigh Medal Lecture - Using Room Acoustics Measures to Understand a Large Room and Sound Reinforcement System.....	141
<i>John Bradley</i>	
Non-Linear Decays in Simple Spaces and Their Possible Exploitation.....	149
<i>Mike Barron</i>	
Investigations On the Development of the Frequency Response with Time in Concert Halls.....	159
<i>Jukka Patynen, Sakari Tervo, Tapio Lokki</i>	
Coupled Volume Multi-Slope Room Impulse Responses: a Quantitative Analysis Method.....	169
<i>Paul Luijzend, Brian Katz</i>	
The Benefit of a CARMEN® Electroacoustic System in the Aylesbury Theatre	177
<i>Isabelle Schmich, Christophe Rougier, Helen Butcher</i>	
Acoustic Enhancement Systems For Classical Concerts - Examples and Experiences	185
<i>Gunter Engel</i>	
The Penderecki Concert Hall in Radom, Poland: Acoustic Design and Performance.....	189
<i>Andrzej Klosak, Anders Christian Gade</i>	

Wagner and the Cinema: a Cognitive Approach to the Acoustics of the Bayreuth Festival Theatre.....	198
<i>Jean-Dominique Polack, Michel Retbi</i>	
The Acoustic Design of the O2.....	206
<i>Daryl Prasad</i>	
Queen Elizabeth Theatre, Vancouver: Acoustic Design Responding to Financial Realities	210
<i>John O'Keefe, Daniel Ruvalcaba</i>	
University of Exeter "The Forum" - Use of Auralisation Techniques to Influence the Design, a Case Study	218
<i>Serafino Di Rosario, Alistair Meachin</i>	
Non-Linear 3D Auralisation in the Acoustic Design of Opera Houses.....	232
<i>Lamberto Tronchin</i>	
The New York State Theater Renovation.....	240
<i>Eckard Mommertz, Gunter Engel, Kh Mueller</i>	
Real-Time Walkthrough Auralisation of the Acoustics of Christ Church Cathedral, Dublin	244
<i>Gavin Kearney, Marcin Gorzel, Fiona Smyth, Frank Boland, Henry Rice, Donal Lennon</i>	
Impulse Response Measurement with Chirp-Lets and Masked Noise Stimuli	259
<i>Massimo Serafini, Francis F Li</i>	
Acoustic Design of the Royal Welsh College of Music and Drama, Cardiff	267
<i>Ned Crowe, Ian Knowles</i>	
Integrated Room Acoustics and Electroacoustic Design - the Concert Venue At Rockheim, Norway.....	273
<i>Bård Støfingsdal</i>	
ITDG Calculation with a Non Linear Iterative Algorithm	280
<i>Simona De Cesaris, Dario D'Orazio, Massimo Garia</i>	
Concert Studio For the BBC Philharmonic Orchestra At Mediacityuk, Salford	287
<i>Mark Howarth</i>	
Acoustic Design of the Tower Theatre At the Irish World Academy of Music and Dance	295
<i>Serafino Di Rosario, Alistair Meachin</i>	
In-Situ Measurements of Diffuse Reflections From Lateral Walls in Concert Halls	306
<i>Yong H Kim, Hyung S Jang, Jin Y Jeon, Hanyang, Christophe Rougier, Isabelle Schmich</i>	
A Ceiling Case Study Inspired by An Historical Scale Model	314
<i>Brian Katz, Olivier Delaozière, Paul Luizard</i>	
On the Struggle to Find a Set of Room Acoustical Parameters That Explains and Predicts Subjective Ranking of Concert Halls.....	322
<i>Magne Skalevik</i>	
Acoustic Evaluation of Typical Errors in the Design of Modern Lecture Theatres.....	329
<i>Alexandra Sotiropoulou, George Poulakos, George Cambourakis</i>	
Acoustic Study of Madrid Auditorio Nacional De Música	338
<i>Gonzalo Vallejo Ortega, José Ignacio Sánchez Rivera</i>	
From Architectural Design to Acoustical Remedies	N/A
<i>Hassan Azad</i>	
Kodály Centre - Pécs, New Concert Hall Objective and Subjective Results.....	346
<i>Andras Kotschy, A B Nagy, F Tamas, Anders Christian Gade</i>	
Architectural and Acoustic Characteristics of the Stage of Traditional Chinese Theatres	352
<i>Jie He, Jian Kang</i>	
Author Index	