

9th INTERNATIONAL CONFERENCE ON

Auditorium Acoustics



29 – 31 OCTOBER 2015, LA PHILHARMONIE, PARIS, FRANCE

THURSDAY 29 OCTOBER 2015

- 10.30 Registration and Coffee
- 11.00 The diffuse sound field and its relevance for auditoria
Mike Barron, Fleming Et Barron, UK
- 11.20 Objective and perceptual evaluation of sound diffusion from a diffusive lateral wall in a small performance space
Louena Shtrepi, Arianna Astolfi, Monika Rychtarikova, Martin Guski, Gianluca D'Antonio, Politecnico di Torino, Italy
- 11.40 Listening experience survey in concert halls: case of Cité de la Musique
Juan-Pablo Espitia, Jean-Dominique Polack, Danièle Dubois, Sorbonne Universités and CNRS, France
- 12.00 Acoustical design of an auditorium with a semicircular plan shape
Takayuki Hidaka, Takehiko Nakagawa, Takenaka R&D Institute, Japan
- 12.20 Lunch and Poster Session
- 13.50 Rayleigh Medal Lecture: Presentational rhetoric in concert halls: the objective of acoustical design
Harold Marshall, Marshall Day Acoustics, New Zealand
- 14.30 Practical application and analysis of full orchestra spatial impulse responses in an opera house
Henrik Möller, Jukka Pätynen, Sakari Tervo, Tapio Lokki, Akukon, Finland
- 14.50 Arctic transformation: a fully flexible concert hall/theatre in Bodø, Norway
Ned Crowe, Ian Knowles, Arup Acoustics, UK
- 15.10 The acoustic design of a vineyard hall and a shoebox theatre at the new Krakow Congress Centre
Raf Orłowski, Ramboll Acoustics, UK
- 15.30 Tea
- 16.00 Acoustic design of Weiwuying Performing Art Center in Kaohsiung, Taiwan
Albert Xu, Mario Philippe, XU-ACOUSTIQUE, France
- 16.20 Tunisian music between tradition and popular diffusion: shifting venues
Yosr Bouhali, Jean-Dominique Polack, Philippe Cathé, Université Paris-Sorbonne and Université Pierre et Marie Curie, France
- 16.40 Reflections on the spatial sound imagination of composers
Jürgen Meyer, Braunschweig, Germany
- 17.00 Genesis of the "Salle des Concerts" at Paris La Villette: a tribute to Pierre Boulez
Daniel Commins, Commins dBlab, France
- 17.20 Close
- 19.00 Round Table Discussion – The acoustics of concert halls
Open to the general public and held in French
- 20.30 Inaugural Concert of the Grand Organ
La Philharmonie de Paris, with the Orchestre de Paris conducted by Paavo Järvi. Programme includes improvisation on the organ, Saint-Säens cello concerto and Saint-Säens' Symphonie N°3 with organ.

FRIDAY 30 OCTOBER 2015

- 09.00 Philharmonie de Paris – the acoustic brief
Eckhard Kahle, Natalie Faillet, Thomas Wulfrank, Yann Jurkiewicz, Kahle Acoustics, Belgium
- 09.20 The conceptual acoustical design for La Philharmonie de Paris, Grand Salle
Harold Marshall, Christopher Day, Marshall Day Acoustics, New Zealand
- 09.40 Implementing the acoustical concept for La Philharmonie de Paris, Grand Salle
Thomas Scélo, Joanne Valentine, Harold Marshall, Christopher Day, Marshall Day Acoustics, New Zealand
- 10.00 Commissioning La Philharmonie de Paris, Grand Salle
Christopher Day, Thomas Scélo, Peter Exon, Marshall Day Acoustics, New Zealand
- 10.20 Coffee
- Tours of La Philharmonie
- 12.00 Lunch and Poster Session
- 13.30 The effects of early reflections on clarity, localization, and loudness
David Griesinger, David Griesinger Acoustics, USA
- 13.50 Auditory distance perception in concert halls and the origins of acoustic intimacy
Antti Kuusinen, Tapio Lokki, Aalto University, Finland
- 14.10 Multimodal perception in concert halls
Anne Minors, Anne Minors Performance Consultants, UK
- 14.30 Subjective impact of concert hall acoustics
Jukka Pätynen, Sakari Tervo, Tapio Lokki, Aalto University School of Science, Finland
- 14.50 Tea
- 15.20 Energy criteria in Italian historical opera houses: a survey over 11 theatres
Federica Morandi, S de Cesareis, D D'Orazio, M Garai, University of Bologna, Italy
- 15.40 Acoustics of vanished 19th century concert halls in Helsinki
Henry Niemi, A-Insinöörin Suunnittelu, Mikko Kylliäinen, Tampere University of Technology, Jere Jäppinen, Mikko Lindqvist, Helsinki City Museum, Finland
- 16.00 Calibrated auralization simulation of the abbey of Saint-Germain-des-Prés for historical study
Barteld Postma, LIMSI-CNRS, Andrew Tallon, Vassar College, USA, Brian Katz, LIMSI-CNRS, France
- 16.20 Acoustic analysis of the Konserthus Gothenburg
Andreas Wagner, Müller-BBM, Alf Berntson, Artifon, Sweden, Karlheinz Müller, Müller-BBM, Germany
- 16.40 Close
- Le Train Bleu, Gare de Lyon
- 19.00 Reception
- 19.30 Conference Dinner



SATURDAY 31 OCTOBER 2015

- 09.00 **The secret of the Musikverein and other shoebox concert halls**
 Tapio Lokki, Jukka Pätynen, Sakari Tervo, Antti Kuusinen, Henna Tahvanainen, Aki Haapaniemi, Aalto University, Finland
- 09.20 **Utzon's acoustics for the major hall at the Sydney Opera House**
 Pamela Clements, Clements Acoustics Design Associates, Australia
- 09.40 **The design of a medium size concert hall for large symphonic orchestra: case study Le Rosey Concert Hall**
 Alban Bassuet, Tippet Rise Art Center, USA
- 10.00 **From the sound up: reverse-engineering room shapes from acoustic signatures**
 Willem Boning, Arup Acoustics, Alban Bassuet, Tippet Rise Art Center, USA
- 10.20 **Designing diffusers in the time domain**
 Trevor J Cox, University of Salford, UK
- 10.40 **Coffee**
- 11.00 **Applying in-situ recalibration for sound strength measurements in auditoria**
 Claus Lyng Christensen, Georgios Koutsouris, Juan Corrales, Jens Holger Rindel, Odeon A/S, Denmark
- 11.20 **Development of a new metric to predict listener envelopment based on spherical microphone array measurements and ambisonic reproductions**
 David Dick, Michelle Vigeant, Pennsylvania State University, USA
- 11.40 **Measuring impulse responses in a fully occupied concert hall using a tailor-made electronic musical composition - Proof of Concept**
 Constant Hak, Remy Wenmaekers, Eindhoven University, The Netherlands
- 12.00 **Oiniades Ancient Theatre acoustics assessment**
 George Cambourakis, Konstantinos Bakogiannis, Dimitrios Argyropoulos, National Technical University of Athens, Greece
- 12.20 **Can source broadening and listener envelopment be measured directly from a music performance in a concert hall?**
 Magne Skålevik, Brekke & Strand Akustikk, Norway
- 12.40 **Lunch and Poster Session**
- 14.00 **On-stage hearing: experience from Orchestra Hall, Minneapolis**
 Evan Green, Robert Essert, Sound Space Design, UK
- 14.20 **Criteria for good stage acoustics**
 Margriet Lautenbach, Peutz, Holland
- 14.40 **How a full scale orchestra of dummies attenuates direct and reflected sound**
 Remy Wenmaekers, Constant Hak, Eindhoven University of Technology, The Netherlands

- 15.00 **Stavanger Concert Hall, acoustic design and measurement results**
 Yann Jurkiewicz, Eckhard Kahle, Kahle Acoustics, Belgium, Brian Katz, LIMSI-CNRS, France
- 15.20 **Possible acoustic design goals in very large venues hosting live music concerts**
 Niels Adelman-Larsen, Flex Acoustics, Denmark
- 15.40 **Tea and Close**

POSTER PRESENTATIONS:

THURSDAY

- A new M. Karłowicz Philharmonic Orchestra in Szczecin, Poland**
 Higinio Arau-Puchades, Arau Acustica, Spain
- 500-seat theater in the city of Qom; computer simulation vs. acoustics measurements**
 Hassan Azad, University of Florida, USA
- Electroacoustic design of Greek Open Theatre in urban area of Athens**
 Konstantinos Bakogiannis, George Cambourakis, National Technical University of Athens, Greece
- A brief review of recent techniques for estimation of sound absorption coefficient**
 Konstantinos Bakogiannis, Dimitrios Zavitsanos, George Cambourakis, National Technical University of Athens, Greece
- On the in-situ estimation of absorption coefficient of acoustic materials in auditoriums with the use of sound intensity**
 Konstantinos Bakogiannis, Dimitrios Zavitsanos, George Cambourakis, National Technical University of Athens, Greece
- From church to concert hall**
 Alf Berntson, Artifon AB, Sweden
- Perceptual comparison of two different simulation algorithms applied on the example of an open theatre**
 Elena Bo, Louena Shtrepi, Arianna Astolfi, Politecnico di Torino, Italy, David Pelegrin-Garcia, KU Leuven, Belgium, Monika Rychtarikova, STU Bratislava, Slovakia
- A room without walls: optimizing an outdoor music shell to maintain views and maximize reflections**
 Willem Boning, Arup Acoustics, USA, Alban Bassuet, Tippet Rise Art Center, USA
- Schools in Hong Kong: acoustics case study, with particular reference to schools' auditoria**
 David Booth, Chu Hai College, Hong Kong
- Collegial Church de la Romieu**
 Victoria Chavez, Theatre Projects Consultants, France
- Computational and parametric design techniques for acoustics**
 Luca Dellatorre, Anderson Acoustics, UK
- ReS, Resonant String Shell, development and design of an acoustic shell for outdoor chamber music concerts**
 Serafino Di Rosario, Buro Happold, UK, Sergio Pone, Bianca Parenti, Eduardo Pignatelli, University of Napoli, Italy

Rebuilding of an orchestra rehearsal room: comparison between objective and subjective on-site measurements for room acoustic predictions
Hugo Dujourdy, LAM - D'Alembert, Thomas Toulemonde, Impédance, France

Relationships between wall tilt and sound field growth and decay
Robert Essert, Evan Green, Sound Space Design, UK

Improving laboratory reproduction of clarity
David Griesinger, David Griesinger Acoustics, USA

Beyond ISO3382 – measuring acoustics with live sound
David Griesinger, David Griesinger Acoustics, USA

FRIDAY

Acoustics in between
Tor Halmrast, Statsbygg, Norway

Spatial decomposition and beam-forming for predicting 3D room acoustics in concert halls
Jin Yong Jeon, Hansol Lim, Muhammad Imran, Hanyang University, Seoul, Korea

Subjective evaluations of stage acoustics in live jazz concerts; multi-dimensional description of evaluations
J Karagiannis, A Sotiropoulou, J Tzouvadakis, Technical University, Greece, G Xanthoulis, A Trispiotis, Civil Engineer, Greece

Remedial acoustics of a monumental neoclassical auditorium at Technical University, Athens
J Karagiannis, G Poulakos, A Sotiropoulou, Technical University, Greece, H Perdikari, Civil Engineer, Greece

La Philharmonie de Paris – acoustic scale model study
Brian Katz, LIMSI-CNRS, France, Yann Jurkiewicz, Thomas Wulfrank, Kahle Acoustics, Belgium, Gatoën Parseihian, LIMSI-CNRS, France, Thomas Scélo, Harold Marshall, Marshall Day Acoustics, New Zealand

The acoustic design and results at the reopened "Pesti Vigadó"
András Kotschy, Attila Nagy, Ferenc Tamás, Kotschy and Partners, Hungary

Acoustics, performers and audiences in medieval English drama
Mariana Lopez, Anglia Ruskin University, UK

Investigation of the effects of room acoustics stimuli on reward regions in the brain
Martin Lawless, Michelle Vigeant, Pennsylvania State University, USA

Acoustical design of the new Zorlu Performing Arts Centre, Istanbul
Eric Magloire, Sound Space Design, UK

Determining sound field characteristics which correlate to the sense of envelopment using a three-dimensional loudspeaker array
Matthew Neal, Michelle Vigeant, Pennsylvania State University, USA

Design of the Sala Minas Concert Hall, Belo Horizonte, Brazil
José Nepomuceno, Acustica & Sônica, Brazil, Chris Blair, Akustiks, USA, Mike Barron, Fleming & Barron, UK

Auralization of vanished 19th century concert halls in Helsinki
Henry Niemi, A-Insinöörin Suunnittelu, Mikko Kylliäinen, Tampere University of Technology, Jere Jäppinen, Mikko Lindqvist, Helsinki City Museum, Finland

Acoustics in the multi-purpose halls of the new main library and the new Munch museum in Oslo
Jannicke Olshausen, Jens Holger Rindel, Multiconsult, Norway

Berlin Philharmonic as a model of Philharmonic halls?
Noemie Quienne, Catherine Semidor, GRECAU, ENSAPBx, France

Sound field visualization using the finite-difference time-domain method and measured spatial room impulse responses
Jukka Saarelma, Aalto University, Finland

Quiet in auditoria: why and how to strive for it on budget- and site-constrained projects
Jonah Sacks, Acentech, USA

SATURDAY

Flexible acoustics in multi-purpose venues (by the use of fabrics and membrane absorbers)
Jonas Schira, Gerriets GmbH, Germany

CARMEN® in the "Théâtre des Quinconces" or how to achieve acoustic enhancement with low early energy content
Isabelle Schmich-Yamane, Jan Jagia, CSTB, France

Sound goes around: the quest for omnidirectional radiation
Neil Shade, John Hopkins University, USA

Influence of diffusive surface position and extension on the acoustics of a small concert hall
Louena Shtrepi, Fiorella Cravero, Sonja Di Blasio, Arianna Astolfi, Monika Rychtáriková, Martin Guski, Politecnico di Torino, Italy

Acoustical design approaches for secondary school and college performing arts halls
Gary Siebein, University of Florida, Siebein Associates, USA

Philharmonie de Paris – vibrations study
Thierry Simoneau, Eric Gaucher, Acoustique Et Conseil, France

Homogeneity of sound in circular auditoriums
Thierry Simoneau, Etienne Bodelet, Acoustique Et Conseil, France

Designing the question: acoustic surveys in the 1920s
Fiona Smyth, University College, Ireland

Subjective acoustic evaluation of Byzantine liturgy in churches of modern Greece
Alexandra Sotiropoulou, G Cambourakis, J Karagiannis, Th Servetas, Technical University, Greece, A Panos, Civil Engineer, Greece

Acoustic design of the Athens Academy of Performing Arts
Alexandra Sotiropoulou, D Nikolaou, S Panagioutou, N Mougkasi, M Papaioannou, Technical University, Greece

A study of low frequency room response for different subwoofer arrays
Bård Støfringsdal, Cowi AS, Norway

Bass in concert halls – recent studies on the seat-dip effect
Henne Tahvanainen, Tapio Lokki, Aalto University, Finland

Spatial analysis of the acoustics of rock clubs and nightclubs
Sakari Tervo, Jukka Pätynen, Perttu Laukkanen & Ramboll UK, Ilkka Huhtakallio, Jukka Saarelma, Aalto University, Finland

Room acoustical conditions of open and closed theatre venues of the Renaissance period in Italy
Stefan Weinzierl, Clemens Büttner, TU Berlin, Germany

Recent survey on the finishing materials in Musikvereinsaal, Vienna
Albert Xu, Mario Philippe, XU-ACOUSTIQUE, France