9th INTERNATIONAL CONFERENCE ON

Auditorium Acoustics

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

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tr>
<td>10.30</td>
<td>Registration and Coffee</td>
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| 11.00 | The diffuse sound field and its relevance for auditoria  
Mike Barron, Fleming & Barron, UK |
| 11.20 | Objective and perceptual evaluation of sound diffusion from a diffusive lateral wall in a small performance space  
Louena Shitrepi, 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 Päätynen, Sakari Tervo, Tapio Lokki, Akukon, Finland |
| 14.50 | Arctic transformation: a fully flexible concert hall/ theatre in Bode, 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 Orlowski, 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  
Yasr Bousali, 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 |

## FRIDAY 30 OCTOBER 2015

<table>
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<tr>
<th>Time</th>
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| 09.00 | Philharmonie de Paris – the acoustic brief  
Eckhard Kahle, Natalie Faillet, Thomas Wulfkranz, Yann Jurkiewicz, Kahle Acoustics, Belgium |
| 09.20 | The conceptual acoustical design for La Philharmonie de Paris, Grand Salle  
| 09.40 | Implementing the acoustical concept for La Philharmonie de Paris, Grand Salle  
| 10.00 | Commissioning La Philharmonie de Paris, Grand Salle  
Christopher Day, Thomas Scélo, Peter Exon, Marshall Day Acoustics, New Zealand |
| 10.20 | Coffee |
| 12.00 | Tours of La Philharmonie |
| 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 Päätynen, 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-Insinöörit Suunnittelu, Mikko Kyliläinen, 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

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<td>Reception</td>
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<td>Conference Dinner</td>
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<tr>
<td>09.00</td>
<td>The secret of the Musikverein and other shoebox concert halls</td>
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<td>09.20</td>
<td>Utzon’s acoustics for the major hall at the Sydney Opera House</td>
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<td>09.40</td>
<td>The design of a medium size concert hall for large symphonic orchestra: case study Le Rosey Concert Hall</td>
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<tr>
<td>10.00</td>
<td>From the sound up: reverse-engineering room shapes from acoustic signatures</td>
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<td>10.20</td>
<td>Designing diffusers in the time domain</td>
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<td>10.40</td>
<td>Coffee</td>
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<tr>
<td>11.00</td>
<td>Applying in-situ recalibration for sound strength measurements in auditoria</td>
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<td>11.20</td>
<td>Development of a new metric to predict listener envelopment based on spherical microphone array measurements and ambisonic reproductions</td>
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<td>11.40</td>
<td>Measuring impulse responses in a fully occupied concert hall using a tailor–made electronic musical composition – Proof of Concept</td>
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<td>12.00</td>
<td>Oiniades Ancient Theatre acoustics assessment</td>
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<td>12.20</td>
<td>Can source broadening and listener envelopment be measured directly from a music performance in a concert hall?</td>
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<td>12.40</td>
<td>Lunch and Poster Session</td>
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<td>13.00</td>
<td>On-stage hearing: experience from Orchestra Hall, Minneapolis</td>
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<td>13.20</td>
<td>Criteria for good stage acoustics</td>
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<td>13.40</td>
<td>How a full scale orchestra of dummies attenuates direct and reflected sound</td>
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<td>15.00</td>
<td>Stavanger Concert Hall, acoustic design and measurement results</td>
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<td>15.20</td>
<td>Possible acoustic design goals in very large venues hosting live music concerts</td>
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<td>15.40</td>
<td>Tea and Close</td>
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**POSTER PRESENTATIONS:**

**THURSDAY**

- A new M. Karlowicz Philharmonic Orchestra in Szczecin, Poland - Higini 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 Ba, Lourena Shstrepi, Arianna Astolfi, Politecnico di Torina, 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, Eduarda 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'Alentembert, Thomas Toulemende, 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
John Karayannis, George Xanthoulis, Athanasios Trispitos, John Tzouvalas, Alexandria Sotirapoulou, Technical University, Greece, Kensan Kwok, Architect, Singapore

Remedial acoustics of a monumental neoclassical auditorium at Technical University, Athens
John Karayannis, George Cambourakis, Athanassios Stamos, Alexandra Sotirapoulou, Technical University, Greece, Helen Poulakos, Civil Engineer, Greece

La Philharmonie de Paris – acoustics scale model study

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 acoustic stimuli on reward regions in the brain
Martin Lawless, Michelle Vigean, 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 Vigean, 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-Insinöörit Suunnittelu, Mikko Kyläläinen, 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 Schirn, 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 Shatrei, Fiorella Cravero, Sonja Di Blasio, Monika Rychtarikova, 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

Phihlanmer de Paris – vibrations study
Thierry Simonneau, Eric Gaucher, Acoustique & Conseil, France

Homogeneity of sound in circular auditoriums
Thierry Simonneau, Etienne Bodelet, Acoustique & 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 Sotirapoulou, George Cambourakis, John Karagiannis, George Vlachos, Technical University, Greece, Thomas Servetas, Antonis Papanis, Civil Engineer, Greece

Acoustic design of the Athens Academy of Performing Arts
Alexandra Sotirapoulou, Dimitra Nikolaou, Panayiotis Vassilatos, Stamatis Panayotou, Maria Papaioannou, Nicol Maughasi, Technical University, Greece

A study of low frequency room response for different subwoofer arrays
Bård Statringdal, Cawi 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 Tervu, Jukka Päätynen, Perttu Laukkanen & Ramboll UK, Jukka Haatakallo, Jukka Saarelma, Aalto University, Finland

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

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

International Congress Centre in Katowice, Poland: acoustic design and performance
Antezej K Klosak, Cracow University of Technology, Poland, Anders C Gade, Gade & Mortensen Akustik A/S, Denmark