



**Institute of Acoustics 2014  
40<sup>th</sup> ANNIVERSARY CONFERENCE**

**15-16 October 2014**

**NEC, Birmingham**

**Programme**

## OVERVIEW of Sessions:

### Wednesday 15 October 2014

0800	registration				
0915	Welcome – <i>Room G</i>				
0930	KEYNOTE LECTURE: Leo Beranek – <i>Room G</i>				
1030	coffee				
1100	plenary: Stephen Turner – <i>Room G</i>				
1130	plenary: ENGINEERING MEDAL LECTURE: Dame Ann Dowling – <i>Room G</i>				
1200	coffee				
	Room G	Room 1	Room 2	Room 3	Room 4
1230	ENV	PAG	NVEG	EAG	MAG
1250	ENV	PAG	NVEG	EAG	MAG
1310	ENV	PAG	NVEG	EAG	MAG
1330	lunch				
1430	plenary: RAYLEIGH MEDAL LECTURE: Tim Leighton – <i>Room G</i>				
1500	plenary: Keith Attenborough – <i>Room G</i>				
1530	coffee				
	Room G	Room 1	Room 2	Room 3	Room 4
1600	BAG	S&H	M&I	EAG	UAG
1620	BAG	S&H	M&I	EAG	UAG
1640	BAG	S&H	M&I	EAG	UAG
1700	BAG	S&H	M&I	EAG	UAG
1720	Peter Barnett Memorial Lecture: Malcolm Hawksford – <i>Room 3</i>				

17.30 – 18.30 Room G

**Young Members Group Acoustic Quick Pub Quiz** - Come and meet the Young Members Group!

Find out more about what we are up to and join in with a mini acoustic pub quiz for the chance to win a prize!

1900	Drinks reception &
1930	40th Anniversary Dinner – The Kings Suite, The Hilton Birmingham Metropole Hotel

### Thursday 16 October 2014

0800	registration			
0930	KEYNOTE LECTURE: Herman J M Steeneken – <i>Room G</i>			
1030	coffee			
1100	plenary: Trevor Cox – <i>Room G</i>			
1130	plenary: John Seller – <i>Room G</i>			
1200	coffee			
	Room G	Room 1	Room 2	Room 3
1230	BAG	S&H	M&I	UAG
1250	BAG	S&H	M&I	UAG
1310	BAG	S&H	M&I	UAG
1330	lunch			
1430	plenary: Stuart Rosen – <i>Room G</i>			
1500	plenary: TYNDALL MEDAL LECTURE: Stephen Dance – <i>Room G</i>			
1530	coffee			
	Room G	Room 1	Room 2	Room 3
1600	ENV	PAG	NVEG	MAG
1620	ENV	PAG	NVEG	MAG
1640	ENV	PAG	NVEG	MAG
1700	ENV	PAG	NVEG	MAG
1720	close			

#### KEY TO ABBREVIATIONS:

ENV	ENVIRONMENTAL NOISE	M&I	MEASUREMENT & INSTRUMENTATION
BAG	BUILDING ACOUSTICS	S+H	SPEECH & HEARING
NVEG	NOISE & VIBRATION ENGINEERING	MAG	MUSICAL ACOUSTICS
UAG	UNDERWATER ACOUSTICS	EAG	ELECTROACOUSTICS
PAG	PHYSICAL ACOUSTICS		

Poster presentations will be available to view on both days

**WEDNESDAY 15 OCTOBER 2014**

08.00 Registration

Room 1 - MORNING

**09.15 Welcome**

**09.30 KEYNOTE LECTURE:**

Concert hall design: new findings  
Leo L. Beranek

**10.30 Coffee**

**11.00 PLENARY:**

The evolution of noise policy and noise management during the life of the IOA  
Stephen Turner, Defra, Colin Grimwood, CJGEM

**11.30 Engineering Medal Lecture:**

Jet noise and its reduction  
Dame Ann Dowling, Cambridge University

**12.00 Coffee**

**12.30 - 13.30 Parallel Sessions:**

Refer to Room number for details

**13.30 Lunch**

**14.30 Rayleigh Medal Lecture:**

Bubble acoustics: from whales to other worlds  
Timothy G Leighton, ISVR, University of Southampton

**15.00 PLENARY:**

Sonic crystals, metasurfaces acoustic invisibility and black holes  
Keith Attenborough, Y B A Chong, Ho-Chul Shin, Imran Bashir, Shahram Teherzadeh,  
The Open University

**15.30 Coffee**

**16.00 - 17.30 Parallel Sessions:**

Refer to Room number for details

**17.30 -18.30 – Room G**

**Young Members Group Acoustic Quick Pub Quiz** - Come and meet the Young Members Group !  
Find out more about what we are up to and join in with a mini acoustic pub quiz for the  
chance to win a prize!

**19.00 Drinks Reception &**

**19.30 40th Anniversary Dinner, The Kings Suite, Hilton Birmingham Metropole Hotel**

### **Room G - MORNING: ENVIRONMENTAL NOISE – Chair. Steve Mitchell**

- 12.30 Dublin City noise: monitoring the sound of a city  
Paul McDonald, Sonitus Systems, Brian McManus, Dublin City Council, Dermot Geraghty, M O'Mahony, Trinity College Dublin
- 12.50 Identifying and protecting urban tranquillity  
Phil McIlwain, Westminster City Council
- 13.10 Factors associated with tranquillity in the Scottish Highlands and Dartmoor National Park  
Greg Watts, Robert Pheasant, University of Bradford

**13.30 Lunch**

### **Room 1 - MORNING: PHYSICAL ACOUSTICS – Chair. Shahram Taherzadeh**

- 12.30 On Kramers-Kronig relations for guided and surface waves  
Victor Krylov, Loughborough University
- 12.50 Sound propagation in the presence of a locally-resonant surface: an analytical model  
Logan Schwan, Olga Umnova, C Boutin, University of Salford
- 13.10 Tunable resonator arrays-transmission, near field interactions and effective property extraction  
Dmitri Smirnov, Olga Umnova, University of Salford

**13.30 Lunch**

### **Room 2 - MORNING: NOISE & VIBRATION ENGINEERING – Chair. Malcolm Smith**

- 12.30 Assessment of low vibration techniques in the construction of a diaphragm wall using a hydromill  
Darayl Prasad, Marshall Day Acoustics
- 12.50 Examination of possible approaches for assessment of industrial noise by emphasis on different standards and guidance  
Tim Britton, J Evans, S Scott, URS
- 13.10 Helicopter pad vibration isolation  
Adam Fox, Mason UK

**13.30 Lunch**

### **Room 3 - MORNING: ELECTROACOUSTICS – Chair. Keith Holland**

- 12.30 Profiling the distortion characteristics of commercial music using amplitude distribution statistics  
Alex Wilson, Bruno Fazenda, University of Salford
- 12.50 How important is audio quality to usage of online recordings?  
Trevor Cox, Bruno Fazenda, Iain Jackson, Paul Kendrick, Francis Li, University of Salford
- 13.10 Applications of the fast multiple boundary element method to the audio industry  
Patrick Macey, PACSYS

**13.30 Lunch**

### **Room 4 - MORNING: MUSICAL ACOUSTICS – Chair. David Sharp**

- 12.30 Why do brass instruments sound "brassy"  
Murray Campbell, University of Edinburgh
- 12.50 Developing and evaluating a hybrid wind instrument excited by a loudspeaker  
Kuriijn Buys, David Sharp, Robin Laney, Open University
- 13.10 Motion of the Cello Bridge  
Ailin Zhang, Jim Woodhouse, Cambridge University

**13.30 Lunch**

**Room G - AFTERNOON: BUILDING ACOUSTICS – Chair. Carl Hopkins**

- 16.00 Airborne sound insulation in buildings – the conundrum of extending to lower frequencies  
Sean Smith, Edinburgh Napier University
- 16.20 A Centenary of architectural acoustics: Hope Bagenal and Wallace Clement Sabine  
Fiona Smyth, University College Dublin
- 16.40 An investigation into the Helmholtz resonators of the Queen Elizabeth Hall, London  
Christina Higgins, Raf Orlowski, Ramboll UK, Luis Gomez Agustina, London South Bank University
- 17.00 Reverberation time, strength & clarity in school halls: measurement and modelling  
Jack Harvie-Clark, D Wallace, N Dobinson, F Larrieu, Apex Acoustics

**ROOM 1 - AFTERNOON: SPEECH AND HEARING – Chair. Graham Frost**

- 16.00 Voice problems and acoustic in schools – an online survey for teachers  
Nick Durup, Rory Sullivan, Sharps Redmore, Bridget Shield, Steve Dance, London South Bank University
- 16.20 TalkMaths over the web: a web-based speech interface to assist disabled people with mathematics  
Dilaksha Attanyake, James Denholm-Price, Gordon Hunter, Eckhard Pflugel, Kingston University
- 16.40 Effectiveness of a new Tablet –based hearing screening system, among a cohort of individuals with a high incidence of hearing loss  
Chris Barlow, Lee Davison, Southampton Solent University, Mark Ashmore, Ray Weinstein, Strategic Audiology Services
- 17.00 Formant frequencies of British English vowels produced by native speakers of Cypriot Turkish  
Gordon Hunter, Zalihe Yarkiner, Kingston University

**Room 2 - AFTERNOON: MEASUREMENT AND INSTRUMENTATION – Chair. Richard Tyler**

- 16.00 Illuminating sound: a review of how sound can be measured using light  
Ben Piper, T Koukloulas, I Butterworth, National Physical Laboratory
- 16.20 Acoustical instrumentation – specifications and use  
Richard Tyler, AVI, Susan Dowson, National Physical Laboratory
- 16.40 Sound pressure level and sound power level declarations: navigating the maze  
Emma Shanks, HSL
- 17.00 Sound level meters: the past, present and future  
David Robinson, Cirrus Research

### **Room 3 - AFTERNOON: ELECTROACOUSTICS – Chair. Paul Malpas**

**16.00 Invited Lecture**

Intelligibility enhancement of speech in noise  
Cassia Valentini-Botinhao, University of Edinburgh

**16.40** Room response estimation using microphone averaging  
Philip Newell, Consultant, Spain, Keith Holland, ISVR, University of Southampton

**17.00** The audibility of comb-filtering due to cinema screens  
David Elliott, Keith Holland, ISVR, University of Southampton, Philip Newell, Consultant, Spain

**17.20 Peter Barnett Award:**

Audio, research and entropy: A 50+ year personal journey  
Malcolm Hawksford, University of Essex

### **Room 4 - AFTERNOON: UNDERWATER ACOUSTICS – Chair. Stephen Robinson**

**16.00** Sounding out sediment transport: developments over the past two decades  
Peter Thorne, National Oceanography Centre, David Hurther, CRNS, France

**16.20** Application of acoustics offshore  
Ken Marriott, Industrial Commercial & Technical Consultants

**16.40** Towards standards for measurement of radiated underwater noise from marine energy system: an update  
Paul Lepper, Loughborough University, Stephen Robinson, Pete Theobald, Tanja Pangerc, NPL

**17.00** Characterisation and calibration of autonomous underwater noise recorders  
Gary Hayman, Stephen Robinson, NPL, Paul Lepper, Loughborough University

**17.20** Close

**08.00 Registration**

**Room G – MORNING**

**09.30 KEYNOTE LECTURE:**

Forty years of Speech Intelligibility Assessment (and some history)  
Herman J M Steeneken, TNO Human Factors, Embedded Acoustics, The Netherlands

**10.30 Coffee**

**11.00 PLENARY:**

The acoustics behind sonic wonderland  
Trevor Cox, University of Salford

**11.30 PLENARY:**

Noise measurement the past and the present  
John Seller, John Seller Associates

**12.00 Coffee**

**12.30 - 13.30 Parallel Sessions:**

Refer to Room number for details

**13.30 Lunch**

**14.30 PLENARY:**

Understanding speech in the background of other sounds: it's complicated  
Stuart Rosen, UCL

**15.00 Tyndall Medal Lecture:**

Conservatoires-acoustics and music working together  
Stephen Dance, London South Bank University

**15.30 Coffee**

**16.00 - 17.30 Parallel Sessions:**

Refer to Room number for details

**Room G - MORNING: BUILDING ACOUSTICS – Chair. Andrew Parkin**

- 12.30 Predicting groundbourne railway noise and vibration in buildings: a comparison of measurements and methods  
Daniel Lurcock, D J Thompson, University of Southampton
- 12.50 The development of vacuum isolating panels for noise control applications  
Stephen Dance, Sheldon Walters, London South Bank University
- 13.10 Temporary theatres: challenges and expectations  
Helen Butcher, Arup Acoustics

**13.30 Lunch**

**Room 1 - MORNING: SPEECH AND HEARING – Chair. Gordon Hunter**

- 12.30 Speech intelligibility rating using a head and torso simulator  
Juan Battaner-Moro, Matthew Hinckling, Solent Acoustics
- 12.50 Predicting speech security and speech privacy: casual versus intentional listening  
Chloe Long, Tim Jackson, Simon Shelley, HMGCC
- 13.10 Reduce noise at ear by removing unwanted noise from the communications channel  
Susan James, Susan Mercy, QinetiQ

**13.30 Lunch**

**Room 2 - MORNING: MEASUREMENT & INSTRUMENTATION – Chair. Susan Dowson**

- 12.30 New paradigm for environmental noise measurement  
Richard Barham, National Physical Laboratory
- 12.50 A critical assessment of sound stimuli for reverberation time measurement in acoustic performance spaces  
Kenneth Liston, Nova Centric
- 13.10 Measurement of source data using optimized beamforming techniques on moving sources for outdoor sound propagation modelling  
Ray Browne, SRL

**13.30 Lunch**

**Room 3 - MORNING: UNDERWATER ACOUSTICS – Chair. Stephen Robinson**

- 12.30 The EU SONIC project and the measurement of underwater related noise from vessels  
Alex Brooker, Victor Humphrey, ISVR, University of Southampton
- 12.50 A new robust dolphin whistle detector algorithm  
Peter Dobbins, Ultra Electronics, Franca Hoffman, University of Cambridge
- 13.10 How “loud” is underwater noise compared with air noise  
Richard Hazelwood, R&V Hazelwood, Sasia Johansen, University of Southern Denmark

**13.30 Lunch**



**Room G - AFTERNOON: ENVIRONMENTAL NOISE – Chair. Colin Cobbing**

- 16.00 The economic valuation of aircraft noise effects: a critical review of the state of the art  
Diane Sanchez Barajas, Anderson Acoustics, Bernard Berry, Berry Environmental
- 16.20 Sound source recognition technique for construction noise control  
Ming Yang, Jian Kang, University of Sheffield
- 16.40 Aviation noise impacts on the historic environment  
Dani Fiumicelli, John Fisk, Simon Perry, Temple Group, Robert Sutton, Cotswold Archaeology
- 17.00 Focussed noise monitoring 2013  
Chris Skinner, Heather Billin, URS, Hilary Notley, Stephen Turner, Defra, Paul Shields, URS

**Room 1 - AFTERNOON: PHYSICAL ACOUSTICS – Chair. Shahram Taherzadeh**

- 16.00 Sound waves through periodic and aperiodic arrays of cylinders near ground surfaces  
Shahram Taherzadeh, Imran Bashir, Keith Attenborough, Open University
- 16.20 Behaviour of acoustic waves in a duct with Helmholtz resonator in presence of a temperature gradient  
Haydar Aygun, Southampton Solent University, Philip Rubini, University of Hull
- 16.40 Non-invasive deduction of soil strength by acoustic-seismic coupling measurements  
Ho-Chul Shin, Shahram Taherzadeh, Keith Attenborough, Open University, Richard Whalley, Chris Watts, Rothamsted Research
- 17.00 The spectrum of the acoustic waves backscattered by the dynamic rough surface of a shallow water flow  
Giulio Dolcetti, Anton Krynkina, Kirill Horoshenkov, Simon J Tait, University of Sheffield

**Room 2 - AFTERNOON: NOISE AND VIBRATION ENGINEERING – Chair. Stephen Walsh**

- 16.00 Crossrail western running tunnels and caverns – managing groundborne noise and vibration  
John Smethurst, Richard Sullivan, P Bhalla, Anderson Acoustics
- 16.20 Automotive NVH career needs-tools for design and development  
Bernard Challen, Shoreham Service
- 16.40 Sound source contributions for the prediction of vehicle pass-by noise  
Michael Braun, Stephen Walsh, Jane Horner, Loughborough University
- 17.00 2D or 3D surround sound in an automotive environment? Preferences of the untrained listener  
Orla Murphy, Jaguar Land Rover

**Room 3 - AFTERNOON: MUSICAL ACOUSTICS – Chair. Lisa Greenhalgh**

- 16.00 Pitch drift in a *cappella* western choral music: the outcomes of a survey as part of an ongoing PHD research project  
Richard Seaton, David Sharp, Dennis Pim, Open University
- 16.20 Resonatorium for soprano and architectural space  
Inès Neuhaus, Fabian Neuhaus, I & F Neuhaus
- 16.40 What contribution can acoustics make to organology?  
Owen Wood, Consultant
- 17.00 Interactive performance for musicians with hearing impairments using the vibrotactile mode  
Carl Hopkins, Saul Mate-Cid, Gary Seiffert, University of Liverpool, Jane Ginsborg, Robert Fulford, Royal Northern College of Music

Posters will be available for viewing each day in the exhibition area:

## **POSTERS**

An objective assessment methodology for a sound field amplification system in simulated classroom  
Bradford Backus, Stephen Dance, Lorenzo Morales, Audio 3 & London South Bank University

Quantifying the acoustic characteristics of open windows and vents  
Miguel Blanco, Steve Lo, University of Bath, Ze Nunes, MACH Acoustics

Transmission of noise via deflection head flanking paths in lightweight partitions  
Ben Burgess, RPS Acoustics

Some of the changes in environmental acoustics over the last 40 years  
Richard Collman, Acoustical Control Engineers

An investigation into the acoustic accuracy of noise maps: a Glasgow City case study  
Adam Craig, Don Knox, David Moore, Glasgow Caledonian University

The Lombard effect – making yourself heard  
David Harbon, Ramboll

Use of G and C50 for classroom design  
Jack Harvie-Clark, N Dobinson, F Larrieu, Apex Acoustics

Practical acoustic design – the Apex method  
Jack Harvie-Clark, Apex Acoustics

Treating noise from MVHR systems - good practice and case studies  
Jack Harvie-Clark, Apex Acoustics

A visual guide to measuring acoustic insulation in buildings  
Matias Hernandez, Mauro Peris, Noiselab.net

Commissioning NR45 containment laboratories adopting local temperature control within acoustically unfavourable constructions  
Alex Krasnic, ASK Acoustics

Noise climate and soundscapes: Past Present and Future  
Adam Lawrence, Dan Pope, Atkins

Acoustical and optical tweezing of bubbles in a microchannel  
GianLuca Memoli, NPL

Addressing horizontal impact transmission and potential changes to UK building regulations  
Lee Nichols, Icopal, Monorfloor Acoustic Systems

Wind Turbine Noise – a review of progress to date, and where to next?  
Richard Perkins, Parsons Brinckerhoff

A noise model for urban water traffic in Venice  
Francesca Remigi, URS Infrastructure & Environment, A Di Bella, University of Padua, Italy

Representative monitoring of environmental noise levels for BS4142:2014  
Jon Tofts, Tony Clayton, Environment Agency, David Waddington, University of Salford

Counting houses: improving assessment of noise impact using the Design Manual for Roads and Bridges  
Roger Tompsett, NoiseMap

An alternative approach to presenting aircraft noise impacts through modelling  
James Trow, George Gibbs, AMEC

Modern building design – preventing poor health & quality of life in our future homes  
Grant Waters, Barry Jobling, Julie Godfrey, Axel Jacobs, Hoare Lee, Ashley Bateson, CIBSE Homes for Future Group

Using reverse noise contours to manage construction noise – a contractor's experience  
Tom Whatling, Taylor Woodrow, Caroline O'Connor, BAM Nuttall, Roger Tompsett, NoiseMap

Pre-microphone acoustic filters with gain  
Graham Bank, Deben Acoustics, Peter Cochrane, University of Hertfordshire

Res (Resonant String Shell), the design of an acoustic shell for outdoor chamber music concerts  
Serafina Di Rosario, Buro Happold

An investigation into the maximum permissible ambient sound levels in 1/3 octave bands between 250Hz-8kHz for an audiometric test  
Lee Davison, Lawrence Yule, Southampton Solent University

Investigating headphone driver modelling using the finite/boundary element method  
Rowan Williams, Woon Innovations, Kelvin Griffiths, Electroacoustic Design,

Tissue-conducted spatial sound fields  
Ian McKenzie, Peter Lennox, Bruce Wiggins, University of Derby

Setting the tone: considerations for educating the next generations of sound reproduction professionals  
Benjamin Mosley, Paul Thompson, Leeds Metropolitan University

Auditory adaptation to spectra in non-speech perception  
Cleo Pike, University of Surrey