



# BNAM 2016

Baltic-Nordic  
Acoustic Meeting,  
June 20-22 2016.  
KTH, Stockholm,  
Sweden



ROYAL INSTITUTE  
OF TECHNOLOGY

## Program Book

Gold sponsors:



# SOCIAL EVENTS

Monday 20 June 19:00  
Reception in Stockholm City Hall  
Hosted by the City of Stockholm



Tuesday 21 June 19:00  
Conference Dinner  
The Royal Opera house: Rotundan  
Jacob square 8



## Scientific Committee

Name	Affiliation	Country
Hans Bodén	KTH	Sweden
Mats Åbom	KTH	Sweden
Sten Ternström	KTH	Sweden
Hans Jonasson	SP	Sweden
Torbjörn Kloow	Acoutronic	Sweden
Anders Schönbeck	ACAD	Sweden
Anders Ågren	LTU	Sweden
Jonas Brunskog	DTU	Denmark
Birgit Rasmusen	SBi	Denmark
Peter Svensson	NTNU	Norway
Esa Nousianen	Wärtsilä	Finland
Jüri Lavrentjev	TUT	Estonia

## Organising Committee

Function	Name	Affiliation
Chair	Hans Bodén	KTH
Vice chair	Mats Åbom	KTH
Exhibition manager	Torbjörn Kloow	Acoutronic
Member	Hans Jonasson	SP
Member	Anders Schönbeck	ACAD
Member	Sten Ternström	KTH

## Keynote speakers:



Jean Kergomard: Directeur de Recherche, CNRS, LMA, Marseille  
Vice President of EAA  
What can we learn from minimum models of self-sustained oscillations in reed musical instruments?



Per-Olof Sturesson: Director Noise & Vibration Center, Volvo Car Corporation  
  
Status & Future of Innovative Product Development & Methods in Automotive NVH



Cheol-Ho Jeong, Associate Professor, DTU  
Uncertainty of input data for room acoustic simulations



# Sponsors and exhibitors

<b>Company/Organization</b>	<b>Exhibitor, Sponsor</b>
Acoutronic	Goldsponsor and Exhibitor
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Acoutronic AB (G.R.A.S.)	Exhibitor
Müller HRM Engineering AB	Exhibitor
Brüel & Kjaer S&V Measurement A/S	Exhibitor
Vibraphon	Exhibitor
Lumir Oy	Exhibitor
ACAD International AB	Exhibitor
Sennberg AB	Exhibitor
Acoutronic AB	Exhibitor
CDM NV	Exhibitor

# Program overview

Time	Monday 20 June 2016		
09:00	Exhibition setup starts		
10:00	Registration starts		
11:40	Opening		
12:00	Keynote 1	<a href="#">Per-Olof Sturesson</a>	Status & Future of Innovative Product Development & Methods in Automotive NVH
12:50	Lunch		
13:50	Session 1 IC-engine exhaustst and intake system acoustics / Duct acoustics	Session 2 Traffic noise and outdoor sound propagation	Session 3 Theory and Measurement techniques for sound transmission and reduction
15:30	Coffee		
16:10- 18:00	Session 1 continued	Session 2 continued	Session 3 continued
19:00	Reception City Hall, Hosted by the City of Stockholm		

Time	Tuesday 21 June 2016			
09:00	Session 4	Sound insulation and noise limits for new and retrofitted housing: Subjective aspects, regulatory policies and classification	Session 5	Young Acousticians Network (YAN) session
10:00	Coffee			
10:40	Session 4 Continued		Session 5 Continued	
12:00	Lunch			
13:00	Keynote 1	Jean Kergomard. What can we learn from minimum models of self-sustained oscillations in reed musical instruments?		
14:00	Session 6	Music acoustics and room acoustics for music	Session 7	Vehicle noise and vibration Workshop: Building acoustics and regulations
15:20	Coffee			
16:00 – 17:30	Session 6 Continued		Session 7 Continued	
19:00	Dinner	Royal Opera House Rotundan		

Time	Wednesday 22 June 2016			
09:30	Keynote 2	Cheol-Ho Jeong, Gerd Marbjerg and Jonas Brunskog	Uncertainty of input data for room acoustic simulations	
10:30	Coffee			
11:00 – 12:20	Session 8	Models and measurement methods for the acoustics of small rooms	Session 9	Environmental noise
12:20	Lunch			
13:20	Session 10	Room acoustics	Session 11	Machinery noise and vibration
15:20	Closing			

# Program

Time		Monday 20 June 2016			
09:00	Exhibition setup starts				
10:00	Registration starts				
11:40	Opening				Room Q1
12:00	Keynote 1	Per-Olof Sturesson	Status & Future of Innovative Product Development & Methods in Automotive NVH		
12:50	Lunch				

Monday 20 June Session 1: IC-engine exhaust and intake system acoustics / Duct acoustics								
Chairs: Esa Nousianen and Mats Åbom							Room: Q34	
13:50	14:30	14:50	15:10	15:30	16:10	16:30	16:50	17:10
<b>Crisp and fuzzy methods for the measurement ducted source characteristics</b> Session Keynote: Erkan Dokumaci	<b>On power plant IC-engine source characterization in-situ</b> Jukka Tanttari, Antti Hynninen and Heikki Isomoisio	<b>Aeroacoustic characterization of duct components</b> Stefan Sack and Mats Åbom	<b>A compact efficient silencer based on the Cremer impedance</b> Raimo Kabral and Mats Åbom	<b>Coffee Break</b>	<b>Silencers for circular ducts – Application of plates with micro-slits</b> Tor Erik Vigran and Torgeir Haugen	<b>Measurement precision and accuracy in impedance tubes</b> Luck Peerlings, Hans Bodén and Susann Boij	<b>Quantitative analysis of the acoustic impedance of an unflanged cylindrical duct for multimode excitation</b> Anna Snakowska, Jerzy Jurkiewicz and Łukasz Gorazd	<b>Acoustic Meta-materials seen from the perspective of Duct Acoustics</b> Zhe Zhang, Mats Åbom and Hans Bodén

<b>Monday 20 June Session 2: Traffic noise and outdoor sound propagation</b>									
<b>Chair: Karl Bolin and Ulf Tengzelius</b>									<b>Room: Q36</b>
13:50 <b>The use of a microphone array to separate noise events from individual vehicles in a traffic flow.</b> Truls Berge and Audun Solvang	14:10 <b>Potential reduction of traffic noise by the means of increased fleet of electric vehicles using a combination of low-noise tyres and low-noise road surfaces.</b> Truls Berge and Piotr Mioduszcwski	14:30 <b>Application of weather data in the abatement of impulsive noise</b> Miro Aalto, Timo Peltonen and Timo Markula	14:50 <b>Development of a monitoring system for track properties related to exterior noise</b> Martin Höjer, Filip Stenlund and Martin Almgren	15:10 <b>CNOSSOS-EU Sensitivity to Meteorological Value Changes</b> Olli Kontkanen, Jarno Kokkonen and Panu Maijala	15:30 <b>Coffee Break</b>	16:10 <b>CNOSSOS-EU noise model implementation in Finland</b> Jarno Kokkonen, Olli Kontkanen and Panu Maijala	16:30 <b>A comparison and update of Nord2000 Road and CNOSSOS-EU road emission models in Sweden</b> Krister Larsson	16:50 <b>SAFT - Simulation of Atmosphere and air traffic For a quieter environment</b> Ulf Tengzelius	17:10 <b>Benchmark cases for atmospheric sound propagation in complex terrain</b> Karl Bolin, Ilkka Karasalo and Esbjörn Olsson

<b>Monday 20 June Session 3: Theory and Measurement techniques for sound transmission and reduction</b>									
<b>Chairs: Romain Rumpler</b>									<b>Room: Q33</b>
13:50 <b>Cinema design to meet high acoustic demands without breaking the budget</b> Bengt Johansson	14:10 <b>Evaluation of impact sound isolation from lightweight stairs</b> Jorge Torres	14:30 <b>Can we screen for impact insulation without using a Tapping Machine?</b> George Dodd	14:50 <b>A finite element model for the vibroacoustic analysis of plate and sandwich structures</b> Zibo Liu, Romain Rumpler and Leping Feng	15:10	15:30 <b>Coffee Break</b>	16:10	16:30	16:50	17:10

**19:00 Reception: City Hall, Hosted by the City of Stockholm**



<b>Tuesday 21 June Session 4: Sound insulation and noise limits for new and retrofitted housing: Subjective aspects, regulatory policies and classification</b>							
<b>Chair: Birgit Rasmussen</b>							<b>Room: Q34</b>
09:00 <b>Acoustic classification schemes in Europe – Applicability for new, existing and renovated housing</b> Birgit Rasmussen	09:20 <b>Acoustic Classification and Building Regulations. Nordic/Baltic Harmonization?</b> Steindor Gudmundsson	09:40 <b>Sound quality in dwellings in Norway – a socio-acoustic investigation</b> Anders Løvstad, Jens Holger Rindel, Clas Ola Høsøien, Ingunn Milford and Ronny Klæboe	10:00 <b>Coffee Break</b>	10:40 <b>Sound insulation and reverberation time for classrooms - Criteria in regulations and classification schemes in the Nordic countries</b> Birgit Rasmussen	11:00 <b>Aiming at satisfactory sound conditions in dwellings – the use of dose-response curves</b> Jens Holger Rindel, Anders Løvstad and Ronny Klæboe	11:20 <b>Replaceable Building Base Isolation</b> Michael Vanstraelen and Zoltan Horvath	11:40 <b>Quiet and Alternative Materials from Palestine</b> May Hanna

<b>Tuesday 21 June Session 5: Young Acousticians Network (YAN)</b>			
<b>Chair: Juan Pablo Parra Martinez</b>			<b>Room: Q36</b>
09:00 <b>Welcome Info about EAA</b> Juan Pablo Parra Martinez Mats Åbom	09:20 <b>Extensive Unified-Domain Simulation of the Human Voice: Overview and Outcomes of the EUNISON Project</b> Sten Ternström and Oriol Guasch	10:00 <b>Coffee Break</b>	10:40 <b>Hearing and speech communication</b> Karolina Smeds
			11:20 <b>The job market in acoustic engineering worldwide</b> Klas Hagberg

<b>12:00</b>	<b>Lunch</b>
<b>13:00</b>	<b>Keynote 2: Jean Kergomard</b> <b>What can we learn from minimum models of self-sustained oscillations in reed musical instruments?</b>
<b>Room: Q1</b>	

<b>Tuesday 21 June Session 6: Music acoustics and room acoustics for music</b>							
<b>Chair: Sten Ternström</b>							<b>Room: Q34</b>
14:00 <b>Feeling music through vibrations - a vibrosensoric experience</b> Russ Palmer and Stina Ojala	14:20 <b>Acoustics for Amplified Music and a New, Variable Acoustics Technology that includes Low Frequencies</b> Niels Adelman-Larsen	14:40 <b>Malmö Live – The process of designing a successful concert hall</b> Jan-Inge Gustafsson	15:00 <b>Coffee Break</b>	15:40 <b>Challenges of design of smaller multi-purpose halls</b> Henrik Möller	16:00 <b>Active control of first order wall reflections in large cylindrical rooms</b> Veronika Jönebratt, Anders Westbrandt and Gunilla Sundin	16:20 <b>Analysis of sound field variations in concert halls via visualization and objective parameter comparison</b> Torbjörn Kloow and Sebastien Barre	16:40

<b>Tuesday 21 June Session 7: Vehicle noise and vibration</b>							
<b>Chair: Susann Boij</b>							<b>Room: Q36</b>
14:00 <b>Interfacial forces for tyre tread block and road in rolling contact – An experimental study</b> Oskar E. Lundberg, Ines Lopez Arteaga and Leif Kari	14:20 <b>Noise and Rolling Resistance Properties of Various Types of Winter Tyres Compared to Normal Car Tyres – Results from measurements 2015</b> Tiago Vieira, Ulf Sandberg, Piotr Mioduszewski and Jerzy Ejsmont	14:40 <b>Interaction between Structural Modes and Gear Transmission Error</b> Gábor Felcsuti, Hao Liu and Leif Kari	15:00 <b>Coffee Break</b>	15:40 <b>Noise reduction for a large diesel engine</b> Zengxin Gao and Kari Saine	16:00 <b>Vibration damping of air intake filter for gas engine, using constrained layer damping (CLD)</b> Anders Olsen and René Smidt Lützen	16:20 <b>Cost effective noise abatements for low-speed railways</b> Martin Almgren	16:40 <b>Pass-by noise simulations - influence of trim representation</b> Anna Färm, Ragnar Glav and Susann Boij

<b>Tuesday 21 June 14:00 Workshop: Building acoustics and regulations</b>							
<b>Chair: Birgit Rasmussen</b>							<b>Room: Q33</b>

<b>19:00</b>	<b>Dinner: The Opera house, Rotundan</b>
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Time	<b>Wednesday 22 June 2016</b>		
09:30	<b>Keynote 3: Cheol-Ho Jeong, Gerd Marbjerg and Jonas Brunskog</b> <b>Uncertainty of input data for room acoustic simulations</b>		<b>Room Q1</b>
10:30	<b>Coffee Break</b>		

<b>Wenesday 22 June Session 8: Models and measurement methods for small rooms</b>			
<b>Chair: Per Sjösten</b>			<b>Room: Q34</b>
11:00 <b>Extreme design of small rooms for music reproduction</b> Per Sjösten and Ingemar Ohlsson	11:20 <b>Using Wave Based Geometrical Acoustics (WBGA) to investigate room resonances</b> Bengt Johansson, Panos Economou and Antreas Eletheriou	11:40 <b>The effect of Helmholtz resonators on the acoustic room response</b> Per Sjösten, Peter Svensson, Bjørn Kolbrek and Karen Evensen Brastad	12:00

<b>Wenesday 22 June Session 9: Environmental noise</b>			
<b>Chair: Iris Turunen-Rindel</b>			<b>Room: Q36</b>
11:00 <b>Noise mapping and noise action planning in Germany</b> Matthias Hintzsche	11:20 <b>Long term noise measurements – Is Leq(A) run out of steam ?</b> Kari Saine, Zengxin Gao, Antti Leskinen and Roy Hjort	11:40 <b>Human reactions to vibration from blasting nearby residential areas</b> Iris Turunen-Rindel, Ronny Klæboe and Karin Norén-Cosgriff	12:00 <b>Auroral Acoustics project – a progress report with a new hypothesis</b> Unto K. Laine

<b>12:20</b>	<b>Lunch</b>		
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<b>Wednesday 22 June Session 10: Room acoustics</b>					
<b>Chair: Carsten Svensson</b>					<b>Room: Q34</b>
13:20 <b>Factors of auditorium design</b> Nella Näveri	13:40 <b>The effect of acoustic absorbing wall panels on room acoustic qualities</b> Carsten Svensson and Erling Nilsson	14:00 <b>Masking sound effects on privacy in open plan offices</b> Johannes Carlsson and Gunilla Sundin	14:20 <b>Wanted: Room Acoustic Standards in Healthcare Facilities</b> Mai-Britt Beldam and Birgit Dietz	14:40 <b>Sound Environment in Hospitals</b> Anna-Christina Borstedt	15:00 <b>Some room acoustical observations of new hospital buildings in Finland</b> Jyrki Kilpikari and Kalle Lehtonen

**Wednesday 22 June Session 11: Machinery noise and vibration****Chair: Hans Jonasson****Room: Q36**

13:20 <b>Intelligent protection from welding noise</b> Marko Antila, Jari Kataja, Heikki Isomoisio, Heli Koskinen and Teemu Koistinen	13:40 <b>Measures to ensure vibration requirements of electro-microscopies</b> Jorge Torres	14:00 <b>New realisation of the quantity sound power</b> Håkan Andersson	14:20 <b>Emission sound pressure level and local environmental correction</b> Hans Jonasson	14:40 <b>Partial loudness assessment of wind turbine sound through continuous judgment by category-ratio scaling</b> Anders Johansson, Jesper Alvarsson and Karl Bolin	15:00 <b>Effect of mounting conditions for bass absorption in baffle absorbers</b> Halvard Høiland-Kaupang and Jarle Ellefsen
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**15:20 Closing****Room: Q1**