

20<sup>th</sup> workshop of the Aeroacoustics Specialists Committee of the CEAS  
**Measurement Techniques and Analysis Methods for Aircraft Noise**

<b>DAY 1 – Wednesday 7<sup>th</sup> September</b>	
<b>Welcome</b> <i>Phillip Joseph, Scientific chair, ISVR</i>	0930 – 0945
<b>Keynote 1</b> Chair: Phillip Joseph, ISVR	
The similarity between duct mode detection and beamforming <i>Pieter Sijtsma, PSA3</i>	0945 – 1030
<b>Break</b>	1030 – 1100
<b>Session 1. Source localisation methods I</b> Chair: Hans Boden, KTH	
Using differential evolution as the global optimization method for acoustic source localization <i>Mirjam Snellen, Anwar Malgoezar, Roberto Martinez, Pieter Sijtsma, Dick Simons</i>	1100 – 1120
Localisation and analysis of sound sources on aircraft in flight <i>Henri Siller, Stefan Funke, Wolfram Hage</i>	1120 – 1140
Phased array aeroacoustic measurements of a scaled UAV in a non-anechoic closed-section wind tunnel <i>Lorenzo Burghignoli, Alessandro Di Marco, Francesco Centracchio, Roberto Camussi, Thomas Ahlefeldt, Arne Henning, Jurg Muller</i>	1140 – 1200
Multi-microphone cepstral method for PSD de reverberation <i>Daniel Blacodon</i>	1200 – 1220
<b>Lunch</b>	1230 – 1330
<b>Session 2. Measurement methods for liner characterisation</b> Chair: Lars Enghardt, DLR	
Design, manufacture and test of aero-engine liners <i>Paul Murray</i>	1330 – 1350
Effect of flow direction on acoustic liner impedance measurement results <i>Hans Boden, Julio Cordioli, Andre Spillere</i>	1350 – 1410
Impedance of perforated and micro-perforated liners with grazing shear flow: Does the impedance make sense with flow? <i>E. Portier, X. Dai, Y. Auregan</i>	1410 – 1430
Experimental methods for determination of nonlinear acoustic properties of liners <i>Hans Boden</i>	1430 – 1450
<b>Break</b>	1500 – 1530
<b>Session 3. Signal processing methods for fan noise characterisation</b> Chair: Harry Brouwer, NLR	
In-duct fan acoustic analysis in the SEMAFOR project <i>Arthur Finez</i>	1530 – 1550
Theory and application of the two-microphone method for mode detection in aero-engines <i>Jian Chen, Phillip Joseph, Brian Tester</i>	1550 – 1610
Novel measurement procedure for the experimental investigation of modal sound transmission through turbomachinery stages <i>Maximilian Behn, Ulf Tapken</i>	1610 – 1630
Compressed sensing based azimuthal mode analysis of in-duct sound fields with reduced modal sparsity <i>Jakob Hurst, Maximilian Behn, Ulf Tapken</i>	1630 - 1650
On measurement of unsteady surface pressure for aerodynamic noise measurement <i>Oksana Stalnov</i>	1650 – 1710
<b>Close (Day 1)</b>	1710

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<b>DAY 2 – Thursday 8<sup>th</sup> September</b>	
<b>Keynote 2</b> Chair: Brian J Tester, ISVR	
The Advanced Noise Control Fan – A 20 Year Retrospective Daniel L Sutliff, NASA	0945 – 1030
<b>Break</b>	1030 – 1100
<b>Session 4. Source localisation methods II</b> Chair: Keith Holland, ISVR	
Validation of an in-duct to far-field beamformer method for predicting far-field fan broadband noise <i>Brian Tester, Yusuf Ozyoruk, Daniel Sutliff, Rick Bozak</i>	1100 – 1120
Aeroengine noise tests on free-field and indoor test-beds using spectral methods and the inverse microphone-array method SODIX <i>Stefan Funke, Henri Siller, Christian Stohr</i>	1120 – 1140
Multi-port characterization of ducted components <i>S. Sack, M. Abom</i>	1140 – 1200
Nearfield aerofoil measurements for source estimation <i>Fabio Casagrande Hirono, Filippo Fazi, Phillip Joseph</i>	1200 – 1220
The bounded correlation length inverse method <i>K R Holland, P A Nelson</i>	1220 – 1240
<b>Lunch</b>	1240 – 1330
<b>Industrial talk</b> Chair: Alec Wilson, ISVR	
An industrial perspective on measurement techniques on aero-engines <i>Chris J Knighton &amp; Kevin M Britchford, Rolls-Royce plc</i>	1330 – 1400
<b>Break</b>	1400 – 1420
<b>Session 5. Jet noise / Combustion noise / Flow Instabilities</b> Chair: Daniel Juve, ECL	
Azimuthal decomposition of turbulent jet noise by means of reduced number of microphones in anechoic chamber measurements and full-scale ground tests <i>Victor Kopiev, Georgy Faranosov, Ivan Belyaev, Mikhail Zaytsev, Alexey Aleksentsev, Yuly Bersenev, Valery Chursin, Tatyana Viskova</i>	1420 – 1440
The basics of statistical aeroacoustics - An extrapolation of industrial statistics to aeroacoustics <i>Constantin Sandu</i>	1440 – 1500
Processing and measurement methods for jet engine combustion noise <i>Tony Hart, Keith Holland, Phillip Joseph</i>	1500 – 1520
Methodology to analyze unsteady flow field data synchronized to pressure measurements: 3D-vortex structures induced by rotating instability <i>Benjamin Pardowitz, Ulf Tapken, Lars Enghardt</i>	1520 – 1540
<b>Break</b>	1540 – 1600
<b>Close (Day 2)</b>	1600