



Acoustics 2013 New Delhi
“Technologies for a Quieter India”

Conference Appraisal

November 10-15, 2013
CSIR-NPL

Organized by
Acoustical Society of India, ASI
French Acoustical Society, SFA
&
CSIR-National Physical Laboratory

Co-sponsored by the International Commission on Acoustics

Venue
CSIR-National Physical Laboratory
Dr. K.S. Krishnan Road, New Delhi-110012, India

<http://www.acoustics2013newdelhi.org>



INTRODUCTION

Acoustics 2013 New Delhi, organized in collaboration between the **ASI**, (Acoustical Society of India) and the **SFA** (Société Française d'Acoustique, French Acoustical Society), is the first of a kind of a series of common Indo-French Conferences.

Acoustics 2013 New Delhi took place in New Delhi from November 10th to 15th. Plenary lectures and regular papers as well as specific collaboration workshops have provided to participants a mutual deep insight on acoustics activity in both India and France.

The large number of papers has permitted building up a challenging and exciting program for five days: 4 plenary lectures and 45 structured sessions and 3 poster sessions (annex1) gathering 296 presentations.

The International participation has shown the attractiveness of the Indian acoustics for scientist from all over the world (19 participating countries with important foreign participation (**India: 75%, France 17%, others: 8%**)).

At this occasion, a “**Who’s Who in acoustics in India and France**” was built up and distributed in a CD format to all participants. It includes a short description of all Indian and French companies, universities, research labs and government agencies in all areas of acoustics.

In order to trigger cooperation between the Indian and the French Community, a series of 10 special CEFIPRA- IFCPAR (Indo-French Centre for the Promotion of Advanced Research) **workshops** were organised on Wednesday afternoon that investigated all collaboration possibilities by technical area:

TOPIC	Indian Chair	French Chair
Aero & Hydroacoustics	N.S. Naidu	Philippe Lafon
Instrumentation & Signal Processing	Arun Kumar	Jean-Marc Girault
Bioacoustics	B. Chakraborty	Thierry Aubin
Physical Acoustics	I Johnson	Bertrand Dubus
Transducers & Electroacoustics	K. Trinath	Stéphane Durand
Musical Acoustics	Punita Singh	Bertrand David
Ultrasounds	R R Yadav	Pascal Laugier
Building & Environmental Acoustics	Mahavir Singh	Catherine Lavandier
Underwater Acoustics	P Palanichamy	Christian Audoly
Vibro-acoustics & noise	PVS. Ganesh Kumar	Charles Pézerat
Speech	S.S. Agrawal	Xavier Pelorson

For every workshop, a summary report was set up by the participants. This document synthesizes all these individual reports on various topics: upcoming events and conferences, sister organizations, existing projects and collaborations, potential future collaborations.

UPCOMING EVENTS AND CONFERENCES



- **2014**
- International Building Performance Simulation Association - 20 - 21 May 2014, Arras. <http://conference2014.ibpsa.fr/>
- International Symposium of Musical Acoustic - ENSIM - Le Mans - July 7-11, 2014. <http://isma.univ-lemans.fr/en/index.html>
- ICNEM - 18th International Conference on Nonlinear Elasticity in Materials - Fréjus, France - June 22-27, 2014. <https://intranet.sfa.asso.fr/archives/J81-ICNEM2014/>
- CMD25, JMC14, Condensed Matter, Paris, 24-29 August 2014 <http://cmd25jmc14.sciencesconf.org/>
- Congrès Français d'Acoustique, April 22-25, 2014. <http://cfa2014.conference.univ-poitiers.fr/>
- Anglo-French Physical Acoustics Conference 2014 (AFPAC2014) - Surrey, UK - 15-17 January 2014. <http://afpac14.iopconfs.org/home>
- ISUD-9 - 9th International Symposium on Ultrasonic Doppler Methods for Fluid Mechanics and Fluid Engineering Strasbourg - August 27–29, 2014. <http://www.ubertone.fr/index.php/en/isud-2014-conference>
- **2015**
- FAN NOISE 2015 - Lyon France - 15 au 17 April 2015. <http://www.fan2015.org/>
- ICU 2015, International Congress on Ultrasonics - Metz, France - May 10-15, 2015. <http://2015-icu-metz.gatech.edu/>
- 20th ISNA – International Symposium on Non-linear acoustics, Lyon, France - June 28th - July 4th, 2015



- Frontiers of Research in Speech and Music, 13-14 March 2014, AIISH, Mysore <http://speech.tifr.res.in/conf/frsm2014.pdf>
- Series of SYMPOL Conferences(odd years): International Symposium on Ocean Electronics (in cooperation with IEEE/OES) Sympol 2013, 23-25 October 2013 at Cochin <http://sympol.cusat.ac.in/>
- 20110-2011 Indo-US Conferences on Shallow water acoustics, CSIR NIO, http://www.nio.org/index/option/com_eventdisplay/task/view/tid/4/sid/114/eid/88
- Ninth international symposium on Underwater Technology 2015 (UT15) NIOT, Chennai, organized by IEEE, OES, India Council.

SISTER ORGANIZATIONS

Several sister organizations (non-profit) cooperating with either ASI or SFA have been identified in both countries.

	<ul style="list-style-type: none">• Condition Monitoring Society: http://www.comsoi.org/home.asp• Indian Society of Ultrasonics: http://www.nplindia.org/ultrasonics-society-india• National Committee of Noise Pollution Control• ITCSAR (Musical acoustics) http://www.itcsra.org/sra_index/sra_index.asp
	<ul style="list-style-type: none">• ITTEM: Institut Technologique Européen des Métiers de la Musique. http://itemm.fr/itemm/• CIDB: Centre d'Information et de Documentation sur le Bruit. http://www.bruit.fr/• Conseil National du Bruit:• International (European) speech and Communication Association: http://www.isca-speech.org/iscaweb/• European Acoustics Association (SFA founding Member): https://www.euracoustics.org/

EXISTING PROJECTS AND COLLABORATIONS



Faculty Exchange:

- Signal processing (detection and estimation in non Gaussian noise): ISC Bangalore (Prof. G.V. Anand) - Université d'Angers (Prof. François Chapeau Blondeau), Université de Lyon (Prof. David Rousseau).
- Sonar transducer modelling: NPOL Cochin and ISEN Lille.



CEFIRPA:

- Phylogeny and Acoustic Evolution of Crickets (IISC-Bangalore & Museum of National History - Paris, ended in 2010). http://cefipra.org/detail_page.aspx?langid=2&id=1046
- Numerical methods in nonlinear fluid mechanics and acoustics. Non-linear analysis and optimization: IIT Kanpur & UPMC, 2006-2009. http://cefipra.org/detail_page.aspx?langid=2&id=691
- Discontinuous Galerkin Method for Nonlinear Acoustics: IIT Mumbai UPMC Paris, 2011-2014. http://cefipra.org/detail_page.aspx?id=1417&langid=2


HOT TOPICS IN RESEARCH AND DEVELOPMENT

During the workshops several hot topics in both countries have been identified by the participants to thematic workshops. They do not constitute an exhaustive list but a starting point for triggering mutual interests. Many groups have preferred to focus on potential actions of collaboration that are described in the next section.



Instrumentation & Signal Processing

	Detection and localization/tracking of targets in the ocean in a non-Gaussian ambient noise environment. Acoustic vector sensor arrays processing techniques. Reverberation modelling and reverberation techniques suppression techniques in the ocean.
	Deconvolution, localisation, source identification. Non-linear processing. Compress sensing, filtering. Acoustics of porous materials. Linking microstructure and acoustical macro-behaviour. Application to foams, fibrous materials, recycling materials, snow...



Physical Acoustics

	Snow avalanche studies
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Transducers & Electroacoustics

	Active control of vibrations. Manufacture of piezoceramics and their characterization. Single crystals for sonar transducers. Active vibration control for ship frequencies (10-1 000 Hz). PZT-Polymer ceramic composites. Underwater electro-acoustics sensors. Development and optimization of non-contact Electromagnetic transducer, EMATS.
	Microphone arrays for signal processing. Loudspeakers as sound absorbers. Metacomposite for acoustic control. Optimization of TS.



Musical Acoustics

	Music Information retrieval. Modelling of instruments (finite elements). Music & emotions.
	Music retrieval. Perception.

Underwater Acoustics

	Sensors for ocean sciences: salinity, surface temperature, conductivity, CO ₂ , Methane
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Speech

	Automatic speaker identification, Speech recognition, telecoms, experimental phonetics, auditory perception, speech quality & emotion, databases.
	Signal processing, telecoms, speech recognition, synthesis, databases, phonetics, linguistics, medical applications.

POTENTIAL FUTURE COLLABORATIONS

Several potential collaborations have been identified by the participants to the workshop. Whenever partners from both countries were present, collaboration topics and actors have been identified. In other cases, proposals for collaborations have been expressed and corresponding contacts have been identified.

This document will be made public on both ASI and SFA website as part of the “match makers” role of both societies. A “partner seeking for partner” webpage will be maintained by ASI and SFA in order to continue the matching effort.

The role of both societies will consist in putting people in contact. Whenever a collaboration action is established, it has to go through conventional tools (incl. CEFIPRA). The Societies will be happy to announce any success of collaboration project.

Several useful links have been identified that can be useful for people seeking for collaboration:

- ASI: <http://acousticsindia.org/>
- SFA: <http://www.sfa.asso.fr/>
- CEFIPRA: <http://cefipra.org/>
- CAMPUS France: <http://www.inde.campusfrance.org/fr>
- French Embassy: <http://www.ambafrance-in.org/-French-Embassy-in-New-Delhi->
- Indo-French Chamber of Commerce and Industry : <http://www.ifcci.org.in/>
- UBIFRANCE: <http://www.ubifrance.com/in/>
- Association Bernard Gregory (French post-docs): www.intelligence.fr

A total of 54 possible areas of collaboration have been identified by the participants to the workshops.

Aero & Hydroacoustics

Characterization of turbulent excitation of underwater bodies

IN: IIT Mumbai, NPOL

FR: Thomas Lessing (DCNS, thomas.leissing@dcnsgroup.com)

Bioacoustics

Dolphin studies

IN: IIT Delhi

FR: tbd

Building & Environmental Acoustics

Archaeological Acoustics

IN: Alpana Dengre (National Institute of Technology, NAGPAM Dept. of Architecture and planning)

FR: tbd

Links to musical acoustics: comparison, indigenous instruments

IN: Buland Shubla (CEPT University, bulandzzz@gmail.com), Prof. Prasad

FR: tbd

Building Acoustics

IN: Mahavir Singh (NPL, mahavir@nplindia.org)

FR: tbd

Worship Acoustics

IN: Menino Allan Tavares (allan.wholysound@gmail.com), Boland Shuhla, Vishnou Koleri (vishnutkolleri@gmail.com), University of Goa

FR: tbd

Indigenous acoustic Materials. Updating technology, transfer of research into practice

IN: Vishnu Koleri (vishnutkolleri@gmail.com), Subramanian Kandaswamy (kanda_swamy@hotmail.com)

FR: tbd

Soundscape acoustics in malls, urban spaces, gardens, classroom

IN: tbd

FR: tbd

Cultural differences

IN: tbd

FR: tbd

Workshops for drafting standards on subjective acoustics domain

IN: tbd

FR: tbd

Instrumentation & Signal Processing

Course on Ceramics from Industrial Company, Industrial training and collaboration

IN: Anil Kashyap (NPOL)

FR: Pascal Mosbah (IEMN/ISEN Lille, pascal.mosbah@isen.fr)

Electronics & communication, imbedded instrumentation

IN: Anshul Jahn (BTech student, NPL, anshulj007@gmail.com)

FR: tbd

Development of imbedded instrumentation for ultrasonic characterization of materials

IN: Chandra Shekar Gohiya (NPL, scgohia@gmail.com)

FR: tbd

Audio Signal Processing, psychoacoustics, deconvolution based problems, music information retrieval

IN: Nitin Balajee Ravi (nitin.balajee@gmail.Com)

FR: tbd

Underwater electroacoustics transducers, Design, optimization, development and characterization (testing)

IN: NPOL/ NSTL

FR: IEMN/ISEN

Snow and avalanches. adding microstructural and physical ingredients

IN: Prof. Arun Kumar (IIT Delhi, arun@care.iitd.ac.in)

FR: Prof Camille Perrot (MSME Univ Paris Est, camille.perrot@univ-paris-est.fr),

Jean-Marc Girault (U. Tours, jmgirault@univ-tours.fr)

Tools for Digital Signal processing and hardware

IN: Prof. Rajendar Bahl (IIT Delhi, rajbahl@hotmail.com), Prof Arun Kumar (IIT Delhi, arun@care.iitd.ac.in)

FR: tbd

Speech recognition, HCI, behaviour and signal processing

IN: Santosh. gailmeadvir@ gmail.com

FR: tbd

Localisation indoor using sonic signals

IN: tbd

FR: Prof Kosai Raouf (LAUM le Mans, kosai.raoof@univ-lemans.fr)

Musical Acoustics

Mechanical Modelling of Indian musical instruments like Sitar and Tapura.

Looking for post-doc in France

IN: Ashok K. Mandal (ITT Kanpur, ashok.mndl@gmail.com)

FR: tbd

Psycho-acoustics, sound perception, music information retrieval, audio signal processing. Looking for co-supervised PhD opportunities

IN: Nitin Balajee Ravi (nitin.balajee@gmail.com)

FR: tbd

Music Analysis, MIR, Music emotions. Looking for co-supervised PhD

IN: Valenkar Malarand (makarand-v@rediffmail.com)

FR: tbd

Physical Acoustics

Non destructive testing and evaluation, NDE, conventional methods and current image processing

IN: Dr S.V. Ranganayakulu

FR: Dr. H Konik, Dr Y Bringer (Université de Saint Etienne)

Indo-French Workshop on ultrasound for nano-materials and nano-objects

IN: J. Johnson (St. Joseph College, Trichy, jnaadarsh@hotmail.com)

FR: Bertrand Dubus (IEMN, Lille, bertrand.dubus@isen.fr)

Thermoacoustics

IN: J. Johnson (St. Joseph College, Trichy, jnaadarsh@hotmail.com)

FR: LAUM (G. Poignant, G. Peuchet), Philippe Blanc-Benon (Ecole Centrale de Lyon, philippe.blanc-benon@ec-lyon.fr)

Physical Acoustics of porous materials

IN: MoD, South Avalanche Study Establishment

FR: Aroune Duclos (LAUM, aroune.duclos@univ-lemans.fr), Camille Perrot (MSME, camille.perrot@univ-paris-est.fr)

Speech

Automatic Speech/speaker recognition. Speaker identification

IN: CIIL Kerala University

FR: tbd

Signal processing of speech: signal processing and pattern recognition techniques for speech processing & communication

IN: Dr Agrawal (KIIT, ss-agrawal@hotmail.com)

FR: André Soubique(U Aix en Provence), Joseph Mariani (LIMSI, Orsay), Prof René Caussé (Grenoble)

Extract of robust acoustic features to serve as ATM-Android password

IN: tbd

FR: tbd

Transducers & Electroacoustics

Collaboration and training in PZT materials, new developments of futuristic materials, bilateral sharing of know-how

IN: Concord Electroceramics Industries Delhi

FR: tbd

Digital hydrophones, Vector sensors

IN: Dr. D. Ebenezer (NPOL Kochi ,d.d.ebenezer@gmail.com)

FR: tbd

Underwater sensors (acoustics, wind , humidity, salinity, temperature.....)

IN: Dr. Dhilsha Rajapan (NIOT, krd@niot.res.in), Prof Madhu Bahl (IIT Delhi, rajbahl@hotmail.com), Dr. Bishwajit Chakraborty (NIO GOA, bishwajit@nio.org)

FR: tbd

Shock and vibration, Environmental chamber, hyperbare (900 bars) & corrosion test of sensors

IN: Dr. G Latha (NIOT Chennai, krd@niot.res.in)

FR: tbd

EMAT optimization and associated Instrumentation development

IN: Dr. P..K Dubey (NPL, dubeypk@nplindia.org)

FR: tbd

Active control of sound field- shunt loudspeakers and electroacoustic absorbers

IN: tbd

FR: Hervé Lissek (EPFL Lausanne, herve.lissek@epfl.ch)

Active suspension-vibration control- Piezo modelling

IN: tbd

FR: Manuel Collet (Ecole Centrale de Lyon, manuel.collet@ec-lyon.fr)

Ultrasounds

Biomedical ultrasound: Ultrasound-enhanced antibiotherapy (This is a hot topic on the international scene)

IN: Dr S.V. Ranganayakulu (Guru Nayak Institutions Technical Campus, nayakulu@rediffmail.com)

FR: Dr Nicolas Taulier (LIP Paris, nicolas.taulier@upmc.fr) Ayache Bouakaz (U. Tours)
Dr. Cyril Lafon (LabTAU/INSERM Lyon)

NDE - Transducers technology

IN: Dr S.V. Ranganayakulu (Guru Nayak Institutions Technical Campus, nayakulu@rediffmail.com)

FR: Dominique Certon (Université de Tours) IEMN, Le Clezio (IES)

Ultrasound and nanomaterials, nanocrystals nanoparticles for (i) photonics and (ii) biomedical applications Basically ultrasound is used for nanoparticles fabrication

IN: J. Johnson (St. Joseph College, Trichy, jnaadarsh@hotmail.com)

FR: Ecole des Mines d'Albi (sonocrystalization, Olivier Louinard) group in Lyon (tbd).

Underwater Acoustics

Moored system for collecting data of a single hydrophone. Use of ambient noise for imaging

IN: Bishwajit Chakarborty (NIOT GOA, bishwajit@nio.org)

FR: tbd

Sensor Technology, Modelling Techniques and Materials for Underwater sensors

MEMS,NEMS Sensor Technology for wideband underwater projectors and miniature sensors/projectors for AUVs / UUV (underwater communication)

IN: Dr. Dhilsharjapan (NICOT Chennai, NSTL- NPOL, krd@niot.res.in)

FR: Dr. Pascal Mosbah (IEMN/ISEN, pascal.mosbah@isen.fr)

Sensor Technology, Modelling Techniques and Materials for Underwater sensors

MEMS,NEMS Sensor Technology for wideband underwater projectors and miniature sensors/projectors for AUVs / UUV (underwater communication)

IN: Dr. Dhilsharjapan (NICOT Chennai, NSTL- NPOL, krd@niot.res.in)

FR: Dr. Pascal Mosbah (IEMN/ISEN, pascal.mosbah@isen.fr)

Soundscape for underwater column description (incl. bottom: sediment movements)

IN: NIOT

FR: tbd

Multibeam active system for bottom classification

IN: NIOT Goa

FR: tbd

Acoustic lining, characterization of polymer materials

IN: NPOL

FR: DCNS

Radiation and scattering (target strength modelling)

IN: NPOL-NSTL

FR: DCNS, LOMC

Underwater acoustics signal processing for passive detection, localisation & classification

IN: Prof. Arun Kumar (IIT Delhi, arun@care.iitd.ac.in)

FR: tbd

Vibro-acoustics & noise

FE model updating of vibro-acoustics

IN: S.V. Modak (Associate Professor, Department of Mechanical, Engineering at Indian Institute of Technology, Delhi)

FR: Prof. Morvan Ouisse (École Nationale Supérieure de Mécanique et des Microtechniques de Besançon, morvan.ouisse@univ-fcomte.fr)

Structural acoustic coupling problems and modelling

IN: B. Venkatesham (IIT Hyderabad, venkatesham@iith.ac.in)

FR: tbd

Optimization in the SEA framework in vibroacoustics, Post-doc

IN: D.N. Manik (PhD student finishing in July 2014, IIT Bombay, dnmanik@iitb.ac.in)

FR: tbd

Acoustic characterization of Honeybee live structure

IN: Dr B. Venkatesham (IIT Hyderabad, venkatesham@iith.ac.in)

FR: tbd

Noise prediction of ships

IN: DRDO

FR: DCNS

French experts for continuous education on noise and vibrations

IN: IIT Mumbai

FR: tbd

Acoustic characterisation and use of jute as acoustic material

IN: Prof. Amiya Mohanty (IIT Kharagpur, amohanty@mech.iitkgp.ernet.in)

FR: Prof. Jean-Michel Geneveaux (LAUM, jmgenev@univ-lemans.fr) Prof Camille Perrot (MSME Univ Paris Est, camille.perrot@univ-paris-est.fr)

ANNEX 1: PLENARY LECTURES AND LIST OF SESSIONS

LIST OF SESSIONS

A&H0: Aero & Hydro Acoustics (General)

A&H1: Propagation of Acoustical Waves in the Atmosphere

A&H2: Numerical Aeroacoustics

A&H5: Acoustical techniques in the earth's atmospheric boundary layer studies

BE0: Building and Environmental Acoustics (General)

BE1: Architectural Acoustics and Functional Space Design

BE3: Acoustics of Worship Spaces

BIO0: Bioacoustics (General)

BIO1: Bioacoustics

ISP0: Instrumentation & Signal Processing (General)

ISP1: Signal and Instrumentation in Acoustics

MA0: Musical Acoustics (General)

MA2: Signal Processing in Musical Acoustics

PA-UW-UL0: Physical Acoustics, Underwater Acoustics & Ultrasonics (General)

PA-UW-UL2: Ultrasonic Cavitation and Sonochemistry

PA-UW-UL3: Acoustic Emission

PA-UW-UL4: Non Destructive Testing and Evaluation

PA-UW-UL5: Ultrasonics in small particles & their liquid suspensions

PA-UW-UL6: Underwater Imaging Systems & Acoustics

SP0: Speech (General)

SP1: Speech Signal Processing

SP2: Speech and Hearing

TEA0: Transducers & Electro-Acoustics (General)

TEA1: Acoustic MEMS

TEA2: Active Materials for Underwater Acoustic Sensors

TEA3: Underwater Transducer

VN0: Vibro-Acoustics & Noise (General)

VN1: Duct Acoustics and Mufflers

VN2: Vibroacoustics in Ships

VN4: Vibroacoustics of Structured Materials and Structures

VN6: Wave Issues in Elastodynamics

VN7: Condition Monitoring

POSTER1, POSTER2, POSTER3

PLENARY LECTURES

Measuring elastic properties of bone: a grand challenge in human skeletal health monitoring

by Pascal Laugier (U. Paris6 / LIP), France

Progress in underwater acoustics in India with special reference to naval applications

by V Bhujanga Rao (DRDO), India

Design of exhaust mufflers for insertion loss

by Manohar Lal Munjal (IIS Bangalore), India

Using structures as sensors

by Jean-Louis Guyader (INSA Lyon, LVA), France

ANNEX2: COMMITTEES

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Prof. N. Tandon IIT, Delhi
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