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# The International Symposium on Musical and Room Acoustics

SEPTEMBER 11-13, 2016 - La Plata, Argentina

## PROGRAMME





**ISMRA 2016**  
The International  
Symposium on Musical  
and Room Acoustics

**LA PLATA, ARGENTINA**  
SEPTEMBER 11-13, 2016.

## ISMRA2016 in La Plata

*The ISMRA2016 Organising Committee and the Asociación de Acústicos Argentinos welcome musical and room acoustics researchers and specialists from around the world to participate in the International Symposium on Musical and Room Acoustics ISMRA 2016, a Satellite Symposium of ICA 2016 in Buenos Aires. This time the Symposium merges the topics corresponding to musical and room acoustics, usually developed in specific symposia ISMA and ISRA.*

*We come from different countries and continents, with different experiences from the point of view of politics, economics, culture and music. But at the same time, we share at least two main features that define and interpellate our contemporary sound landscape: the widespread use of modern digital systems of sound reproduction and the extensive application of dynamical compression in music transmission and recording. Answering those issues is, among others, one of the main challenges to our discipline. We hope that in the symposium we can interchange knowledge, experiences and good moments on those topics and on the others included in it and distributed among the different sessions that cover a wide range of themes related to room and musical acoustics.*

*We are confident that you will find the Symposium rewarding and challenging, and hope you have the opportunity to meet friends and colleagues in a convivial atmosphere.*

*We think that in this symposium we all share the passion for sound and, through sound, the passion for music. Music is, in our opinion, the core of all the sessions that will be held in ISMRA 2016. We are lucky to be passionate for such a wonderful subject.*

*You are welcome to La Plata and to ISMRA2016.*



**Gustavo Basso**  
General Chair  
of ISMRA2016



**Nilda Vecchiatti**  
Asociación de Acústicos  
Argentinos President

# ORGANIZING COMMITTEES

## International Organizing Committee:

General Chair	Gustavo Basso
Room Acoustics Technical Chair	Nicola Prodi
Musical Acoustics Technical Chair	Murray Campbell
Programme Chair	María Andrea Farina
Secretary	Ernesto Accolti
FIA President	Jorge Patricio
AdAA President	Nilda Vechiatti

## International Advisory Committee:

Noam Amir	Harold Marshall
José Antunes	Thomas Moore
Anders Askenfelt	Andrew Morrison
Higini Arau	Roberto Pompoli
Densil Cabrera	Thomas Rossing
Jean-Pierre Dalmont	Monika Rychtarikova
Anders Chr. Gade	David Sharp
Patrizio Fausti	Christophe Vergez
Peter Hoekje	Michael Vorländer
Ana Jaramillo	Lily Wang
Jin Yong Jeon	Joe Wolfe
Eckhard Kahle	Jim Woodhouse
Tapio Lokki	Masuzo Yanagida

## Latin America Advisory Committee:

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Márcio Avelar	Dinara Paixão
Gonzalo Fernández Breccia	Fausto Rodríguez

## Local Advisory Committee:

Alejandro Bidondo	Florent Masson
Manuel Eguia	Walter Montano Rodríguez
Rodolfo Gareis	Pablo Murad
Juan Cruz Giménez de Paz	Daniel Muzzio
Alberto Haedo	Rafael Sánchez Quintana
Beatriz Garzón	Pedro Valleta
Arturo Raúl Maristany	



### GENERAL ORGANIZING

MCI Buenos Aires Office  
 Av. Santa Fe 1970, 1st Floor -  
 Te. +54 11 5252 9801  
 www.mci-group.com

# GENERAL INFORMATION




## TEATRO ARGENTINO

51 702 Av. (between 9 and 10)  
La Plata. Buenos Aires



### DAY 1: SUNDAY 11<sup>TH</sup>


#### 1<sup>st</sup> Underground

-  Pettoruti Hall: Registration & Commercial Exhibition
-  Piazzolla Room: Sessions

#### 3<sup>rd</sup> floor


-  Conferences Room: Parallel Sessions

#### Opening & Registration: 08.20 am

-  Technical Visit Teatro Argentino: 06.30pm - 07.30pm
-  Welcome Cocktail: 7.30pm- 08.30pm

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#### Special thanks to:

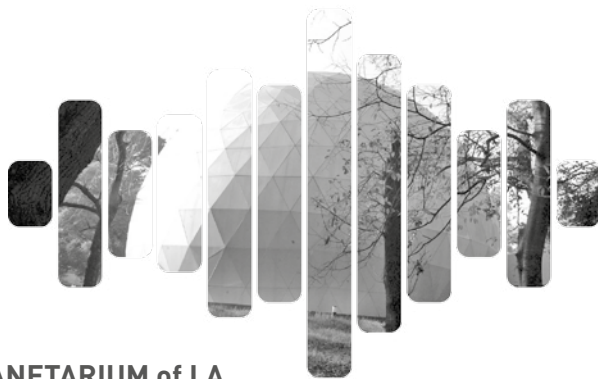
-  Teatro Argentino. La Plata
-  Planetarium. La Plata
-  Faculty of Fine Arts.  
La Plata National University

#### Cuarteto Tangor

##### Members:

CYNTHIA AGUIRRE - VOICE  
ALEJANDRO RODRIGUEZ - PIANO  
BRUNO CABADAS - BANDONEON  
DIEGO AMERISE - DOUBLE BASS  
NEHUEN ERCOLI - GUITAR

# GENERAL INFORMATION



## PLANETARIUM of LA PLATA UNIVERSITY

Iraola Av. Casco Urbano,  
La Plata. Buenos Aires

12

### DAY 2: MONDAY 12<sup>TH</sup>

**Sessions: 10.00am-06.00pm**

#### **Shuttle service:**

- 🎧 Meeting point: Main entrance of Teatro Argentino 09.15am
- 🎧 Teatro Argentino to Planetarium: Departure 09.30am

#### **Planetarium to Teatro Argentino**

- 🎧 Meeting point: Main entrance of Planetarium: 06.15pm
- 🎧 Departure: 06.30pm



## TECHNICAL VISITS

13

### DAY 3: THURSDAY 13<sup>RD</sup>

- 🎧 Teatro Colón
- 🎧 Usina del Arte
- 🎧 Centro Cultural Kirchner (CCK). Ballena Azul Auditorium

***Schedule of technical visits will be informed during the sessions***

Technical Programme 


# TEATRO ARGENTINO

## Day 1. Sunday, 11/9

Hours	Piazzolla Room	Conferences Room	Pettoruti Hall
8:20 a.m.	<b>Opening and registration</b>		<i>Exhibition</i>
9:00 - 9:20	<b>Opening ceremony</b>		
9:20 - 10:10	Keynote presentation (topic: Musical Acoustics)		
10:10 - 11:30	Structured session on Room Acoustics - RA : MS	Session on Musical Acoustics - Wind instruments	
11:30 - 11:50	Coffee break		
11:50 - 13:00	E- poster on Room Acoustics	E- poster on Musical Acoustics	
13:00 - 15:00	Break		
15:00 - 15:50	Keynote presentation (topic: Room Acoustics)		
15:50 - 17:10	Structured session on Musical Acoustics - Modeling and Synthesis	Session on Room Acoustics - RA : SM	
17:10 - 17:30	Coffee break		
17:30 - 18:30	Structured session on Musical Acoustics - Sound Production in Wind Instruments	Session on Room Acoustics - RA	
18:30 - 19:30	<b>Technical visit to Teatro Argentino</b>		
19:30 - 20:30	<b>Welcome cocktail + Tango Show</b>		

*Technical Programme* 

 Planetarium  
**Day 2. Monday, 12/9**

Hours	Planetarium
09:00 - 10:20	Sesssion on Room Acoustics - RA : EV
10:20 - 11:10	Keynote presentation (topic: cross topic Room and Musical Acoustics)
11:10 - 11:30	Coffee break
11:30 - 13:00	Sesssion on Musical Acoustics - Chordophones and Idiophones
13:00 - 15:00	Break
15:00 - 16:20	Stage Ac. Structured Sesssion
16:20 - 16:40	Coffee break
16:40 - 18:20	Joint Sesssion (MA and RA)
18:20 - 18:40	<b>Closing Ceremony</b>



Technical Visits in Buenos Aires City  
**Day 3. Tuesday, 13/9**

**Sites**










Teatro Colón

Usina del Arte

Centro Cultural Kirchner (Ballena Azul Auditorium)



*Technical Programme - Day 1. Sunday, 11/9* 

	08:20-17:00 <b>Piazzolla Room</b> <b>Opening and Registration</b>
	08:20 - 20:30 <b>Pettoruti Hall</b> <b>Exhibition</b>
	09:00 - 09:20 <b>Piazzolla Room</b> <b>Opening Ceremony</b>
	09:20 - 10:10 <b>Piazzolla Room</b>
	<b>Oral Plenary</b> <b>MA-PH: Physics of musical instruments and voice</b> ISMRA2016-68 ACOUSTICS OF PIANOS: AN HISTORICAL PERSPECTIVE. Antoine Chaigne
	10:10 - 11:30
	<b>Oral</b>
	<b>RA-MS: Measurement of concert halls / opera houses</b> ISMRA2016-39 MEASUREMENTS OF SPACIOUSNESS DURING SYMPHONY ORCHESTRA PERFORMANCES IN CONCERT HALLS. Magne Skålevik ISMRA2016-56 STAGE AND PIT ACOUSTICS IN OPERA HOUSES. Martijn Vercammen ISMRA2016-41. RECORDINGS OF ITALIAN OPERA ORCHESTRA AND SOLOIST: THE MUSICIANS' POINT OF VIEW. Dario D'orazio ISMRA2016-5 A NEW CHAMBER HALL IN M. KARLOWICZ PHILHAMONIC ORHESTRA IN SZCZECIN POLAND. Higini Arau-Puchades
	10:10 - 11:30 <b>Conferences Room</b>
	<b>Oral</b>
	<b>MA-PH: Physics of musical instruments and voice</b> ISMRA2016-46 2. MODERNIZATION OF TRADITIONAL ASIAN FREE REED INSTRUMENTS: COMPARING THE SHENG AND THE KHAEN. James Cottingham ISMRA2016-85 NON STATIONARY TONES IN REED INSTRUMENTS: A SEQUENCE OF STATIONARY STATES?. Andre Almeida ISMRA2016-36 IMPROVING THE STABILITY OF A HYBRID WIND INSTRUMENT USING TWO MICROPHONES. Kurijn Buys

*Technical Programme - Day 1. Sunday, 11/9* 



11:30 - 11:50



**Coffee break**



11:50 - 13:00

**Piazzola Room**



**E-poster**

**RA-SM: Simulation and auralization of concert halls / opera houses**

ISMRA2016-29 STUDY OF ENERGY ACOUSTICAL PARAMETERS AT AUDIENCE AREA IN A SIMULATED MULTI-PURPOSE HALL WITH AN ARTICULATED ORCHESTRA SHELL. Stelamaris Rolla Bertoli

ISMRA2016-40 THE CHOICE OF ARCHITECTURAL MATERIALS AND ITS INFLUENCE IN THE ACOUSTICAL PERFORMANCE OF AN OPERA HOUSE. Roberta Smiderle

ISMRA2016-32 DOUBLE SLOPE DECAY ROOMS: THE INFLUENCE OF COUPLING APERTURE LOCATION ON PERCEIVED REVERBERATION ACCORDING TO SEAT LOCATION Alexandre Maiorino

**RA-EV: Evaluation of concert halls / opera house**

ISMRA2016-6 ACOUSTICS FOR AMPLIFIED MUSIC AND A NEW, VARIABLE ACOUSTICS TECHNOLOGY THAT INCLUDES LOW FREQUENCIES. Niels Adelman-Larsen

ISMRA2016-80 THE ACOUSTICAL QUALITY OF ROOMS FOR MUSIC BASED ON THEIR ARCHITECTURAL TYPOLOGIES. Maria Farina

**Conferences Room**



**E-poster**

**MA-PH: Physics of musical instruments and voice**

ISMRA2016-83 A NEW METHOD FOR HIGH-SPEED LINE-SCANNING OF BRASS PLAYERS' VIBRATING LIPS USING THE EXAMPLES OF SUBCONTRA G-FLAT (TUBA) AND SPLIT TONES (TROMBONE). Renate Mauersberger

**MA-SP: Sound production – Sound synthesis**

ISMRA2016-48 ELIMINATING ALIASING CAUSED BY DISCONTINUITIES USING INTEGRALS OF THE SINC FUNCTION. Fabian Esqueda Flores

**MA-IM: Instrument making**

ISMRA2016-77 TUNABLE SONIC CRYSTALS AS AN EXTENSION OF ACOUSTICAL MUSICAL INSTRUMENTS. Ignacio Spiouasas

ISMRA2016-49 DESIGN AND DEVELOPMENT OF ACTIVE RIBBON MICROPHONE WITH VARIABLE POLAR PATTERN. Emilio Luquet

ISMRA2016-73 ON THE EFFECT OF ENTROPY AND DURATION OF MUSIC ON PERCEPTION OF PHRASE DURATION . Sergio Santi



13:00 - 15:00



**Break**

*Technical Programme - Day 1. Sunday, 11/9* 

15:00 - 15:50

**Piazzolla Room****Oral Plenary****RA-EV: Evaluation of concert halls / opera houses**

ISMRA2016-69 BIG HALLS FOR MUSIC IN ARGENTINE. Rafael Sánchez Quintana



15:50 - 17:10

**Piazzolla Room****Oral****MA-PH: Physics of musical instruments and voice**

ISMRA2016-38 OPTIMISATION TECHNIQUES FOR FINITE ORDER VISCOTHERMAL LOSS MODELING IN ACOUSTIC TUBES. Stefan Bilbao

ISMRA2016-27 COUPLING OF A ONE-DIMENSIONAL ACOUSTIC TUBE TO A THREE-DIMENSIONAL ACOUSTIC SPACE USING FINITE-DIFFERENCE TIME-DOMAIN METHODS. Reginald Harrison

**MA-SP: Sound production - Sound synthesis**

ISMRA2016-82 DEVELOPMENT OF A MODAL UDWADIA-KALABA FORMULATION FOR GUITAR MODELLING. Jose Antunes

ISMRA2016-42 BOW CONTROL AND PLAYABILITY OF A TWO-POLARISATION TIME DOMAIN PHYSICAL MODEL OF A BOWED STRING. Charlotte Desvages



15:50 - 17:10

**Conferences Room****Oral****RA-SM: Simulation and auralization of concert halls / opera houses**

ISMRA2016-23 ACQUISITION OF BOUNDARY CONDITIONS FOR A ROOM ACOUSTICS SIMULATION COMPARISON. Lukas Aspöck

ISMRA2016-70 INTERACTIVE MULTI-SOURCE SOUND PROPAGATION AND AURALIZATION FOR DYNAMIC SCENES. Carl Schissler

ISMRA2016-14 AUGMENTED AURALIZATION : COMPLIMENTING AURALIZATIONS WITH IMMERSIVE VIRTUAL REALITY TECHNOLOGIES. Brian Katz

ISMRA2016-52 FINITE DIFFERENCE ROOM ACOUSTICS SIMULATION WITH GENERAL IMPEDANCE BOUNDARIES AND VISCOTHERMAL LOSSES IN AIR: PARALLEL IMPLEMENTATION ON MULTIPLE GPUS. Brian Hamilton



17:10 - 17:30

**Coffee break**

*Technical Programme - Day 1. Sunday, 11/9* 



17:30 - 18:30

**Piazzolla Room**



**Oral**

**MA-PH: Physics of musical instruments and voice**

ISMRA2016-10 MODE SWITCHING IN AN AIR-JET INSTRUMENT. Nicholas Giordano

ISMRA2016-81 LIP VIBRATIONS IN BRASS MUSICIANS. Renate Mauersberger

ISMRA2016-86 THE PHYSICS OF PLAYING A GOOD NOTE ON REED INSTRUMENTS  
CONTROLLING THE TRANSIENTS AND TIMBRE ON SINGLE REED INSTRUMENTS. Andre  
Almeida



17:30 - 18:30

**Conferences Room**



**Oral**

**RA-SM: Simulation and auralization of concert halls / opera houses**

ISMRA2016-45 ACOUSTICAL DESIGN OF IZMIR OPERA HOUSE. Mehmet Caliskan

**MA-PH: Physics of musical instruments and voice**

ISMRA2016-8 DESIGN OF A MEASUREMENT METHODOLOGY TO CHARACTERIZE  
ACOUSTIC PARAMETERS AND SOUND DIRECTIVITY OF STRING INSTRUMENTS IN A REAL  
ACOUSTIC ENVIRONMENT. Leonardo Funes



18:30 - 19:30

**Piazzolla Room**

**Technical visit to Teatro Argentino**

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19:30 - 20:30

**Pettoruti Hall**

**Welcome cocktail + Tango Show**

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*Technical Programme - Day 2. Monday, 12/9* 

 09:00 - 10:20

**Planetarium**

 **Oral**

**RA-EV: Evaluation of concert halls / opera houses**

ISMRA2016-66 ACOUSTICAL DESIGN OF THE NEW CANOPY FOR THE GINASTERA HALL OF THE TEATRO ARGENTINO OF LA PLATA. Gustavo Basso

**RA-ST: Stage acoustics**

ISMRA2016-43 METHODS TO KNOW AND PRESERVE A HERITAGE OF THE ITALIAN HISTORICAL THEATRES: THE WOODEN STAGEE. Massimo Garai

**RA-EV: Evaluation of concert halls / opera houses**

ISMRA2016-28 THE EFFECTS OF ROOM ACOUSTICS ON THE PHYSICS AND NEUROLOGY THAT ENABLE US TO SEPARATE INFORMATION IN SONICALLY COMPLEX ENVIRONMENTS. David Griesinger

ISMRA2016-30 ACCURATE REPRODUCTION OF NON-INDIVIDUAL BINAURAL RECORDINGS WITHOUT HEAD TRACKING THROUGH INDIVIDUAL HEADPHONE EQUALIZATION. David Griesinger

 10:20 - 11:10

 **Oral Plenary**

**RA-EV: Evaluation of concert halls / opera houses**

ISMRA2016-72 WHY SOME CONCERT HALLS RENDER MUSIC MORE EXPRESSIVE AND IMPRESSIVE THAN THE OTHERS?. Tapio Lokki

 11:10 - 11:30

 **Coffee break**

 11:30 - 13:00

 **Oral**

**MA-IM: Instrument making**

ISMRA2016-47 THE VIOLIN: STUDYING THE INFLUENCE OF THE MODEL BY MEANS OF A FREE SORTING TASK. Claudia Fritz

**MA-PH: Physics of musical instruments and voice**

ISMRA2016-60 WHEN SINGING BOWLS DON'T SING: A NUMERICAL AND EXPERIMENTAL INVESTIGATION ON THE SUBTLE DYNAMICS OF TIBETAN BOWLS. Jose Antunes


**MA-MP: Music perception**

ISMRA2016-9 ASSESSING THE ACOUSTIC SIMILARITY OF DIFFERENT PIANOS USING AN INSTRUMENT-IN-NOISE TEST. Alejandro Osses

ISMRA2016-50 HARPSICHORD VOICING: THE PLAYER'S AUDITIVE AND TACTILE PERCEPTION. Arthur Pate

*Technical Programme - Day 2, Monday, 12/9* 

 13:00 - 15:00  
 **Break**

 15:00 - 16:20

 **Oral**

**RA-ST: Stage acoustics**


**ISMRA2016-59** TRANSFORMING A REHEARSAL STAGE INTO AN EXPERIMENTAL MUSIC VENUE USING ACTIVE ACOUSTICS. Steve Ellison

**ISMRA2016-58** STAGE ACOUSTIC REQUIREMENTS EXTENDED TO ORCHESTRA REHEARSAL ROOMS. Margriet Lautenbach

**ISMRA2016-15** OVERVIEW AND PRELIMINARY RESULTS FROM A STUDY OF STAGE ACOUSTICS FOR CHAMBER ORCHESTRAS. Lilyan Panton

**ISMRA2016-13** LIVE PERFORMANCE ADJUSTMENTS OF SOLO TRUMPET PLAYERS DUE TO ACOUSTICS. Sebastià V. Amengual Garí

 16:20 - 16:40  
 **Coffee break**

 16:40 - 18:20

 **Oral**

**MA-PH: Physics of musical instruments and voice**

**ISMRA2016-22** PROPOSED METRICS FOR UNDERSTANDING HOW DIRECTIONAL CHARACTERISTICS OF ASSORTED MUSICAL INSTRUMENTS CHANGE ACROSS MUSICAL PASSAGES. Lily Wang

**RA-EV: Evaluation of concert halls / opera houses**

**ISMRA2016-79** ACOUSTIC FEEDBACK FOR PERFORMERS ON STAGE - RETURN FROM EXPERIENCE. Eckhard Kahle

**RA-ST: Stage acoustics**

**ISMRA2016-34** THREE-DIMENSIONAL SOUND FIELD SIMULATION USING THE IMMERSIVE AUDITORY DISPLAY SYSTEM "SOUND CASK" FOR STAGE ACOUSTICS. Kanako Ueno

**MA-PH: Physics of musical instruments and voice**

**ISMRA2016-55** THE INFLUENCE OF BORE PROFILE ON SPECTRAL ENRICHMENT DUE TO NONLINEAR SOUND PROPAGATION IN BRASS INSTRUMENTS.. Donald Murray Campbell

**RA-EV: Evaluation of concert halls / opera houses**

**ISMRA2016-37** ACOUSTICS IN THE RESTORATION OF ITALIAN HISTORICAL OPERA HOUSES: LESSONS LEARNED. Nicola Prodi

 18:20 - 18:40

**Closing Ceremony**

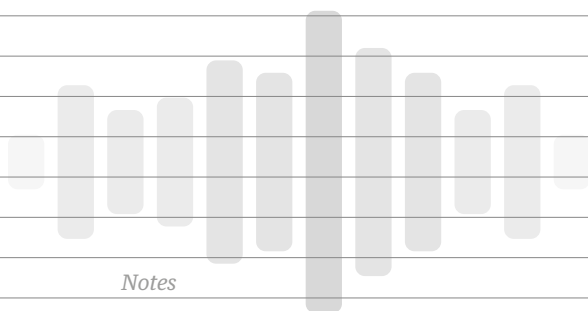
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*Notes*



## The International Symposium on Musical and Room Acoustics



LA PLATA, ARGENTINA  
SEPTEMBER 11-13, 2016.



# Ingeniería de Sonido

## *Dipl. Sound Engineering Program*

Formación integral teórico- práctica del estudiante en tres ramas: Ciencias de la Grabación, Electrónica de Audio y Acústica y Electro-acústica, con énfasis en Investigación y emprendedorismo.

*Integral education of the student in a theoretical and practical study program based into three branches: Recording Sciences, Audio Electronics, and Acoustics and Electro-Acoustics, with an emphasis on research and entrepreneurship.*

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Sistema de ingreso, plan de estudio e información complementaria  
*Admission system, course syllabi and complementary information*  
**[www.untref.edu.ar](http://www.untref.edu.ar)**