

# **2021 IEEE UFFC Latin America Ultrasonics Symposium (LAUS 2021)**

**Gainesville, Florida, USA  
4 – 5 October 2021**



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Monday, October 4

2021 IEEE LAUS Technical Program

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Opening Session

8:15 AM – 9:00 AM

**Plenary Talk: Highlighting a decades lasting French-Uruguayan collaboration in Biomedical ultrasonics**

Dr. Mickael Tanter and Dr. Carlos A. Negreira

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9:15 AM - 10:45 AM UTC-5 (Bogotá Time)

**A1L-A: Ultrasound Image Acquisition & Beamforming**

**Session Chair(s):** João Machado (Universidade Federal do Rio de Janeiro)

---

9:15 AM

**8035: FPGA-Based Reception Board of 64-Channels Ultrasound Research Platform...1**

Tiago Dezotti{1}, Amanda Costa Martinez{1}, Amauri Amorin Assef{2}, Joaquim Miguel Maia{2}, Eduardo Tavares Costa{1}

{1}Universidade Estadual de Campinas, Brazil; {2}Universidade Tecnológica Federal do Paraná, Brazil

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{1}Eduardo Mondlane University, Brazil; {2}Universidade Estadual de Campinas, Brazil; {3}Universidade Tecnológica Federal do Paraná, Brazil

9:45 AM

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{1}Eduardo Mondlane University, Brazil; {2}Universidade Estadual de Campinas, Brazil; {3}Universidade Tecnológica Federal do Paraná, Brazil

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{1}Eduardo Mondlane University, Brazil; {2}Instituto Federal de Santa Catarina, Brazil; {3}Universidade Estadual de Campinas, Brazil; {4}Universidade Tecnológica Federal do Paraná, Brazil

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Jie Zheng{2}, Norio Tagawa{2}, Masasumi Yoshizawa{1}, Takasuke Irie{3}

{1}Tokyo Metropolitan College of Industrial Technology, Japan; {2}Tokyo Metropolitan University, Japan;

{3}Tokyo Metropolitan University and Microsonic Co, Ltd., Japan

## Monday, October 4

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Mok Kun Jeong{1}, Sung Jae Kwon{1}, Min Joo Choi{2}  
{1}Daejin University, Korea; {2}Jeju National University, Korea

**9:15 AM - 10:45 AM UTC-5 (Bogotá Time)**

**A1L-B: Physical Acoustics**

**Session Chair(s):** Joao Luis Ealo Cuello (Universidad del Valle), Aline Carvalho da S. Xavier (Universidad de O'Higgins)

**9:15 AM**

**8043: Time Reversal Focusing of an Ultrasonic Nonlinear Wave...N/A**

Gonzalo Garay, Yamil Abraham, Nicolás Benech, Carlos Negreira  
Instituto de Física, Facultad de Ciencias, UdelaR, Uruguay

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Universidad de O'Higgins, Chile

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Ruben Muelas, Jhon Pazos-Ospina, Joao Ealo  
Universidad del Valle, Colombia

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Alisson Marques, Glauber Silva  
Federal University of Alagoas, Brazil

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**Session Chair(s):** Elisa E. Konofagou (Columbia University)

**11:00 AM**

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Stephen Lee, Hermes Kamimura, Elisa Konofagou  
Columbia University, United States

## Monday, October 4

**11:15 AM**

**8028: Spatio-Temporal Description of Focused Ultrasound (FUS)-Evoked Local Field Potentials: an Ex Vivo Study on a Mouse Hippocampal Model...N/A**

Ivan Suarez-Castellanos<sup>{3}</sup>, Elena Dossi<sup>{2}</sup>, Jérémy Vion-Bailly<sup>{3}</sup>, Lea Salette<sup>{2}</sup>, Jean-Yves Chapelon<sup>{3}</sup>, Alexandre Carpentier<sup>{1}</sup>, Gilles Huberfeld<sup>{1}</sup>, William Apoutou N'Djin<sup>{3}</sup>  
{1}AP-HP, France; {2}College de France, France; {3}INSERM, France

**11:30 AM**

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Mathieu Pernot<sup>{4}</sup>, Guillaume Goudot<sup>{3}</sup>, Alexander Ijsselmuiden<sup>{2}</sup>, Selina Vlieger<sup>{2}</sup>, Mathieu Cyrille Remond<sup>{1}</sup>, Daniel Suarez Escudero<sup>{1}</sup>, Mickael Tanter<sup>{4}</sup>, Benjamin Bertrand<sup>{1}</sup>, Emmanuel Messas<sup>{3}</sup>  
{1}Cardiawave SA, France; {2}Cardiovascular department, Amphia Hospital, Breda, Netherlands;  
{3}Hopital européen Georges Pompidou, France; {4}Physics for Medicine Paris, France

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Ryerson University, Canada

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Niloufar Saharkhiz<sup>{2}</sup>, Stephen Lee<sup>{2}</sup>, Xiaoyue Judy Li<sup>{2}</sup>, Hermes A. S. Kamimura<sup>{2}</sup>, Saurabh Singh<sup>{1}</sup>, Indranil Basu<sup>{1}</sup>, Chandan Guha<sup>{1}</sup>, Elisa E. Konofagou<sup>{2}</sup>  
{1}Albert Einstein College of Medicine, United States; {2}Columbia University, United States

**11:00 AM - 12:15 PM UTC-5 (Bogotá Time)**

**A2L-B: NDE/Industrial Applications 1**

**Session Chair(s):** Nicolás Benech (Instituto de Física, Facultad de Ciencias), Joaquim Miguel Maia (Federal University of Technology - Paraná)

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Instituto de Telecomunicacoes, Portugal

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Bruno Marció<sup>{2}</sup>, Guilherme Braz<sup>{1}</sup>, Antonio Adilton Oliveira Carneiro<sup>{1}</sup>, Rodolfo Flesch<sup>{3}</sup>  
{1}Universidade de São Paulo, Brazil; {2}Universidade Federal de Mato Grosso, Brazil; {3}Universidade Federal de Santa Catarina, Brazil

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Kai Zhang<sup>{1}</sup>, Xuelian Chen<sup>{1}</sup>, Kun Zhang<sup>{2}</sup>  
{1}China University of Petroleum, China; {2}ShanDong DeYuan Electric Power Technology Co. Ltd, China

## Monday, October 4

**12:15 PM – 1:15 PM**

**Panel: Funding Opportunities & Collaboration in LatAm (Round Table)**

Matthew Eames (Focused Ultrasound Foundation), Ana Vasquez (ANII), & Sofia El Mhassani (CNRS)

**1:15 PM – 2:00 PM**

**Plenary Talk: Imaging and Full-waveform, From First Principles to Full Implementation**

Dr. Koen W.A van Dongen and Dr. Ana Beatriz Ramirez Silva

**2:15 PM - 3:45 PM UTC-5 (Bogotá Time)**

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**Session Chair(s):** Kenneth Hoyt (University of Texas at Dallas)

**2:15 PM**

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Aline Xavier<sup>{1}</sup>, Gianmarco Pinton<sup>{2}</sup>, David Espíndola<sup>{1}</sup>

<sup>{1}</sup>Universidad de O'Higgins, Chile; <sup>{2}</sup>University of North Carolina, United States

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Maximiliano Anzibar Fialho<sup>{4}</sup>, Mariana Martínez<sup>{1}</sup>, Lucía Vázquez<sup>{1}</sup>, Miguel Calero<sup>{2}</sup>, Mikael Tanter<sup>{3}</sup>, Carlos Negreira<sup>{4}</sup>, Nicolás Rubido<sup>{5}</sup>, Alejandra Kun<sup>{1}</sup>, Javier Brum<sup>{4}</sup>

<sup>{1}</sup>Instituto de investigaciones biológicas Clemente Estable, Uruguay; <sup>{2}</sup>Instituto de Salud Carlos III, CIBERNED, Spain; <sup>{3}</sup>Physics for Medicine Paris, Inserm, CNRS, ESPCI, France; <sup>{4}</sup>Universidad de la República, Uruguay; <sup>{5}</sup>University of Aberdeen, Aberde

**2:45 PM**

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Luciana C. Cabrelli, João H. Uliana, Luismar B. Da Cruz Junior, Luciano Bachmann, Antonio A. O. Carneiro, Theo Z. Pavan

USP, Brazil

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Roger Domingo-Roca, Mairi Sandison, Richard O'Leary, Joseph Jackson-Camargo, Helen Mulvana  
University of Strathclyde, United Kingdom

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University of Texas at Dallas, United States

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<sup>{1}</sup>Thomas Jefferson University, United States; <sup>{2}</sup>University of Texas at Dallas, United States

## Monday, October 4

**2:15 PM - 3:45 PM UTC-5 (Bogotá Time)**

**A3L-B: Transducers, Sensors & Actuators**

**Session Chair(s):** Ricardo Tokio Higuti (Universidade Estadual Paulista), Nicolás Perez Alvarez (Universidad de la República)

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Sheffield Hallam University, United Kingdom

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Universidade Estadual de Campinas, Brazil

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University of Calgary, Canada

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<sup>{1}</sup>Conselho Superior de Investigações Científicas, Spain; <sup>{2}</sup>Universidade Estadual Paulista, Brazil;  
<sup>{3}</sup>Universidade Tecnológica Federal do Paraná, Brazil

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<sup>{1}</sup>Universidad Autónoma de Occidente, Colombia; <sup>{2}</sup>Universidad de la República, Uruguay;  
<sup>{3}</sup>Universidade de São Paulo, Brazil

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<sup>{1}</sup>Petrobras, Brazil; <sup>{2}</sup>Universidad Autónoma de Occidente, Colombia; <sup>{3}</sup>Universidade de São Paulo, Brazil

**8:45 AM**

**8052: Shear Wave elastography Based on Noise correlation: from 1D to 3D Shear Elasticity...N/A**

Miguel Bernal<sup>{3}</sup>, Javier Brum<sup>{1}</sup>, Ron Daigle<sup>{2}</sup>, Carlos Negreira<sup>{1}</sup>, Nicolas Benech<sup>{1}</sup>  
<sup>{1}</sup>Instituto de Física, Facultad de Ciencias, UdelaR, Uruguay; <sup>{2}</sup>Verasonics Inc., United States;  
<sup>{3}</sup>Verasonics SAS, Medellín, Colombia

**4:00 PM – 5:40 PM**

**Invited Talks (Meet the Labs in Latin America - Networking event)**

**5:40 PM – 5:50 PM**

**Day 1 Closing Remarks & Student Awards**



## Tuesday, October 5

8:00 AM – 8:35 AM

### Plenary Talk - Top Advances on Dermatologic Ultrasound: Results of the Development of High and Ultrahigh Frequency Ultrasound

Dr. Ximena Wortsman

8:45 AM - 9:45 AM UTC-5 (Bogotá Time)

#### B1L-A: Ultrasound Elastography

Session Chair(s): Benjamín Castañeda Aphan (Pontificia Universidad Católica del Perú)

8:45 AM

#### 8058: A Diffraction Correction to Quantify Shear Wave Attenuation in Transverse Isotropic tissues: Preliminary Results...N/A

Eliana Budelli{1}, Javier Brum{2}, Patricia Lema{1}, Carlos Negreira{2}

{1}Instituto de Ingeniería Química. Facultad de Ingeniería. Universidad de la República., Uruguay;

{2}Laboratorio de Acústica Ultrasonora. Facultad de Ciencias. Universidad de la República, Uruguay

9:00 AM

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Liliana Maria Arroyave Muñoz{1}, Sergio Estrada Mira{1}, Luz Marina Restrepo Múnera{1}, Claudia Patricia Ossa Orozco{1}, Miguel Bernal Restrepo{2}

{1}Universidad de Antioquia, Colombia; {2}Verasonics SAS, Colombia

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Aishwarya Mallampati, Mohamed Almekkawy

Pennsylvania State University, United States

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Agustin Arruti{1}, Vera De Mora{2}, Andrea Tavitian{1}, Federico Avondet{1}, Liliana Servente{1}, Mariela Garau{1}, Javier Brum{3}

{1}Hospital de Clinicas, Facultad de Medicina, UdelaR, Uruguay; {2}Hospital de ClinicasHospital de Clinicas, Facultad de Medicina, UdelaR, Uruguay; {3}Laboratorio Acustica Ultrasonora. Insituto de Fisica. Facultad de Ciencias. UdelaR, Uruguay

8:45 AM - 9:45 AM UTC-5 (Bogotá Time)

#### B1L-B: Clinical Applications of Ultrasound

Session Chair(s): Lauren Wirtzfeld (FUJIFILM VisualSonics)

8:45 AM

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Ariane Sanches, Lucas Cesar Zeni, Felipe Grillo, Jorge Elias Jr., Aron Ferreira, Theo Pavan, Adilton Carneiro

University of São Paulo, Brazil

9:00 AM

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Lukas Brausch, Steffen Tretbar, Holger Hewener

Fraunhofer-Institut für Biomedizinische Technik IBMT, Germany

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Universidad de Valparaíso, Chile

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**10:45 AM - 12:15 PM UTC-5 (Bogotá Time)**

**B2L-A: Novel Ultrasound Imaging Methods & Tissue Characterization**

**Session Chair(s):** Ivan M. Rosado Mendez (University of Wisconsin-Madison)

**10:45 AM**

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{1}Universidade de São Paulo, Brazil; {2}Universidade Federal de São Carlos, Brazil

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{1}Oncosalud, Peru; {2}Pontificia Universidad Católica del Perú, Peru; {3}University of Rochester, United States; {4}University of Rochester Medical Center, United States; {5}University of Texas at Dallas, United States

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University of Illinois at Urbana-Champaign, United States

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{1}Bleu Solid, France; {2}Fudan University, China; {3}Universidad de Chile, Chile; {4}Universidad de Valparaíso, Chile

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University of Texas at Dallas, United States

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Guilherme Braz, Paulo Agnollitto, Maecello Nogueira-Barbosa, Adilton Carneiro  
University of São Paulo, Brazil

## Tuesday, October 5

**10:45 AM - 12:15 PM UTC-5 (Bogotá Time)**

**B2L-B: NDE/Industrial Applications 2**

**Session Chair(s):** Eduardo Tavares Costa (University of Campinas), Amauri Amorin Assef (Federal University of Technology - Paraná)

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Simon Montoya-Bedoya{1}, Miguel Bernal Restrepo{2}, Laura A Sabogal-Moncada{1}, Hader V Martinez-Tejada{1}, Esteban Garcia-Tamayo{1}  
{1}Universidad Pontificia Bolivariana, Colombia; {2}Verasonics SAS, Colombia

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Universidad Pontificia Bolivariana, Colombia

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David Alejandro Collazos-Burbano{1}, Joao Luis Ealo Cuello{1}, Mayo Villagrán-Múniz{2}  
{1}Universidad del Valle, Colombia; {2}Universidad Nacional Autónoma de México, Mexico

**11:30 AM**

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Jose-Luis Castaño-Bernal{2}, Joao Ealo{2}, Enrique Franco{1}, David Collazos-Burbano{2}  
{1}Universidad Autónoma de Occidente, Colombia; {2}Universidad del Valle, Colombia

**11:45 AM**

**8041: Influence of Sample Geometry and Ultrasonic Transducer Center Frequency on Quantitative Pulsed Photoacoustic Spectroscopy...N/A**

João Henrique Uliana, Antonio Adilton Oliveira Carneiro, Theo Zeferino Pavan  
Department of Physics, FFCLRP - USP, Brazil

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**8024: Ultrasonic Vegetation Index to Estimate Water Content in Plant Leaves: Preliminary Results Using Pulsed Photoacoustics...N/A**

David Alejandro Collazos-Burbano{1}, Joao Luis Ealo Cuello{1}, Mayo Villagrán-Múniz{2}  
{1}Universidad del Valle, Colombia; {2}Universidad Nacional Autónoma de México, Mexico

**12:15 PM – 1:15 PM**

**Women in Engineering**

**1:15 PM - 2:45 PM UTC-5 (Bogotá Time)**

**B3L-A: Ultrasound Imaging with Contrast Mechanisms: Photoacoustic Imaging & Microbubbles**

**Session Chair(s):** Diego Dumani Jarquín (University of Costa Rica)

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Universidad de Costa Rica, Costa Rica

## Tuesday, October 5

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University of Colorado, United States

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Universidade de São Paulo, Brazil

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Anuj Kaushik, Himanshu Shekhar  
IIT Gandhinagar, India

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Jose Navarro, Kang-Ho Song, Mark Borden  
University of Colorado Boulder, United States

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Daniella Jimenez, Antonios Pouliopoulos, Elisa Konofagou  
Columbia University, United States

**1:15 PM - 2:45 PM UTC-5 (Bogotá Time)**

**B3L-B: Acoustic Levitation, Transducers & Microfluidics**

**Session Chair(s):** Karen Volke-Sepúlveda (Universidad Nacional Autonoma de Mexico), Marco Aurélio Brizzotti Andrade (Universidade de Sao Paulo)

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**8031: Design and Construction of a Piezoelectric Transducer for Acoustic Levitation...145**

Sílvio Vieira<sup>{2}</sup>, Marco Andrade<sup>{1}</sup>  
<sup>{1}</sup>Universidade de São Paulo, Brazil; <sup>{2}</sup>Universidade Federal de Goiás, Brazil

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**8065: Dielectric Optical Interfaces in Total Internal Reflection for Ultrasound Detection...149**

Edison O. Carrillo Vallejo<sup>{1}</sup>, Carlos Carreño Romano<sup>{1}</sup>, Francisco Veiras<sup>{2}</sup>, Ligia Ciocci Brazzano<sup>{2}</sup>  
<sup>{1}</sup>Universidad de Buenos Aires, Argentina; <sup>{2}</sup>Universidad de Buenos Aires and CONICET, Argentina

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**8071: Airborne High Power Vortex Beam Generation by Means of Ultrasonic Vibrations...N/A**

Jhoan Acevedo-Espinosa, Jhon Pazos-Ospina, Joao Ealo  
School of Mechanical Engineering, Universidad del Valle, Colombia

## Tuesday, October 5

### 2:00 PM

#### **8078: Superresolution Ultrasonic Transducer Based on a Core-Shell Lens...N/A**

José Pereira Leão-Neto{1}, Everton Brito de Lima{1}, João Henrique Uliana{2}, Theo Pavan{2}, Glauber Tomaz Silva{1}, José Henrique Lopes{1}  
{1}Federal University of Alagoas, Brazil; {2}University of São Paulo, Brazil

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#### **8082: Measuring Cell Density in a Acoustofluidic Microcavity...153**

Harrison David A. Santos, Giclênio Cavalcante Silva, Tiago F. Vieira, Amanda E. Silva, Ícaro Bezerra Queiroz de Araújo, Carlos Jacinto, Ueslen Rocha, Magna S. Alexandre-Moreira, Glauber Tomaz Da Silva Universidade Federal do Alagoas, Brazil

### 2:30 PM

#### **8083: Effect of Source Curvature on the Equilibrium Position of Ultrasonically Levitated Particles...N/A**

Jhon Pazos-Ospina{1}, Jordan Estrada{2}, Victor Contreras{2}, Diego Baresch{3}, Joao Ealo{1}, Karen Volke{2}  
{1}Universidad del Valle, Colombia; {2}Universidad Nacional Autónoma de México, Mexico; {3}Université de Bordeaux, France

### 2:45 PM - 3:45 PM UTC-5 (Bogotá Time)

#### **B4P-C: Biomedical Poster Session**

**Session Chair(s):** Nicolás Benech (Instituto de Física, Facultad de Ciencias), Antonio Adilton Carneiro (Universidade de São Paulo), Acácio Zimbico (UEM/DEEL)

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Atsushi Hosokawa  
National Institute of Technology, Akashi College, Japan

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Belfor Galaz{3}, Teresa Henriquez{3}, David Espíndola{2}, Miguel Trejo{1}  
{1}Universidad de Buenos Aires, Argentina; {2}Universidad de O'Higgins, Chile; {3}Universidad de Santiago de Chile, Chile

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Lokesh Basavarajappa, Kenneth Hoyt  
University of Texas at Dallas, United States

#### **8018: Simulation Assessment of Two Focused Ultrasound Sources for Neuromodulation...N/A**

Patricia de Andrade{2}, Eduardo Costa{2}, Hermes Kamimura{1}  
{1}Columbia University, United States; {2}Universit of Campinas, Brazil

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**8037: Muscle-Computer Interface Using Portable Ultrasonography Device...N/A**

César Millán-Castillo, Eduardo Gerardo Mendizabal-Ruiz, Hugo Abraham Vélez-Perez, Rebeca Del Carmen Romo-Vázquez  
Departamento. de Ciencias Computacionales, CUCEI, Av. Revolución 1500, C.P. 44840, Guadalajara, Jal, Mexico

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<sup>{1}</sup>Universidade Estadual de Campinas, Brazil; <sup>{2}</sup>Universidade Tecnológica Federal do Paraná, Brazil

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Pennsylvania State University, United States

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Guillermo Cortela<sup>{3}</sup>, Christiano Bittencourt Machado<sup>{2}</sup>, Carlos Negreira<sup>{4}</sup>, Wagner C. de Albuquerque Pereira<sup>{1}</sup>  
<sup>{1}</sup>COPPE, Universidade Federal do Rio de Janeiro, Brazil; <sup>{2}</sup>Estácio de Sá University, Brazil;  
<sup>{3}</sup>Instituto de Física, Universidad de la República, Uruguay; <sup>{4}</sup>Universidad de la República, Uruguay

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Niranjan Thirusangu, Mohamed Almekkawy  
Pennsylvania State University, United States

**8067: Propagation of Critically Refracted Longitudinal Ultrasonic Waves in Acrylic As a cortical-bone-Mimicking Phantom for Ultrasound Thermometry...N/A**

Caroline Duderstadt, Sílvio Vieira  
Universidade Federal de Goiás, Brazil

**8070: Characterization of Acoustic and Mechanical Properties of tissue-Mimicking Materials by Ultrasound...N/A**

Jheferson Gomes, Sílvio Vieira  
Goias Federal University, Brazil

**8085: Comparison of Three Simulation Methods for RF Ultrasound Signal Envelope Detection...192**

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<sup>{1}</sup>Universidade Estadual de Campinas, Brazil; <sup>{2}</sup>Universidade Tecnológica Federal do Paraná, Brazil

**8096: Evaluation of the Standard Error of the Regression and Coefficient of Determination as Goodness-of-Fit Parameters for Reverberant Shear Wave Elastography...196**

Aldo Tecse, Stefano Romero, Benjamin Castaneda  
Pontificia Universidad Católica del Perú, Peru

**Tuesday, October 5**

**2:45 PM - 3:45 PM UTC-5 (Bogotá Time)**

**B4P-D: Industrial Applications, Transducer & Physical Acoustics Poster Session**

**Session Chair(s):** Flávio Buiochi (Unversidade de São Paulo)

**8029: Parametric Study of the Subwavelength Ultrasound Beam Generated by Core-Shell Lens...200**

Gutemberg Da Silva Cardoso, José Pereira Leão-Neto, José Henrique Lopes  
Universidade Federal do Alagoas, Brazil

**8030: 3D Printed Acoustofluidic Resonators for Applications in Biospectroscopy...N/A**

Giclênio Cavalcante, Marcos Sales, Ana Leite, Flávio D'Amato, Ueslen Rocha, Glauber Silva  
Federal University of Alagoas, Brazil

**8038: Enhancing Contrast of Magneto-Motive Ultrasound Imaging by Applying a Combination of Magnetic Nanoparticles with Gold Nanorods...N/A**

Saeideh Arsalani<sup>{2}</sup>, Soudabeh Arsalani Arsalani<sup>{1}</sup>, Ernesto Mazon<sup>{2}</sup>, João Uliana<sup>{2}</sup>, Theo Pavan<sup>{2}</sup>,  
Oswaldo Baffa<sup>{2}</sup>, Antonio Adilton Carneiro<sup>{2}</sup>  
<sup>{1}</sup>hysikalisch-Technische Bundesanstalt,, Germany; <sup>{2}</sup>University of Sao Paulo, Brazil

**8073: Dynamical Characterization of a Power Ultrasonic Bath...204**

Nicolás Pérez Álvarez<sup>{2}</sup>, Mariana Gonzalez<sup>{2}</sup>, Eliana Budelli<sup>{1}</sup>, Patricia Lema<sup>{1}</sup>  
<sup>{1}</sup>Instituto de Ingeniería Química, Universidad de la República, Uruguay; <sup>{2}</sup>Universidad de la República,  
Uruguay

**3:45 PM – 5:25 PM**

**Invited Talks (Meet the Labs in Latin America - Networking event)**

**5:25 PM – 5:35 PM**

**Closing Remarks of the Symposium**

**5:35 PM**

**Post Symposium Happy Hour**