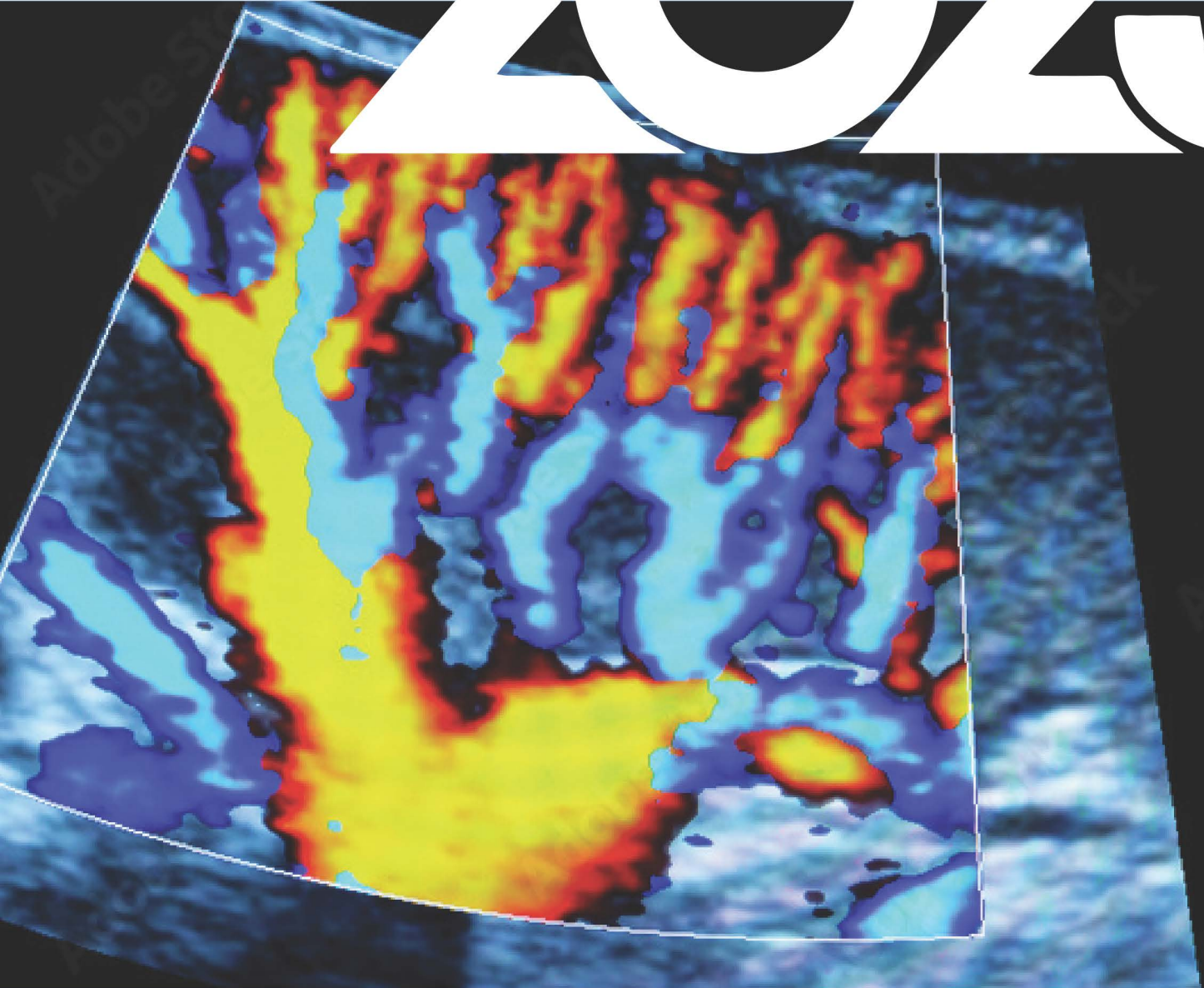


# 2023



47th Annual International Symposium on

## ULTRASONIC IMAGING AND TISSUE CHARACTERIZATION

June 5 - 7, 2023

Westin Arlington Gateway Hotel

# ABOUT UITC

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The annual International Symposium on Ultrasonic Imaging and Tissue Characterization has long been recognized as one of the world's leading forums concerned with ultrasonic technology for medical applications. Forty-two technical contributions will be presented this year. Many of the presentations will deal with clinical evaluation of novel methodologies and instrumentation for tissue characterization.

The program includes technical sessions on ultrasonic measuring techniques, ultrasonic imaging, photoacoustic imaging and Doppler techniques, ultrasound-guided intervention and ultrasound imaging. In a special session to be held on Wednesday afternoon, NIH representatives will respond to questions regarding research-funding opportunities in the face of budget constraints at NIH.

The Symposium provides a forum for discussion of new directions in state-of-the-art technology and research opportunities in ultrasonic and photoacoustic imaging and characterization of tissues. The meeting affords physicians, engineers and physical scientists a unique venue for sharing their contributions to this important area of technology development related to disease detection, diagnosis, staging, treatment planning and treatment monitoring.

## **CONFERENCE CHAIRMAN**

Timothy Hall  
University of Wisconsin-Madison

## **CONFERENCE CO-CHAIR**

Marie Muller  
North Carolina State University

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Jonathan Mamou  
Weill Cornell Medicine

## **EXECUTIVE & FOUNDING CHAIR**

Melvin Linzer

## **CHAIRMAN EMERITUS**

Ernest J. Feleppa  
Riverside Research (retired)

## **THANK YOU TO OUR SPONSORS**



## MONDAY, JUNE 5

**9:00 – 10:00**      **Coffee and Pastry**

**10:00 – 11:45**      **Speed of Sound & Shear Wave Elasticity**      *Moderator: Ivan Rosado-Mendez*

**10:00** – Global Average Sound Speed Estimation Through a Tissue Mimicking Aberrating Layer

*Thurston Brevett, Sergio Sanabria, Arsenii Telichko, Jeremy Dahl*

**10:15** – Local Reconstruction of Speed-Of-Sound in A Murine Model of Nonalcoholic Fatty Liver with Spatio-temporal Filtering of Full-Synthetic Aperture Data

*Sergio Sanabria, Thurston Brevett, Arsenii Telichko, Jeremy Dahl*

**10:30** – Estimation of Abdominal Sound Speed Distributions Using Neural Networks Trained on Wave Propagation Physics in The Human Body

*Louise Zhuang, Walter Simson, Oleksii Ostras, Dongwoon Hyun, Gianmarco Pinton, Jeremy Dahl*

**10:45** – Advanced Multi-Lag Approaches for Improving Shear Wave Elastography Applications

*E. G. Sunethra Dayavansha, Ali Kafeei Zad Tehrani, Yuyang Gu, Marko Jakovljevic, Kai Thomenius, Mike Wang, Rimon Tadross, Anthony E. Samir*

**11:00** – Shear Modulus and Viscosity Changes in The Pancreatic Tumor Microenvironment in Response to Stereotactic Body Radiation and Immunotherapy

*Nikhila Nyayapathi, Tara Vrooman, Angela Hughson, Scott Gerber, Marvin Doyley*

**11:15** – Robot-Assisted 3D Rotational Shear Wave Elasticity Imaging

*Shruthi Srinivasan, Courtney Trutna-Paley, Wren Wightman, Kathryn R. Nightingale*

**11:30** – Ultrasound Imaging Biomarkers for Myofascial Pain Syndrome

*Cristian Rios, Matin Jahani Jirsaraei, Siddhartha Sikdar*

**11:45 – 2:00**      **Lunch Break**

**2:00 – 3:30**      **Quantitative Ultrasound**      *Moderator: Gregory Czarnota*

**2:00** – Addressing the Effect of Chest Wall Thickness in Lung Tissue Characterization

*Azadeh D. Cole, Marie Muller*

**2:15** – Ultrasound Imaging of Muscle Function During Dynamic Physical Activity

*Erica L. King, Ahmed Bashatah, Brian M. Guthrie, Margaret T. Jones, Qi Wei, Siddhartha Sikdar, Parag V. Chitnis*

**2:30** – Vascular and Structural Assessment of Open Wounds Using Ultrasound Imaging

*David Lemonnier, Brandon J. Sumpio, Ikram Mezghani, Maxwell Crouse, Georgios Theocharidis, Tengfei Ma, Aristidis Veves, Samuel K. Sia, Parag V. Chitnis*

**2:45** – Quantitative Ultrasound Imaging of The Placenta in a Rat Model of Preeclampsia

*Andrew Markel, Cameron Hoerig, Kenneth Swan, Allan Alancar, Carolyn Bayer, Jonathan Mamou*

**3:00** – AIUM/QIBA Pulse-Echo Quantitative Ultrasound (PEQUS) Biomarker Committee Update

*Ivan Rosado-Mendez, M. Wang, A. Samir, and the members of the PEQUS Biomarker Committee*

**3:15** – Predicting Head and Neck Cancer Treatment Outcomes Using Machine Learning Classifiers Trained with Features from Pre-Treatment Lymph Node Ultrasound and CT Scans

*Safakish, A. Sannachi, L., DiCenzo D. Kolios, C, Pejović-Milić, A.2 Czarnota, G.J*

**3:30 – 4:00**

**Coffee Break**

**4:00 – 5:00**

**Imaging**

**Moderator: Marie Muller**

**4:00** – Emulating Clinical Muscle B-Modes Using a Two Stage Machine Learning Model

*Reed Chen, Courtney Trutna Paley, Wren Wightman, Lisa Hobson-Webb, Felix Jin, Ouwen Huang, Mark Palmeri, Kathryn Nightingale*

**4:15** – Ultrafast Ultrasound Beamformer for Plane Wave Imaging with Field Programmable Gate Array

*Zhengchang Kou, Michael L. Oelze*

**4:30** – Distributed Aberration Correction for Transcranial Doppler: A Simulation Study Using a High Sound Speed and Density Aberrator

*Saachi Munot, Thurston Brevett, Jeremy Dahl*

**4:45** – Plane Wave Imaging in Arbitrary Media Via Efficient Phase Compensation

*Scott Schoen Jr, Marko Jakovljevic, and Anthony E. Samir*

**TUESDAY, JUNE 6**

**8:00 – 9:00**

**Coffee and Pastry**

**9:00 – 10:30**

**Quantitative Ultrasound, Breast Applications**

**Moderator: Michael Oelze**

**9:00** – Radiomics of Quantitative Ultrasound (QUS) Spectral Parametric Imaging for The Non-Invasive Characterization of Breast Lesions

*Laurentius O. Osapoetra, Lakshamanan Sannachi, Schontal Halstead, David Alberico, Joyce Wai Sze Yip, Michael Oelze, and Gregory J. Czarnota*

**9:15** – A Prior Prediction of Tumor Response to Neoadjuvant Chemotherapy In Breast Cancer Patients Using Quantitative Ultrasound, Texture And Molecular Subtype

*Lakshamanan Sannachi, Laurentius O. Osapoetra, Schontal Halstead, Sonal Gandhi, Frances Wright, Michael Oelze and Gregory J. Czarnota*

**9:30** – Quantitative Noninvasive Texture Analysis of Breast Masses in Ultrasound Images: Proposal of A New Gold Standard

*Sleiman R. Ghorayeb, Rena Fukuda and Mirla Sales*

**9:45** – Comparison of Quantitative Ultrasound and Computed Tomography Radiomics with Texture-Derivative Features for Breast Cancer Response Prediction

*Deok Hyun Jang, Lakshamanan Sannachi, Laurentius O. Osapoetra and Gregory J. Czarnota*

**10:00** – Quantitative Ultrasound Texture Analysis of Breast Tumors: Comparison of Portable and Cart-Based Ultrasound Scanners

*David Alberico, Daniel DiCenzo, Schontal Halstead, Joyce Yip, Lakshamanan Sannachi, Sonal Gandhi, Frances Wright, Michael Oelze, and Gregory Czarnota*

**10:15** – Transfer Learning of Pre-Treatment Quantitative Ultrasound Images for The Prediction of Locally Advanced Breast Cancer Response to Neoadjuvant Chemotherapy

*Omar Falou, Lakshamanan Sannachi, Gregory J. Czarnota, Michael C. Kolios*

**10:30 – 11:00**

**Coffee Break**

**11:00 – 12:00**

**Flow Measurement**

**Moderator: Jeremy Dahl**

- 11:00** – From Literature to Implementation: Challenges in The Development of a Calibrated Microflow Phantom  
*Lizbeth Ayala-Dominguez, Kricia Ruano Espinoza, and Ivan Rosado-Mendez*
- 11:15** – Contrast-Free Peripheral Perfusion Imaging in The Diabetic Ischemic Mouse Hindlimb  
*Somaye Babaei, Bingze Dai, Wawrzyniec L. Dobrucki, Michael F. Insana*
- 11:30** – Improved Resolution and Contrast for Ultrafast Power Doppler Microvessel Imaging with Null Subtraction Imaging  
*Michael L. Oelze, Zhengchang Kou*
- 11:45** – Value of Long-Ensemble Power Doppler to Detect Slow Flow in Metastatic Renal Carcinoma (mRCC)  
*Sergio J Sanabria, Neha Antil, Christian Horner, You Leo Li, Aya Kamaya, Susanna Miao, FeiFei Qin, Max Zalzman, Alice Fan, Jeremy Dahl*

**12:00 – 2:00**

**Lunch Break**

**2:00 – 3:30**

**Photoacoustics**

**Moderator: Parag Chitnis**

- 2:00** – Modular Photoacoustic Helmet for Vulnerable Neonatal Monitoring In NICU  
*Ananya Tandri, Jeeun Kang, Emad M. Boctor*
- 2:15** – Towards MRI-Compatible Photoacoustic Imaging of Prostate Cancer: Instrumentation Evaluation  
*Ryo Murakami, Yang Wang, Ryosuke Tsumura, Yichuan Tang, Yasuyuki Tsunoi, Christopher J. Nycz, Wojciech G. Lesniak, Martin G. Pomper, Gregory S. Fischer, and Haichong K. Zhang*
- 2:30** – Miniaturized Intracardiac Photoacoustic Imaging Catheter: Below 4 mm Diameter  
*Shang Gao, Ryo Murakami, Haichong K. Zhang*
- 2:45** – Development of Mechanical Property Microscopy Using Photoacoustic Excitation and Optical Interferometry  
*Kazuki Tamura, Ken-ya Hashimoto, and Shinpei Okawa*
- 3:00** – Comparison of Photoacoustic-Based PAttrace Biodistribution Assessment with Independent Validation  
*Cayla Wood, Sangheon Han, Riley Watson, Dmitry Nevozhay, Jennifer Meyer, Jason Cook, Amit Roy, Julie-Anne Burdick, Konstantin Sokolov, Richard Bouchard*
- 3:15** – Eavesdropping the Tissues in Action with High-Speed Photoacoustic Microscopy  
*Junjie Yao*

**3:30 – 4:00**

**Coffee Break**

**4:00 – 5:00**

**Quantitative Ultrasound Models**

**Moderator: Jonathan Mamou**

- 4:00** – Effects of Cylindrical-Gaussian Form Factor for Quantitative Collagen Fiber Characteristics Assessment in Myopic Guinea Pig Eye Sclera  
*Kazuyo Ito, Quan V. Hoang Cameron Hoerig, Sally A. McFadden, Jonathan Mamou*
- 4:15** – Comparison of Different Methods to Measure and Model Ultrasonic Attenuation in Cortical Bone  
*Brett Austin McCandless, Kay Raum, Marie Muller*

**4:30** – Accurate Simulation of Acoustic Wave Propagation for Quantitative Ultrasound Applications

*Karthik J. Nagabhushana, Aiguo Han*

**4:45** – Addressing Assumptions in Describing the Cervical Extracellular Matrix Through Ultrasound Speckle

*Alexandra Christensen, Amber Possell, Ivan Rosado-Mendez, and Timothy J. Hall*

## WEDNESDAY, JUNE 7

**7:30 – 8:30**

### Coffee and Pastry

**8:30 – 9:45**

### Devices

**Moderator: Siddhartha Sikdar**

**8:30** – An Electronic Radiological Clip Having Ultrasound Identification for Localization of Lesions Being Treated by Neoadjuvant Chemotherapy

*Jenna Cario, Michael L. Oelze*

**8:45** – Volumetric Tracking of Beacon Signal During Vascular Access: System Design and Optimization

*Jintan Zhang, Emad M. Boctor, Jeeun Kang*

**9:00** – Wearable Ultrasound System for Controlling Upper-Limb Prosthetics

*Afsana Hossain Rima, Zahra Taghizadeh, Abhishek Aher, Ahmed Bashatah, Siddhartha Sikdar*

**9:15** – Wearable Ultrasound-Integrated AR Navigation System for Lumbar Puncture Guidance

*Baichuan Jiang, Liam Wang, Keshuai Xu, Martin Hossbach, Alican Demir, Purnima Rajan, Russell Taylor, Ahbay Moghekar, Pezhman Foroughi, Peter Kazanzides and Emad Boctor*

**9:30** – Automated Radiological Bead Detection in Breast Tumors for Calibrating Quantitative Ultrasound

*Yuning Zhao, Michael L. Oelze*

**9:45 – 10:00**

### Coffee Break

**10:00 – 12:00**

### Funding Opportunities

**Moderator: Tim Hall**

Christina Liu (NIGMS)

Pushpa Tendon (NCI)

Guo Feng Xu (SRO for Division of Translational and Clinical Sciences)

Michael Heintz (The Academy of Radiology and Biomedical Imaging Research)

**12:00**

### Adjourn

# GENERAL INFORMATION

## HOTEL

The Westin Arlington Gateway is the venue for all meeting activities. It is a four-star luxury hotel located in Arlington, VA. The meeting will take place in a beautiful, large ballroom. Very-high ceilings and absence of support pillars provide unrestricted views of the large projector screen.

The hotel is surrounded by a large number of restaurants. Amenities include an indoor heated pool and whirlpool, a 24-hour fitness center, a Starbucks and a 24-hour business center. Free WiFi and printer are provided in the hotel lobby. For additional information, see the hotel website: [westinarlingtongateway.com](http://westinarlingtongateway.com)

Hotel room rates are guaranteed through May 11, 2023. Information on how to book your room is available on the UIC Symposium website.

## TRANSPORTATION

The hotel is near the Washington Metro subway stop in Ballston, placing it within minutes of downtown Washington, Capitol Hill and National Airport. There is now a direct link between Dulles Airport and the Ballston stop on the Washington Metro subway. Bus service to New York City is available nearby at the Rosslyn Metro stop. The New York City buses cost as little as \$50 each way and feature free WiFi and electrical outlets. The hotel is also serviced by shuttle service from National and Dulles Airports. Hotel valet parking is also available.

## EXHIBITS

A limited amount of exhibit space for commercial scientific equipment is available just outside the meeting ballroom. Contact Mel Linzer for more information on exhibit options.

## SOCIAL PROGRAM

A continental breakfast will be served each morning before sessions. Coffee and tea will be available during the morning sessions and coffee, tea and cold drinks at mid-afternoon breaks.

## CASUAL DRESS CODE

Dress code is casual, e.g., no ties or jackets for men. Casual dress will make all of us more comfortable, simplify our packing and help maintain an atmosphere of open and informal dialog at the Symposium.

## REGISTRATION

Advance registration is requested to complete meeting arrangements. All registration fees help to defray the costs of conducting the Symposium.

Early bird registration fees (\$550) are guaranteed until May 11, 2023.

Registration fees on or after May 11 are \$590.

The graduate student fee for those who identify their school and advisor and provide the advisor's contact information is \$350 (\$380 on or after May 11).

Postdoctoral fellows must pay the regular registration fee.

Details on registration are available on the UIC Symposium website.