

Stanford



Jeremy Dahl

Associate Professor of Radiology (Pediatric Radiology)

Radiology - Pediatric Radiology

CONTACT INFORMATION

- **Alternate Contact**

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Bio

BIO

My laboratory develops and implements ultrasonic beamforming methods, ultrasonic imaging modalities, and ultrasonic devices. Our current focus is on beamforming methods that are capable of generating high-quality images in the difficult-to-image patient population. These methods include general B-mode and Doppler imaging techniques that utilize additional information from the ultrasonic wavefields. We attempt to build these imaging methods into real-time imaging systems in order to apply them to clinical applications. Other projects in our laboratory include the development of novel ultrasonic imaging devices, such as small, intravascular ultrasound arrays that are capable of generating high acoustic output. These arrays are capable of generating radiation force in order to push on tissue to elucidate the mechanical properties and structure of vascular plaques.

ACADEMIC APPOINTMENTS

- Associate Professor, Radiology - Pediatric Radiology
- Member, Bio-X
- Member, Cardiovascular Institute
- Member, Maternal & Child Health Research Institute (MCHRI)
- Member, Stanford Cancer Institute
- Member, Wu Tsai Neurosciences Institute

ADMINISTRATIVE APPOINTMENTS

- Director, Research Academic Affairs, Department of Radiology, (2020- present)

HONORS AND AWARDS

- Fellow, American Institute of Ultrasound in Medicine (2021)
- Senior Member, Institute of Electrical and Electronics Engineers (2020)
- Distinguished Investigator Award, The Academy for Radiology & Biomedical Imaging Research (2018)
- Outstanding Paper Award, IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society (2011)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Board of Governors, American Institute of Ultrasound in Medicine (2021 - present)
- Chair, Basic Science & Instrumentation Community, American Institute of Ultrasound in Medicine (2018 - present)
- Associate Editor, IEEE Transactions on Medical Imaging (2017 - present)
- Associate Editor, IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control (2013 - present)
- Associate Editor, Ultrasonic Imaging (2013 - present)

PROFESSIONAL EDUCATION

- B.S., University of Cincinnati , Electrical Engineering (1999)
- Ph.D., Duke University , Biomedical Engineering (2004)

COMMUNITY AND INTERNATIONAL WORK

- Aberration Correction in the Minimum Variance Distortionless Response Beamformer, Lima, Perú

PATENTS

- D. Hyun, L. Brickson, K. Looby, and J. J. Dahl. "United States Patent 11,030,780 Ultrasound speckle reduction and image reconstruction using deep learning techniques", Leland Stanford Junior University, Jun 8, 2021
- T. Lee, J. K. Willmann, and J. J. Dahl. "United States Patent 10,792,518 System and device for improved ultrasound cavitation mapping", The Board of Trustees of the Leland Stanford Junior University, Oct 6, 2020
- J. J. Dahl, D. Hyun, and J. K. Willmann. "United States Patent 10,751,028 Coherence-Based Beamforming for Improved Microbubble Detection in Contrast Enhanced Ultrasound", Leland Stanford Junior University, Aug 25, 2020
- J. J. Dahl and Y. L. Li. "United States Patent 10,111,644 A Method of Coherent Flow Imaging Using Synthetic Transmit Focusing and Acoustic Reciprocity", Leland Stanford Junior University, Oct 30, 2018
- J. Doherty, J. J. Dahl, K. R. Nightingale, and G. E. Trahey. "United States Patent 9,883,852 Ultrasound systems, methods and computer program products for estimating tissue deformation with harmonic signals", Duke University, Feb 6, 2018
- J. J. Dahl, M. A. Lediju Bell, and G. E. Trahey. "United States Patent 9,254,116 Methods, systems and apparatuses for Van-Cittert Zernike imaging", Duke University, Feb 9, 2016

LINKS

- Lab Website: <http://ultrasound.stanford.edu>

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Our laboratory is an ultrasound engineering laboratory that develops and implements ultrasonic beamforming methods, ultrasonic imaging modalities, and ultrasonic devices for diagnostic imaging applications. Our current focus is on beamforming methods that are capable of generating high-quality images in difficult-to-image patients and imaging conditions. These methods include general B-mode and Doppler imaging techniques that utilize additional information from the ultrasonic wavefields to improve image quality. We attempt to build these imaging methods into real-time imaging systems in order to apply them to clinical applications, such as cardiac, liver, and fetal imaging. In addition, our laboratory develops ultrasonic imaging devices, such as small, intravascular ultrasound (IVUS) arrays that are capable of generating high acoustic output. These arrays are capable of generating radiation force in order to push on tissue to elucidate the mechanical properties and structure of vascular plaques, but can be utilized for therapeutic applications of ultrasound as well.

Current projects in our laboratory involve the simulation of nonlinear, acoustic wave propagation under complex models of human anatomy and the impact of anatomy and acoustic parameters on the resulting images. Often, the anatomy and acoustic parameters are the source of aberration and diffuse reverberation of the wavefronts, both of which contribute to image clutter. In addition to modeling and understanding these sources of clutter, we have developed imaging methods that utilize the spatial coherence of the ultrasonic wavefields in order to mitigate the impact of reverberation noise (called short-lag spatial coherence [SLSC], short-lag angular

coherence [SLAC], and coherent flow power Doppler [CFPD] imaging) and the estimation of local sound speed in order to mitigate wavefront distortion. These methods demonstrate significant improvement in image quality and the ability to detect slow flow under difficult-to-image scenarios. We have developed a prototype imaging system capable of implementing some of these techniques at up to 30-35 frames per second. We are currently developing methods and approximations to the spatial coherence functions in order to increase the real-time display and image quality. This system will be utilized in clinical studies of cardiac function and placental imaging.

We have recently integrated machine learning techniques to construct neural-network beamformers for a variety of imaging tasks. For example, we recently constructed a neural-network beamformer to output ultrasound images with speckle reduction. These images maintained the resolution of conventional ultrasound images while improving the visualization of tissue structures in human imaging. We have also demonstrated that this neural-network beamformer can be implemented in real-time imaging.

Other projects in our laboratory include molecular imaging techniques and B7-H3 targeted microbubbles, passive cavitation mapping, and therapeutic ultrasound systems for drug delivery.

CLINICAL TRIALS

- Serial Ultrasound in Metastatic Renal Cell Carcinoma (mRCC), Not Recruiting

Teaching

COURSES

2023-24

- Advanced Ultrasound Imaging: BMP 235, RAD 235 (Win)
- Medical Imaging Systems I: BMP 269A, EE 369A (Win)

2022-23

- Advanced Ultrasound Imaging: RAD 235 (Win)
- Biomedical Signals II: BMP 212, RAD 212 (Win)

2021-22

- Advanced Ultrasound Imaging: RAD 235 (Win)

2020-21

- Advanced Ultrasound Imaging: RAD 235 (Win)
- Ultrasound Beamforming and Array Processing: RAD 230 (Sum)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Matine Azadian, Junyi Wang, Brenda Yu

Postdoctoral Faculty Sponsor

Jihye Baek, Junhong Park

Doctoral Dissertation Advisor (AC)

Thurston Brevett, Louise Zhuang

Publications

PUBLICATIONS

- **Noninvasive estimation of local speed of sound by pulse-echo ultrasound in a rat model of nonalcoholic fatty liver.** *Physics in medicine and biology*
Telichko, A. V., Ali, R., Brevett, T., Wang, H., Vilches-Moure, J., Kumar, S. U., Paulmurugan, R., Dahl, J. J.
1800
- **Passive Cavitation Mapping by Cavitation Source Localization From Aperture-Domain Signals-Part II: Phantom and In Vivo Experiments** *IEEE TRANSACTIONS ON ULTRASONICS FERROELECTRICS AND FREQUENCY CONTROL*
Telichko, A., Lee, T., Hyun, D., Chowdhury, S., Bachawal, S., Herickhoff, C. D., Paulmurugan, R., Dahl, J. J.
2021; 68 (4): 1198–1212
- **Reverberation Noise Suppression in Ultrasound Channel Signals Using a 3D Fully Convolutional Neural Network** *IEEE TRANSACTIONS ON MEDICAL IMAGING*
Brickson, L. L., Hyun, D., Jakovljevic, M., Dahl, J. J.
2021; 40 (4): 1184–95
- **Nondestructive Detection of Targeted Microbubbles Using Dual-Mode Data and Deep Learning for Real-Time Ultrasound Molecular Imaging.** *IEEE transactions on medical imaging*
Hyun, D. n., Abou-Elkacem, L. n., Bam, R. n., Brickson, L. L., Herickhoff, C. D., Dahl, J. J.
2020
- **Efficacy of affibody-based ultrasound molecular imaging of vascular B7-H3 for breast cancer detection.** *Clinical cancer research : an official journal of the American Association for Cancer Research*
Bam, R. n., Lown, P. S., Stern, L. A., Sharma, K. n., Wilson, K. E., Bean, G. R., Lutz, A. M., Paulmurugan, R. n., Hackel, B. J., Dahl, J. n., Abou-Elkacem, L. n.
2020
- **Beamforming and Speckle Reduction Using Neural Networks.** *IEEE transactions on ultrasonics, ferroelectrics, and frequency control*
Hyun, D., Brickson, L. L., Looby, K. T., Dahl, J. J.
2019; 66 (5): 898–910
- **Local speed of sound estimation in tissue using pulse-echo ultrasound: Model-based approach.** *The Journal of the Acoustical Society of America*
Jakovljevic, M., Hsieh, S., Ali, R., Chau Loo Kung, G., Hyun, D., Dahl, J. J.
2018; 144 (1): 254
- **Longitudinal assessment of ultrasound-guided complementary microRNA therapy of hepatocellular carcinoma.** *Journal of controlled release : official journal of the Controlled Release Society*
Chowdhury, S. M., Lee, T., Bachawal, S. V., Devulapally, R., Abou-Elkacem, L., Yeung, T. A., Wischhusen, J., Tian, L., Dahl, J., Paulmurugan, R., Willmann, J. K.
2018
- **Coherent Flow Power Doppler (CFPD): Flow Detection Using Spatial Coherence Beamforming** *IEEE TRANSACTIONS ON ULTRASONICS FERROELECTRICS AND FREQUENCY CONTROL*
Li, Y. L., Dahl, J. J.
2015; 62 (6): 1022-1035
- **Sources of Image Degradation in Fundamental and Harmonic Ultrasound Imaging: A Nonlinear, Full-Wave, Simulation Study (vol 58, pg 754, 2011)** *IEEE TRANSACTIONS ON ULTRASONICS FERROELECTRICS AND FREQUENCY CONTROL*
Pinton, G. F., Trahey, G. E., Dahl, J. J.
2011; 58 (6): 1272-1283
- **Investigating pulse-echo sound speed estimation in breast ultrasound with deep learning.** *Ultrasonics*
Simson, W. A., Paschali, M., Sideri-Lampretsa, V., Navab, N., Dahl, J. J.
2023; 137: 107179
- **Fast volumetric ultrasound facilitates high-resolution 3D mapping of tissue compartments.** *Science advances*
Park, E. Y., Cai, X., Foiret, J., Bendjador, H., Hyun, D., Fite, B. Z., Wodnicki, R., Dahl, J. J., Boutin, R. D., Ferrara, K. W.
2023; 9 (22): eadg8176

- **Synthesis and Evaluation of Clinically Translatable Targeted Microbubbles Using a Microfluidic Device for In Vivo Ultrasound Molecular Imaging.** *International journal of molecular sciences*
Bam, R., Natarajan, A., Tabesh, F., Paulmurugan, R., Dahl, J. J.
2023; 24 (10)
- **Optimal transmit apodization for the maximization of lag-one coherence with applications to aberration delay estimation.** *Ultrasonics*
Ali, R., Duric, N., Dahl, J. J.
2023; 132: 107010
- **Sound Speed Estimation for Distributed Aberration Correction in Laterally Varying Media.** *IEEE transactions on computational imaging*
Ali, R., Mitcham, T. M., Singh, M., Doyley, M. M., Bouchard, R. R., Dahl, J. J., Duric, N.
2023; 9: 367-382
- **Rapid beamforming of ultrasound chirp signals in frequency domain using the chirp scaling algorithm**
Zhuang, L. L., Dahl, J., Zebker, H., Jakovljevic, M.
ACOUSTICAL SOC AMER AMER INST PHYSICS.2023
- **Aberration correction in diagnostic ultrasound: A review of the prior field and current directions.** *Zeitschrift fur medizinische Physik*
Ali, R., Brevett, T., Zhuang, L., Bendjador, H., Podkowa, A. S., Hsieh, S. S., Simson, W., Sanabria, S. J., Herickhoff, C. D., Dahl, J. J.
2023
- **Distributed Aberration Correction in Handheld Ultrasound Based on Tomographic Estimates of the Speed of Sound**
Ali, R., Mitcham, T., Singh, M., Bouchard, R., Dahl, J., Doyley, M., Duric, N., Boehm, C., Bottenus, N.
SPIE-INT SOC OPTICAL ENGINEERING.2023
- **Sound Speed Estimation for Distributed Aberration Correction in Laterally Varying Media** *IEEE TRANSACTIONS ON COMPUTATIONAL IMAGING*
Ali, R., Mitcham, T. M., Singh, M., Doyley, M. M., Bouchard, R. R., Dahl, J. J., Duric, N.
2023; 9: 367-382
- **Correction: Immunotheranostic microbubbles (iMBs) - a modular platform for dendritic cell vaccine delivery applied to breast cancer immunotherapy.** *Journal of experimental & clinical cancer research : CR*
Jugniot, N., Dahl, J. J., Paulmurugan, R.
2022; 41 (1): 357
- **Correction: Facilitating islet transplantation using a three-step approach with mesenchymal stem cells, encapsulation, and pulsed focused ultrasound.** *Stem cell research & therapy*
Razavi, M., Ren, T., Zheng, F., Telichko, A., Wang, J., Dahl, J. J., Demirci, U., Thakor, A. S.
2022; 13 (1): 526
- **Separation of mainlobe and sidelobe contributions to B-mode ultrasound images based on the aperture spectrum.** *Journal of medical imaging (Bellingham, Wash.)*
Ali, R., Mitcham, T., Brickson, L., Hu, W., Doyley, M., Rubens, D., Ignjatovic, Z., Duric, N., Dahl, J.
2022; 9 (6): 067001
- **Immunotheranostic microbubbles (iMBs) - a modular platform for dendritic cell vaccine delivery applied to breast cancer immunotherapy.** *Journal of experimental & clinical cancer research : CR*
Jugniot, N., Dahl, J. J., Paulmurugan, R.
2022; 41 (1): 299
- **Adaptation of Range-Doppler Algorithm for Efficient Beamforming of Monostatic and Multistatic Ultrasound Signals.** *IEEE transactions on ultrasonics, ferroelectrics, and frequency control*
Jakovljevic, M., Michaelides, R., Biondi, E., Hyun, D., Zebker, H., Dahl, J.
2022; PP
- **Comparative Study of Raw Ultrasound Data Representations in Deep Learning to Classify Hepatic Steatosis.** *Ultrasound in medicine & biology*
Sanabria, S. J., Pirmoazen, A. M., Dahl, J., Kamaya, A., El Kaffas, A.
2022
- **Improving Transcranial Acoustic Targeting: The Limits of CT Based Velocity Estimates and The Role of MR.** *IEEE transactions on ultrasonics, ferroelectrics, and frequency control*
Webb, T. D., Fu, F., Leung, S. A., Ghanouni, P., Dahl, J., Does, M. D., Pauly, K. B.

2022; PP

- **Biomimetic nanobubbles for triple-negative breast cancer targeted ultrasound molecular imaging.** *Journal of nanobiotechnology*
Jugniot, N., Massoud, T. F., Dahl, J. J., Paulmurugan, R.
2022; 20 (1): 267
- **Angular spectrum method for curvilinear arrays: Theory and application to Fourier beamforming.** *JASA express letters*
Ali, R., Dahl, J.
2022; 2 (5): 052001
- **Distributed Aberration Correction Techniques Based on Tomographic Sound Speed Estimates.** *IEEE transactions on ultrasonics, ferroelectrics, and frequency control*
Ali, R., Brevett, T., Hyun, D., Brickson, L. L., Dahl, J. J.
2022; 69 (5): 1714-1726
- **Cylindrical Transducer Array for Intravascular Shear Wave Elasticity Imaging: Preliminary Development.** *IEEE transactions on ultrasonics, ferroelectrics, and frequency control*
Telichko, A. V., Dahl, J. J., Herickhoff, C. D.
2022; 69 (3): 1077-1087
- **Local Sound Speed Estimation for Pulse-Echo Ultrasound in Layered Media** *IEEE TRANSACTIONS ON ULTRASONICS FERROELECTRICS AND FREQUENCY CONTROL*
Ali, R., Telichko, A., Wang, H., Sukumar, U. K., Vilches-Moure, J. G., Paulmurugan, R., Dahl, J. J.
2022; 69 (2): 500-511
- **Ultrasound Lesion Detectability as a Distance Between Probability Measures** *IEEE TRANSACTIONS ON ULTRASONICS FERROELECTRICS AND FREQUENCY CONTROL*
Hyun, D., Kim, G. B., Bottenus, N., Dahl, J. J.
2022; 69 (2): 732-743
- **Ultrasound-Guided Microbubble-Mediated Locoregional Delivery of Multiple MicroRNAs Improves Chemotherapy in Hepatocellular Carcinoma.** *Nanotheranostics*
Wang, H., Hu, Z., Sukumar, U. K., Bose, R. J., Telichko, A., Dahl, J. J., Paulmurugan, R.
1800; 6 (1): 62-78
- **Speed of Sound Estimation at Multiple Angles from Common Midpoint Gathers of Non-Beamformed Data**
Brevett, T., Sanabria, S. J., Ali, R., Dahl, J., IEEE
IEEE.2022
- **Direct Speed of Sound Reconstruction from Full-Synthetic Aperture Data with Dual Regularization**
Sanabria, S. J., Brevett, T., Ali, R., Telichko, A., Dahl, J., IEEE
IEEE.2022
- **Speed of Sound Imaging with Curvilinear Probes from Full-Synthetic Aperture Data**
Sanabria, S. J., Brevett, T., Telichko, A., Dahl, J., IEEE
IEEE.2022
- **APPLYING THE CHIRP SCALING ALGORITHM FOR EFFICIENT BEAMFORMING OF ULTRASOUND IMAGES**
Zhuang, L., Dahl, J., Zebker, H., Jakovljevic, M., IEEE
IEEE.2022: 3011-3014
- **Separation of Mainlobe and Sidelobe Contributions to B-Mode Ultrasound Images Based on the Aperture Spectrum**
Ali, R., Bottenus, N., Ruitter, N. V.
SPIE-INT SOC OPTICAL ENGINEERING.2022
- **Real-Time In Vivo Imaging of Human Liver Vasculature Using Coherent Flow Power Doppler: A Pilot Clinical Study** *IEEE TRANSACTIONS ON ULTRASONICS FERROELECTRICS AND FREQUENCY CONTROL*
Li, Y., Hyun, D., Ducey-Wysling, J., Durot, I., D'Hondt, A., Patel, B., Dahl, J. J.
2021; 68 (9): 3027-3041
- **Passive Cavitation Mapping by Cavitation Source Localization From Aperture-Domain Signals-Part I: Theory and Validation Through Simulations** *IEEE TRANSACTIONS ON ULTRASONICS FERROELECTRICS AND FREQUENCY CONTROL*

- Telichko, A., Lee, T., Jakovljevic, M., Dahl, J. J.
2021; 68 (4): 1184–97
- **Ultrasound Triggered Co-Delivery of Therapeutic MicroRNAs and a Triple Suicide Gene Therapy Vector by Using Biocompatible Polymer Nanoparticles for Improved Cancer Therapy in Mouse Models** *ADVANCED THERAPEUTICS*
Kumar, S., Wang, H., Telichko, A. V., Natarajan, A., Bettinger, T., Cherkaoui, S., Massoud, T. F., Dahl, J. J., Paulmurugan, R.
2021
 - **Blood Flow Imaging in the Neonatal Brain Using Angular Coherence Power Doppler** *IEEE TRANSACTIONS ON ULTRASONICS FERROELECTRICS AND FREQUENCY CONTROL*
Jakovljevic, M., Yoon, B., Abou-Elkacem, L., Hyun, D., Li, Y., Rubesova, E., Dahl, J. J.
2021; 68 (1): 92–106
 - **Real-Time Universal Synthetic Transmit Aperture Beamforming with Retrospective Encoding for Conventional Ultrasound Sequences (REFoCUS)**
Hyun, D., Dahl, J. J., Bottenus, N., IEEE
IEEE.2021
 - **Upstream Machine Learning in Radiology.** *Radiologic clinics of North America*
Sandino, C. M., Cole, E. K., Alkan, C., Chaudhari, A. S., Loening, A. M., Hyun, D., Dahl, J., Imran, A. A., Wang, A. S., Vasanawala, S. S.
2021; 59 (6): 967-985
 - **Superiorized Photo-Acoustic Non-NEgative Reconstruction (SPANNER) for Clinical Photoacoustic Imaging.** *IEEE transactions on medical imaging*
Steinberg, I. n., Kim, J. n., Schneider, M. K., Hyun, D. n., Zlitni, A. n., Hooper, S. M., Klap, T. n., Sonn, G. A., Dahl, J. J., Kim, C. n., Gambhir, S. S.
2021; PP
 - **Acoustically Driven Microbubbles Enable Targeted Delivery of microRNA-Loaded Nanoparticles to Spontaneous Hepatocellular Neoplasia in Canines.** *Advanced therapeutics*
Kumar, S. U., Telichko, A. V., Wang, H., Hyun, D., Johnson, E. G., Kent, M. S., Rebhun, R. B., Dahl, J. J., Culp, W. T., Paulmurugan, R.
2020; 3 (12)
 - **Acoustically Driven Microbubbles Enable Targeted Delivery of microRNA-Loaded Nanoparticles to Spontaneous Hepatocellular Neoplasia in Canines** *ADVANCED THERAPEUTICS*
Kumar, S., Telichko, A. V., Wang, H., Hyun, D., Johnson, E. G., Kent, M. S., Rebhun, R. B., Dahl, J. J., Culp, W. N., Paulmurugan, R.
2020
 - **Therapeutic Ultrasound Parameter Optimization for Drug Delivery Applied to a Murine Model of Hepatocellular Carcinoma.** *Ultrasound in medicine & biology*
Telichko, A. V., Wang, H., Bachawal, S., Kumar, S. U., Bose, J. C., Paulmurugan, R., Dahl, J. J.
2020
 - **Extending Retrospective Encoding for Robust Recovery of the Multistatic Data Set** *IEEE TRANSACTIONS ON ULTRASONICS FERROELECTRICS AND FREQUENCY CONTROL*
Ali, R., Herickhoff, C. D., Hyun, D., Dahl, J. J., Bottenus, N.
2020; 67 (5): 943–56
 - **The role of ultrasound in enhancing mesenchymal stromal cell-based therapies.** *Stem cells translational medicine*
Liu, D. D., Ullah, M., Concepcion, W., Dahl, J. J., Thakor, A. S.
2020
 - **Effects of motion on correlations of pulse-echo ultrasound signals: Applications in delay estimation and aperture coherence.** *The Journal of the Acoustical Society of America*
Hyun, D., Dahl, J. J.
2020; 147 (3): 1323
 - **Effects of motion on correlations of pulse-echo ultrasound signals: Applications in delay estimation and aperture coherence** *JOURNAL OF THE ACOUSTICAL SOCIETY OF AMERICA*
Hyun, D., Dahl, J. J.
2020; 147 (3): 1323–32
 - **Ultrasound and microbubble mediated therapeutic delivery: Underlying mechanisms and future outlook.** *Journal of controlled release : official journal of the Controlled Release Society*

- Chowdhury, S. M., Abou-Elkacem, L. n., Lee, T. n., Dahl, J. n., Lutz, A. M.
2020
- **Acoustic Attenuation: Multifrequency Measurement and Relationship To CT and MR Imaging.** *IEEE transactions on ultrasonics, ferroelectrics, and frequency control*
Webb, T. D., Leung, S. A., Ghanouni, P. n., Dahl, J. J., Pelc, N. J., Pauly, K. B.
2020; PP
 - **Medical Pulse-Echo Ultrasound Imaging Based on the Cross-Correlation of Transmitted and Backpropagated-Receive Wavefields**
Ali, R., Jennings, J., Dahl, J. J., IEEE
IEEE.2020
 - **Application of Common Midpoint Gatherers to Medical Pulse-Echo Ultrasound for Optimal Coherence and Improved Sound Speed Estimation in Layered Media**
Ali, R., Hyun, D., Dahl, J. J., IEEE
IEEE.2020
 - **Anisotropic regularization of ultrasound pulse-echo tomography for reconstruction of speed-of-sound and tissue heterogeneity through abdominal layers.**
Sanabria, S. J., Brevett, T., Dahl, J., IEEE
IEEE.2020
 - **Lung ultrasound for point-of-care COVID-19 pneumonia stratification: computer-aided diagnostics in a smartphone. First experiences classifying semiology from public datasets.**
Almeida, A., Bilbao, A., Ruby, L., Rominger, M. B., Lopez-de-Ipina, D., Dahl, J., ElKaffas, A., Sanabria, S. J., IEEE
IEEE.2020
 - **Application of a Range-Doppler Algorithm to Frequency-Domain Beamforming of Ultrasound Signals**
Jakovljevic, M., Michaelides, R., Biondi, E., Herickhoff, C., Hyun, D., Zebker, H., Dahl, J., IEEE
IEEE.2020
 - **Learning steatosis staging with two-dimensional Convolutional Neural Networks: comparison of accuracy of clinical B-mode with a co-registered spectrogram representation of RF Data**
Sanabria, S. J., Dahl, J., Pirmoazen, A., Kamaya, A., ElKaffas, A., IEEE
IEEE.2020
 - **Multi-parametric Ultrasound Tissue Characterization (MUTC) as a surrogate to Magnetic Resonance Imaging (MRI) for Non-Alcoholic Fatty Liver Disease (NAFLD) characterization.**
Sanabria, S. J., Dahl, J., Pirmoazen, A., Kamaya, A., ElKaffas, A., IEEE
IEEE.2020
 - **Human Placental Vasculature Imaging Using Long Ensemble Angular-coherence-based Doppler**
Li, Y., Chueh, J., Ness, A., Hyun, D., Jakovljevic, M., Lyell, D., Winn, V., Dahl, J. J., IEEE
IEEE.2020
 - **The Paracrine Function of Mesenchymal Stem Cells in Response to Pulsed Focused Ultrasound** *CELL TRANSPLANTATION*
Razavi, M., Rezaee, M., Telichko, A., Inan, H., Dahl, J., Demirci, U., Thakor, A. S.
2020; 29: 963689720965478
 - **Sound Speed Estimation in Layered Media Using the Angular Coherence of Plane Waves**
Ali, R., Maredia, S., Telichko, A., Wang, H., Paulmurugan, R., Vilches-Moure, J., Dahl, J. J., Byram, B. C., Ruitter, N. V.
SPIE-INT SOC OPTICAL ENGINEERING.2020
 - **Facilitating islet transplantation using a three-step approach with mesenchymal stem cells, encapsulation, and pulsed focused ultrasound.** *Stem cell research & therapy*
Razavi, M. n., Ren, T. n., Zheng, F. n., Telichko, A. n., Wang, J. n., Dahl, J. J., Demirci, U. n., Thakor, A. S.
2020; 11 (1): 405
 - **Improving the Function and Engraftment of Transplanted Pancreatic Islets Using Pulsed Focused Ultrasound Therapy.** *Scientific reports*
Razavi, M., Zheng, F., Telichko, A., Wang, J., Ren, G., Dahl, J., Thakor, A. S.
2019; 9 (1): 13416

- **Ultrasound/microbubble-mediated targeted delivery of anticancer microRNA-loaded nanoparticles to deep tissues in pigs.** *Journal of controlled release : official journal of the Controlled Release Society*
Di Ianni, T., Bose, R. J., Sukumar, U. K., Bachawal, S., Wang, H., Telichko, A., Herickhoff, C., Robinson, E., Baker, S., Vilches-Moure, J. G., Felt, S. A., Gambhir, S. S., Paulmurugan, et al
2019
- **Special Issue on Pilot Clinical Translation of New Medical Ultrasound Methodologies** *IEEE TRANSACTIONS ON ULTRASONICS FERROELECTRICS AND FREQUENCY CONTROL*
Gallippi, C. M., Dahl, J. J.
2019; 66 (3): 423–24
- **Improved Visualization in Difficult-to-Image Stress Echocardiography Patients Using Real-Time Harmonic Spatial Coherence Imaging** *IEEE TRANSACTIONS ON ULTRASONICS FERROELECTRICS AND FREQUENCY CONTROL*
Hyun, D., Crowley, A. C., LeFevre, M., Cleve, J., Rosenberg, J., Dahl, J. J.
2019; 66 (3): 433–41
- **Unsupervised clustering method to convert high-resolution magnetic resonance volumes to three-dimensional acoustic models for full-wave ultrasound simulations.** *Journal of medical imaging (Bellingham, Wash.)*
Looby, K. n., Herickhoff, C. D., Sandino, C. n., Zhang, T. n., Vasanaawala, S. n., Dahl, J. J.
2019; 6 (3): 037001
- **Effect of Pulsed Focused Ultrasound on the Native Pancreas.** *Ultrasound in medicine & biology*
Razavi, M. n., Zheng, F. n., Telichko, A. n., Ullah, M. n., Dahl, J. n., Thakor, A. S.
2019
- **Cylindrical Transducer for Intravascular ARFI Imaging: Design & Feasibility.** *IEEE transactions on ultrasonics, ferroelectrics, and frequency control*
Herickhoff, C. D., Telichko, A. V., Dahl, J. J.
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