Stanford



Kim Butts Pauly

Professor of Radiology (Radiological Sciences Lab) and, by courtesy, of Electrical Engineering

Bio

ACADEMIC APPOINTMENTS

- Professor, Radiology
- Professor (By courtesy), Electrical Engineering
- Member, Bio-X
- Member, Stanford Cancer Institute
- Member, Wu Tsai Neurosciences Institute

ADMINISTRATIVE APPOINTMENTS

- Director, Center for Biomedical Imaging at Stanford, (2010-2015)
- Director, Radiological Sciences Laboratory, (2017-2025)
- Vice Chair for Research, Department of Radiology, (2025- present)

HONORS AND AWARDS

- Fellow, ISMRM (2009)
- Distinguished Investigator, The Academy of Radiology Research (2012)
- Fellow, American Institute For Medical and Biological Engineering (2015)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Board Member, ISMRM (2004 - 2008)
- Board Member, ISTU (2009 - 2012)
- Chair, Scientific Program Committee, ISMRM (2007 - 2008)
- Chair, Technical Program Committee, ISTU (2013 - 2014)
- Secretary General, ISTU (2018 - 2021)

PROFESSIONAL EDUCATION

- B.S., Duke University , Physics (1989)
- Ph.D., Mayo Graduate School , Biophysical Sciences (1993)

LINKS

- My Webpage: http://kbplab.stanford.edu/

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

We are investigating and developing, and applying focused ultrasound in neuromodulation, blood brain barrier opening, and ablation for both neuro and body applications.

Our study of focused ultrasound neuromodulation of deep brain structures includes study of the mechanism and how to monitor/ensure accurate intensities reach the brain. We are studying neuromodulation in both small rodent models and in larger brain models.

We are using focused ultrasound in the presence of microbubbles to open the blood brain barrier in order to enhance drug delivery to cancers of the brain. We are studying how ultrasound modulates the immune system and how that can be directed toward cancer therapy. Engineering efforts are centered around finding the in situ pressure and tissue strain from the radiation force displacement measured on MRI.

We are also using focused ultrasound to thermally ablate tissue for movement disorders such as essential tremor, as well as for cancers in the body. Robust volumetric MR thermometry in the presence of motion and transducers is an ongoing engineering focus.

Teaching

COURSES

2026-27

- Introduction to Imaging and Image-based Human Anatomy: BIOE 220, BMP 220, RAD 220 (Win)

2025-26

- Introduction to Imaging and Image-based Human Anatomy: BIOE 220, BMP 220, RAD 220 (Win)
- Medical Imaging Ethics: RAD 255 (Win)

2024-25

- Introduction to Imaging and Image-based Human Anatomy: BIOE 220, BMP 220, RAD 220 (Win)

2023-24

- Introduction to Imaging and Image-based Human Anatomy: BIOE 220, BMP 220, RAD 220 (Win)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Benjamin Frey

Postdoctoral Faculty Sponsor

Weerathunga Arachchige Hasini Weerathunge

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Bioengineering (PhD Program)

Publications

PUBLICATIONS

- **ITRUSST Consensus on Biophysical Safety for Transcranial Ultrasound Stimulation.** *Brain stimulation*

Aubry, J. F., Attali, D., Schafer, M. E., Fouragnan, E., Caskey, C. F., Chen, R., Darmani, G., Bubrick, E. J., Sallet, J., Butler, C. R., Stagg, C. J., Klein-Flügge, M. C., Yoo, et al
2025

- **Biophysical effects and neuromodulatory dose of transcranial ultrasonic stimulation.** *Brain stimulation*
  Nandi, T., Kop, B. R., Naftchi-Ardebili, K., Stagg, C. J., Pauly, K. B., Verhagen, L.
  2025

- **ITRUSST consensus on standardised reporting for transcranial ultrasound stimulation.** *Brain stimulation*
  Martin, E., Aubry, J. F., Schafer, M., Verhagen, L., Treeby, B., Pauly, K. B.
  2024

- **Histologic safety of transcranial focused ultrasound neuromodulation and magnetic resonance acoustic radiation force imaging in rhesus macaques and sheep.** *Brain stimulation*
  Gaur, P., Casey, K. M., Kubanek, J., Li, N., Mohammadjavadi, M., Saenz, Y., Glover, G. H., Bouley, D. M., Pauly, K. B.
  2020; 13 (3): 804–14

- **Radiation force as a physical mechanism for ultrasonic neurostimulation of the ex vivo retina.** *The Journal of neuroscience : the official journal of the Society for Neuroscience*
  Menz, M. D., Ye, P. n., Firouzi, K. n., Nikoozadeh, A. n., Butts Pauly, K. n., Khuri-Yakub, P. n., Baccus, S. A.
  2019

- **A deep-learning model for one-shot transcranial ultrasound simulation and phase aberration correction** *Medical Physics*
  Naftchi-Ardebili, K., Singh, K., Popelka, G., Butts Pauly, K.
  2026; 53 (1)

- **Letter to the Editor in response to "Brain injury during focused ultrasound neuromodulation for substance use disorder".** *Brain stimulation*
  Pauly, K. B.
  2025; 18 (6): 2075-2076

- **Tiletamine-Zolazepam for Total Intravenous Anesthesia in Sheep.** *Journal of the American Association for Laboratory Animal Science : JAALAS*
  Mocarski, E., Heng, K., Huss, M., Saenz, Y., Franco, B., Butts Pauly, K., Jampachaisri, K., Sharp, P., Pacharinsak, C.
  2025: 1-6

- **MR-ARFI to evaluate intensity variability and enhance targeting of FUS: A brain study in rats.** *Magnetic resonance in medicine*
  Eldirdiri, A., Chang, L., Martin, D. A., Cunningham, E., Bernard, S., Calu, D. J., Butts Pauly, K., Ernst, T.
  2025

- **Focused Ultrasound-Induced Peripheral Nerve Blockade: Duration of Changes to Thermal Withdrawal Latency and Nerve Structure After Focused Ultrasound Application to the Sciatic Nerve in a Rat Model of Acute Pain.** *Journal of neuroscience research*
  Gao, G., Thomas, Z., Kantarci, H., Pacharinsak, C., Zuchero, J. B., Pauly, K. B., Yeomans, D. C., Anderson, T. A.
  2025; 103 (9): e70079

- **A New Versatile System for 3D Steered LIFU Based on 2D Matrix Arrays.** *Brain connectivity*
  Tretbar, S. H., Fournelle, M., Risser, C., Hewener, H., Degel, C., Bost, W., Weber, P., Mohammadjavadi, M., Glover, G. H., Butts Pauly, K., Melzer, A.
  2025

- **Parameter optimisation for mitigating somatosensory confounds during transcranial ultrasonic stimulation.** *Brain stimulation*
  Kop, B. R., de Jong, L., Pauly, K. B., den Ouden, H. E., Verhagen, L.
  2025

- **Optimization of MR acoustic radiation force imaging (MR-ARFI) for human transcranial focused ultrasound.** *Magnetic resonance in medicine*
  Mohammadjavadi, M., Ash, R. T., Glover, G. H., Pauly, K. B.
  2025

- **Response to 'Safety Considerations for Transcranial Ultrasound Stimulation: A Comment on Nandi et al.'.** *Brain stimulation*
  Nandi, T., Kop, B. R., Pauly, K. B., Stagg, C. J., Verhagen, L.
  2025

- **Parameter optimisation for mitigating somatosensory confounds during transcranial ultrasonic stimulation.** *bioRxiv : the preprint server for biology*

Kop, B. R., de Jong, L., Pauly, K. B., den Ouden, H. E., Verhagen, L.
2025

- **A practical guide to transcranial ultrasonic stimulation from the IFCN-endorsed ITRUSST consortium.** *Clinical neurophysiology : official journal of the International Federation of Clinical Neurophysiology*
  Murphy, K. R., Nandi, T., Kop, B., Osada, T., Lueckel, M., N'Djin, W. A., Caulfield, K. A., Fomenko, A., Siebner, H. R., Ugawa, Y., Verhagen, L., Bestmann, S., Martin, et al
  2025; 171: 192-226

- **DETERMINING OPTIMAL PARAMETERS FOR NONINVASIVE THALAMIC NEUROMODULATION WITH TRANCRANIAL FOCUSED ULTRASOUND**
  Ash, R., Limon, P., Scott, M., Mohammadjavadi, M., Pauly, K., Norcia, A.
  SPRINGERNATURE.2024: 418

- **The relationship between parameters and effects in transcranial ultrasonic stimulation.** *Brain stimulation*
  Nandi, T., Kop, B. R., Pauly, K. B., Stagg, C. J., Verhagen, L.
  2024

- **Focal Volume, Acoustic Radiation Force, and Strain in Two-Transducer Regimes** *IEEE TRANSACTIONS ON ULTRASONICS FERROELECTRICS AND FREQUENCY CONTROL*
  Naftchi-Ardebili, K., Menz, M. D., Salahshoor, H., Popelka, G. R., Baccus, S. A., Pauly, K.
  2024; 71 (10): 1199-1216

- **In Vivo Dual-Channel Widefield GCaMP Imaging using Transparent Ultrasound Transducer.** *Proceedings of the ... IEEE International Symposium on Applications of Ferroelectrics. IEEE International Symposium on Applications of Ferroelectrics*
  Kim, Y. H., Prieto, M. L., Lin, C., Zhang, Y., Firouzi, K., Maduke, M., Pauly, K. B., Khuri-Yakub, P.
  2024; 2024

- **Use of Ultra-Short Echo Time MRI to Improve Temporal Bone Imaging.** *The Laryngoscope*
  Kaufman, A. C., Fu, F., Martinez, M. C., Fischbein, N., Popelka, G. R., Butts Pauly, K., Blevins, N. H.
  2024

- **Optimized ultrasound neuromodulation for non-invasive control of behavior and physiology.** *Neuron*
  Murphy, K. R., Farrell, J. S., Bendig, J., Mitra, A., Luff, C., Stelzer, I. A., Yamaguchi, H., Angelakos, C. C., Choi, M., Bian, W., Dilanni, T., Pujol, E. M., Matosevich, et al
  2024

- **Biophysical effects and neuromodulatory dose of transcranial ultrasonic stimulation.** *ArXiv*
  Nandi, T., Kop, B. R., Naftchi-Ardebili, K., Stagg, C. J., Pauly, K. B., Verhagen, L.
  2024

- **The relationship between parameters and effects in transcranial ultrasonic stimulation.** *ArXiv*
  Nandi, T., Kop, B. R., Butts Pauly, K., Stagg, C. J., Verhagen, L.
  2024

- **The relationship between parameters and effects in transcranial ultrasonic stimulation.** *ArXiv*
  Nandi, T., Kop, B. R., Butts Pauly, K., Stagg, C. J., Verhagen, L.
  2024

- **A novel method for tracking hyperbaric nitrogen kinetics in vivo using radioactive nitrogen-13 gas and positron emission tomography.** *Journal of applied physiology (Bethesda, Md. : 1985)*
  Ashworth, E. T., Ogawa, R., Nguyen, J., Afif, C., Sá, R. C., Butts Pauly, K., Vera, D. R., Lindholm, P.
  2024

- **ITRUSST Consensus on Standardised Reporting for Transcranial Ultrasound Stimulation.** *ArXiv*
  Martin, E., Aubry, J. F., Schafer, M., Verhagen, L., Treeby, B., Pauly, K. B.
  2024

- **In Vivo Dual-Channel Widefield GCaMP Imaging using Transparent Ultrasound Transducer**
  Kim, Y., Prieto, M., Lin, C., Zhang, Y., Firouzi, K., Maduke, M., Pauly, K., Khuri-Yakub, P., IEEE
  IEEE.2024

- **Poster Session I: Noninvasive neuromodulation of subcortical visual pathways with transcranial focused ultrasound.** *Journal of vision*
  Ash, R., Mohammadjavadi, M., Butts Pauly, K., Norcia, A.
  2023; 23 (15): 23

- **Development and validation of a computational method to predict unintended auditory brainstem response during transcranial ultrasound neuromodulation in mice.** *Brain stimulation*
  Choi, M. H., Li, N., Popelka, G., Butts Pauly, K.
  2023

- **Focused ultrasound-induced inhibition of peripheral nerve fibers in an animal model of acute pain.** *Regional anesthesia and pain medicine*
  Anderson, T. A., Pacharinsak, C., Vilches-Moure, J., Kantarci, H., Zuchero, J. B., Butts-Pauly, K., Yeomans, D.
  2023

- **Three-layer model with absorption for conservative estimation of the maximum acoustic transmission coefficient through the human skull for transcranial ultrasound stimulation.** *Brain stimulation*
  Attali, D., Tiennot, T., Schafer, M., Fouragnan, E., Sallet, J., Caskey, C., Chen, R., Darmani, G., Bubrick, E. J., Butler, C., Stagg, C., Klein-Flugge, M., Verhagen, et al
  2022

- **A tool for monitoring cell type-specific focused ultrasound neuromodulation and control of chronic epilepsy.** *Proceedings of the National Academy of Sciences of the United States of America*
  Murphy, K. R., Farrell, J. S., Gomez, J. L., Stedman, Q. G., Li, N., Leung, S. A., Good, C. H., Qiu, Z., Firouzi, K., Butts Pauly, K., Khuri-Yakub, B. P., Michaelides, M., Soltesz, et al
  2022; 119 (46): e2206828119

- **Comparison between MR and CT imaging used to correct for skull-induced phase aberrations during transcranial focused ultrasound.** *Scientific reports*
  Leung, S. A., Moore, D., Gilbo, Y., Snell, J., Webb, T. D., Meyer, C. H., Miller, G. W., Ghanouni, P., Butts Pauly, K.
  2022; 12 (1): 13407

- **Benchmark problems for transcranial ultrasound simulation: Intercomparison of compressional wave models.** *The Journal of the Acoustical Society of America*
  Aubry, J. F., Bates, O., Boehm, C., Butts Pauly, K., Christensen, D., Cueto, C., Gélat, P., Guasch, L., Jaros, J., Jing, Y., Jones, R., Li, N., Marty, et al
  2022; 152 (2): 1003

- **Benchmark problems for transcranial ultrasound simulation: Intercomparison of compressional wave modelsa)** *JOURNAL OF THE ACOUSTICAL SOCIETY OF AMERICA*
  Aubry, J., Bates, O., Boehm, C., Pauly, K., Christensen, D., Cueto, C., Gelat, P., Guasch, L., Jaros, J., Jing, Y., Jones, R., Li, N., Marty, et al
  2022; 152 (2): 1003-1019

- **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

- **Improving in situ acoustic intensity estimates using MR acoustic radiation force imaging in combination with multifrequency MR elastography.** *Magnetic resonance in medicine*
  Li, N., Gaur, P., Quah, K., Butts Pauly, K.
  2022

- **Changes In The Cerebello-thalamo-cortical Network After MR-guided Focused Ultrasound Thalamotomy.** *Brain connectivity*
  Thaler, C., Tian, Q., WIntermark, M., Ghanouni, P., Halpern, C., Henderson, J., Airan, R., Zeineh, M., Goubran, M., Leuze, C., Fiehler, J., Butts Pauly, K., McNab, et al
  2022

- **Dose-dependent effects of high intensity focused ultrasound on compound action potentials in an ex vivo rodent peripheral nerve model: comparison to local anesthetics.** *Regional anesthesia and pain medicine*
  Anderson, T. A., Delgado, J., Sun, S., Behzadian, N., Vilches-Moure, J., Szlavik, R. B., Butts-Pauly, K., Yeomans, D.
  1800

- **Transcranial ultrasound neuromodulation of the thalamic visual pathway in a large animal model and the dose#response relationship with MR#ARFI** *Scientific Reports*

Mohammadjavadi, M., Ash, R. T., Li, N., Gaur, P., Kubanek, J., Saenz, Y., Glover, G. H., Popelka, G. R., Norcia, A. M., Butts Pauly, K.
2022; 12: 19588

- **Non-invasive transcranial ultrasound stimulation for neuromodulation.** *Clinical neurophysiology : official journal of the International Federation of Clinical Neurophysiology*
  Darmani, G., Bergmann, T. O., Butts Pauly, K., Caskey, C. F., de Lecea, L., Fomenko, A., Fouragnan, E., Legon, W., Murphy, K. R., Nandi, T., Phipps, M. A., Pinton, G., Ramezanpour, et al
  1800; 135: 51-73

- **Stability and Plasticity of Steady-State Visual-Evoked Potential Contrast-Response Functions**
  Ash, R., Nix, K., Lee, M., Pauly, K., Williams, N., Norcia, A.
  SPRINGERNATURE.2021: 507

- **Transcranial focused ultrasound phase correction using the hybrid angular spectrum method.** *Scientific reports*
  Leung, S. A., Moore, D., Webb, T. D., Snell, J., Ghanouni, P., Butts Pauly, K.
  2021; 11 (1): 6532

- **Evaluation of an MRI receive head coil for use in transcranial MR guided focused ultrasound for functional neurosurgery.** *International journal of hyperthermia : the official journal of European Society for Hyperthermic Oncology, North American Hyperthermia Group*
  Bitton, R. R., Sheingaouz, E., Assif, B., Kelm, N., Dayan, M., Butts Pauly, K., Ghanouni, P.
  2021; 38 (1): 22–29

- **A preclinical study of diffusion-weighted MRI contrast as an early indicator of thermal ablation.** *Magnetic resonance in medicine*
  Allen, S. P., Prada, F., Xu, Z., Gatesman, J., Feng, X., Sporkin, H., Gilbo, Y., DeCleene, S., Pauly, K. B., Meyer, C. H.
  2020

- **Impact of skull density ratio on efficacy and safety of magnetic resonance-guided focused ultrasound treatment of essential tremor** *JOURNAL OF NEUROSURGERY*
  D'Souza, M., Chen, K. S., Rosenberg, J., Elias, W., Eisenberg, H. M., Gwinn, R., Taira, T., Chang, J., Lipsman, N., Krishna, V., Igase, K., Yamada, K., Kishima, et al
  2020; 132 (5): 1392–97

- **Remote, brain region-specific control of choice behavior with ultrasonic waves** *SCIENCE ADVANCES*
  Kubanek, J., Brown, J., Ye, P., Pauly, K., Moore, T., Newsome, W.
  2020; 6 (21)

- **Remote, brain region-specific control of choice behavior with ultrasonic waves.** *Science advances*
  Kubanek, J., Brown, J., Ye, P., Pauly, K. B., Moore, T., Newsome, W.
  2020; 6 (21)

- **Remote, brain region-specific control of choice behavior with ultrasonic waves.** *Science advances*
  Kubanek, J. n., Brown, J. n., Ye, P. n., Pauly, K. B., Moore, T. n., Newsome, W. n.
  2020; 6 (21): eaaz4193

- **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

- **MRI-Guided Focused Ultrasound of Osseous Metastases: Treatment Parameters Associated With Successful Pain Reduction.** *Investigative radiology*
  Bitton, R. R., Rosenberg, J. n., LeBlang, S. n., Napoli, A. n., Meyer, J. n., Butts Pauly, K. n., Hurwitz, M. n., Ghanouni, P. n.
  2020

- **Improved Vim targeting for focused ultrasound ablation treatment of essential tremor: A probabilistic and patient-specific approach.** *Human brain mapping*
  Su, J. H., Choi, E. Y., Tourdias, T. n., Saranathan, M. n., Halpern, C. H., Henderson, J. M., Pauly, K. B., Ghanouni, P. n., Rutt, B. K.
  2020

- **MR elastography frequency-dependent and independent parameters demonstrate accelerated decrease of brain stiffness in elder subjects.** *European radiology*

Lv, H. n., Kurt, M. n., Zeng, N. n., Ozkaya, E. n., Marcuz, F. n., Wu, L. n., Laksari, K. n., Camarillo, D. B., Pauly, K. B., Wang, Z. n., Wintermark, M. n.
2020

- **Case Report on Deep Brain Stimulation Rescue After Suboptimal MR-Guided Focused Ultrasound Thalamotomy for Essential Tremor: A Tractography-Based Investigation.** *Frontiers in human neuroscience*
  Saluja, S. n., Barbosa, D. A., Parker, J. J., Huang, Y. n., Jensen, M. R., Ngo, V. n., Santini, V. E., Pauly, K. B., Ghanouni, P. n., McNab, J. A., Halpern, C. H.
  2020; 14: 191

- **Histologic evaluation of activation of acute inflammatory response in a mouse model following ultrasound-mediated blood-brain barrier using different acoustic pressures and microbubble doses.** *Nanotheranostics*
  Pascal, A. n., Li, N. n., Lechtenberg, K. J., Rosenberg, J. n., Airan, R. D., James, M. L., Bouley, D. M., Pauly, K. B.
  2020; 4 (4): 210–23

- **Viscoelasticity of children and adolescent brains through MR elastography.** *Journal of the mechanical behavior of biomedical materials*
  Ozkaya, E. n., Fabris, G. n., Macruz, F. n., Suar, Z. M., Abderezaei, J. n., Su, B. n., Laksari, K. n., Wu, L. n., Camarillo, D. B., Pauly, K. B., Wintermark, M. n., Kurt, M. n.
  2020; 115: 104229

- **Prolonged heating in nontargeted tissue during MR-guided focused ultrasound of bone tumors** *JOURNAL OF MAGNETIC RESONANCE IMAGING*
  Bitton, R. R., Webb, T. D., Pauly, K., Ghanouni, P.
  2019; 50 (5): 1526–33

- **Anatomic and Thermometric Analysis of Cranial Nerve Palsy after Laser Amygdalohippocampotomy for Mesial Temporal Lobe Epilepsy.** *Operative neurosurgery (Hagerstown, Md.)*
  Huang, Y., Leung, S. A., Parker, J. J., Ho, A. L., Wintermark, M., Patel, S. H., Pauly, K. B., Kakusa, B. W., Beres, S. J., Henderson, J. M., Grant, G. A., Halpern, C. H.
  2019

- **Optimization of a Multifrequency Magnetic Resonance Elastography Protocol for the Human Brain** *JOURNAL OF NEUROIMAGING*
  Kurt, M., Wu, L., Laksari, K., Ozkaya, E., Suar, Z. M., Lv, H., Epperson, K., Epperson, K., Sawyer, A. M., Camarillo, D., Pauly, K., Wintermark, M.
  2019; 29 (4): 440–46

- **Elimination of peripheral auditory pathway activation does not affect motor responses from ultrasound neuromodulation** *BRAIN STIMULATION*
  Mohammadjavadi, M., Ye, P., Xia, A., Brown, J., Popelka, G., Pauly, K.
  2019; 12 (4): 901–10

- **Optimization of a Multifrequency Magnetic Resonance Elastography Protocol for the Human Brain.** *Journal of neuroimaging : official journal of the American Society of Neuroimaging*
  Kurt, M., Wu, L., Laksari, K., Ozkaya, E., Suar, Z. M., Lv, H., Epperson, K., Epperson, K., Sawyer, A. M., Camarillo, D., Pauly, K. B., Wintermark, M.
  2019

- **Prolonged Heating in Nontargeted Tissue During MR-guided Focused Ultrasound of Bone Tumors.** *Journal of magnetic resonance imaging : JMRI*
  Bitton, R. R., Webb, T. D., Pauly, K. B., Ghanouni, P.
  2019

- **Elimination of peripheral auditory pathway activation does not affect motor responses from ultrasound neuromodulation.** *Brain stimulation*
  Mohammadjavadi, M., Ye, P. P., Xia, A., Brown, J., Popelka, G., Pauly, K. B.
  2019

- **TESTING DIFFERENT COMBINATIONS OF ACOUSTIC PRESSURE AND DOSES OF QUINOLINIC ACID FOR INDUCTION OF FOCAL NEURON LOSS IN MICE USING TRANSCRANIAL LOW-INTENSITY FOCUSED ULTRASOUND** *ULTRASOUND IN MEDICINE AND BIOLOGY*
  Zhang, Y., Liao, C., Qu, H., Huang, S., Jiang, H., Zhou, H., Abrams, E., Habte, F. G., Yuan, L., Bertram, E. H., Lee, K. S., Pauly, K., Buckmaster, et al
  2019; 45 (1): 129–36

- **Impact of skull density ratio on efficacy and safety of magnetic resonance-guided focused ultrasound treatment of essential tremor.** *Journal of neurosurgery*
  D'Souza, M. n., Chen, K. S., Rosenberg, J. n., Elias, W. J., Eisenberg, H. M., Gwinn, R. n., Taira, T. n., Chang, J. W., Lipsman, N. n., Krishna, V. n., Igase, K. n., Yamada, K. n., Kishima, et al

2019: 1–6

- **A rapid beam simulation framework for transcranial focused ultrasound.** *Scientific reports*
  Leung, S. A., Webb, T. D., Bitton, R. R., Ghanouni, P. n., Butts Pauly, K. n.
  2019; 9 (1): 7965
- **Enhanced microbubble contrast agent oscillation following 250 kHz insonation** *SCIENTIFIC REPORTS*
  Ilovitsh, T., Ilovitsh, A., Foiret, J., Caskey, C. F., Kusunose, J., Fite, B. Z., Zhang, H., Mahakian, L. M., Tam, S., Butts-Pauly, K., Qin, S., Ferrara, K. W.
  2018; 8
- **Enhanced microbubble contrast agent oscillation following 250kHz insonation.** *Scientific reports*
  Ilovitsh, T., Ilovitsh, A., Foiret, J., Caskey, C. F., Kusunose, J., Fite, B. Z., Zhang, H., Mahakian, L. M., Tam, S., Butts-Pauly, K., Qin, S., Ferrara, K. W.
  2018; 8 (1): 16347
- **Testing Different Combinations of Acoustic Pressure and Doses of Quinolinic Acid for Induction of Focal Neuron Loss in Mice Using Transcranial Low-Intensity Focused Ultrasound.** *Ultrasound in medicine & biology*
  Zhang, Y., Liao, C., Qu, H., Huang, S., Jiang, H., Zhou, H., Abrams, E., Habte, F. G., Yuan, L., Bertram, E. H., Lee, K. S., Pauly, K. B., Buckmaster, et al
  2018
- **Brain stiffens post mortem** *JOURNAL OF THE MECHANICAL BEHAVIOR OF BIOMEDICAL MATERIALS*
  Weickenmeier, J., Kurt, M., Ozkaya, E., de Rooij, R., Ovaert, T. C., Ehman, R. L., Pauly, K., Kuhl, E.
  2018; 84: 88–98
- **Measurements of the Relationship Between CT Hounsfield Units and Acoustic Velocity and How It Changes With Photon Energy and Reconstruction Method** *IEEE TRANSACTIONS ON ULTRASONICS FERROELECTRICS AND FREQUENCY CONTROL*
  Webb, T. D., Leung, S. A., Rosenberg, J., Ghanouni, P., Dahl, J. J., Pelc, N. J., Pauly, K.
  2018; 65 (7): 1111–24
- **Hearing out Ultrasound Neuromodulation** *NEURON*
  Airan, R. D., Pauly, K.
  2018; 98 (5): 875–77
- **Hearing out Ultrasound Neuromodulation.** *Neuron*
  Airan, R. D., Butts Pauly, K.
  2018; 98 (5): 875–77
- **A spiral-based volumetric acquisition for MR temperature imaging** *MAGNETIC RESONANCE IN MEDICINE*
  Fielden, S. W., Feng, X., Zhao, L., Miller, G., Geeslin, M., Dallapiazza, R. F., Elias, W., Wintermark, M., Pauly, K., Meyer, C. H.
  2018; 79 (6): 3122–27
- **Brain stiffens post mortem.** *Journal of the mechanical behavior of biomedical materials*
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