

## DIETER KLATT, Ph.D.

Associate Professor, Richard and Loan Department of Biomedical Engineering <https://bme.uic.edu>  
Adjunct Associate Professor, Department of Mechanical and Industrial Engineering  
Director, UIC Motion-Encoding MRI Laboratory <https://meml.lab.uic.edu>  
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### RESEARCH INTERESTS

**Technical focus:** development of rapid motion-encoding MRI acquisition approaches; fusion of MRE and DTI. cross validation of MR Elastography with other elastography methods; development of noninvasive tools for assessing muscle structure and function.

**Diagnostic focus:** relating tissue mechanics to pathology (neurodegenerative brain diseases; prostate cancer; liver fibrosis).

### EDUCATION

Ph.D. (2010), Physics, Humboldt University, Berlin, Germany

German University Diploma (2002), Geophysics, Ruhr-University, Bochum, Germany

### PROFESSIONAL EXPERIENCE

- 1) The University of Illinois at Chicago, Chicago, Illinois. The Richard and Loan Hill Department of Biomedical Engineering, Research Associate: 09/2011-01/2013. Assistant Professor 02/2013 – 08/2019. Associate Professor 08/2019 – *present*.
- 2) Charité-University Medicine Berlin, Germany. Department of Radiology. Research Assistant: 02/2004-03/2010. Research Associate: 04/2010-06/2011.
- 3) Deutsche Montan Technologie (DMT-Group), Essen, Germany, Geophysicist: 01/2003-12/2003.

### SELECTED HONORS AND AWARDS

American Society of Mechanical Engineers (ASME):

Poster Award for Best Computational Approach, IMECE (2019), Salt Lake City, UT (Abstract # 13710).

The University of Illinois at Chicago:

College of Engineering Faculty Award for Advising (2022).

College of Engineering Teaching Award (2021); College of Engineering Research Award (2021);

College of Medicine Departmental Rising Star Award (2019).

The International Society for Magnetic Resonance in Medicine (ISMRM):

Summa cum laude Merit Award at the 23rd Annual Meeting (2015), Toronto, Canada (Abstract # 108).

Magna cum laude Merit Award at the 22<sup>nd</sup> Annual Meeting (2014), Milan, Italy (Abstract # 87).

Best poster, 9th Meeting of the German Section of the ISMRM (2006), Jena, Germany (Abstract # P9).

### PROFESSIONAL MEMBERSHIPS AND ACTIVITIES

The International Society for Magnetic Resonance in Medicine (ISMRM):

Member: 03/2013 – *present*.

Elected ISMRM MR Elastography Study Group Governing Committee Member: 04/2017 – 05/2021.

American Society of Mechanical Engineers (ASME):

Guest associate editor of special issue *Fractional Calculus in Vibration and Acoustics* published in the ASME Journal of Vibration and Acoustics 136(5) on July 25th 2014.

The IEEE Engineering in Medicine & Biology Society:

Organizer of Symposia (2019 Berlin, Germany; 2014, Chicago, IL; 2012 San Diego, CA)

National Institutes of Health (NIH)

Member of L-Fellowship Review Panel; 2021/01 ZRG1 F01B-J (20): 11/2020.

### PUBLICATIONS

h-index = 25; citations: 4346; archival journal publications: 47; book chapters: 2; conference papers and abstracts: > 120; also see: <https://meml.lab.uic.edu/publications>

### INVENTIONS

Patents issued: 1; additional intellectual property disclosures: 4.

### STUDENT MENTORSHIP

Post-Doc: 1 graduated; PhD: 2 graduated, 1 in progress; MS-thesis: 2 graduated. Placements in Academia: Brigham and Women's Hospital, Harvard Medical School, Boston, MA; Beckman Institute, University of Illinois at Urbana-Champaign, Urbana, IL; Charite – University Medicine Berlin, Germany. Placements in Industry: Grayhill Inc., La Grange, IL; MR Solutions, Guildford, United Kingdom.

## EDUCATION

Ruhr-University Bochum, Germany                      Geophysics                      German University Diploma (11/2002)  
Thesis: Isostatic Anomalies of Subduction Zones (in German).  
Advisor: Uwe Casten

Humboldt University Berlin, Germany                      Physics                      Ph.D.                      (03/2010)  
Thesis: Development and Application of Multi-Frequency Magnetic Resonance Elastography (in German).  
Advisor: Ingolf Sack

Charite, Berlin, Germany                      Radiology                      Post-Doc                      (06/2011)  
Advisor: Ingolf Sack

University of Illinois at Chicago                      Biomedical Engineering                      Post-Doc                      (01/2013)  
Advisor: Thomas Royston

## POSITIONS AND EMPLOYMENT

01/2003 – 12/2003      Geophysicist for *Deutsche Montan Technologie*, Essen, Germany.

02/2004 – 03/2010      Research Assistant at the Department of Radiology,  
Charité – University Medicine Berlin, Germany.

04/2010 – 06/2011      Research Associate at the Department of Radiology,  
Charité-University Medicine Berlin, Germany.

09/2011 – 01/2013      Research Associate at the Department of Biomedical Engineering,  
The University of Illinois at Chicago, Chicago, Illinois.

02/2013 – 08/2019      Assistant Professor at the Richard and Loan Hill Department of Biomedical Engineering,  
The University of Illinois at Chicago, Chicago, Illinois.

10/2018 – 08/2019      Assistant Professor at the Department of Mechanical & Industrial Engineering,  
The University of Illinois at Chicago, Chicago, Illinois. (Courtesy Appointment)

08/2019 – *present*      Associate Professor at the Richard and Loan Hill Department of Biomedical Engineering,  
The University of Illinois at Chicago, Chicago, Illinois.

08/2019 – *present*      Associate Professor at the Department of Mechanical & Industrial Engineering,  
The University of Illinois at Chicago, Chicago, Illinois. (Courtesy Appointment)

## RESEARCH VISITS

04/1998 – 07/1998      Island of Crete, Greece.  
Purpose: Geophysical measurements to examine the underground structure of the  
Hellenic Arc.

10/2008                      Freiburg Material Research Center, University of Freiburg, Germany.  
Purpose: Oscillatory rheometry measurements on biological tissue samples.  
Resulting publication: *doi:10.3233/BIR-2010-0565*.

## CONTINUING EDUCATION

06/2020 – 07/2020      Participant in Course *Overview of Online Instruction* by the Illinois Online Network (ION).

## PROFESSIONAL MEMBERSHIPS

03/2013 – *present*      Member, International Society for Magnetic Resonance in Medicine (ISMRM).

## SERVICE

### *Service to the University*

- 01/2013 – 08/2019 Academic Advisor for the MRI/NMR facilities of the Research Resources Center (RRC), The University of Illinois at Chicago, Chicago, Illinois.
- 01/2013 – present Service as facilitator for *BME 250: Clinical Problems in Biomedical Engineering*.
- 01/2013 – 05/2019 Guest lecture and MRI demonstrations in spring semester for *GCLS 505: GEMS Methods Module: Introduction to Imaging*.
- 08/2013 – present Fellow of the Honors College at the University of Illinois at Chicago.
- 08/2014 – present Guest lecture in fall semester for *BME 101: Introduction to Biomedical Engineering*.
- 08/2015 Development of the Concentration Area *Biomedical Imaging* as part of the B.S. at the Department of Biomedical Engineering, The University of Illinois at Chicago, Chicago, Illinois.
- 06/2016 – 08/2019 Hosting science high school teacher in my lab during summer term as part of the *Biomedical Engineering Experience for Science Teachers (BEST) Program*.
- 08/2019 – 07/2022 Member of the Curriculum Committee of the Dept. of Biomedical Engineering.
- 08/2019 – present Member of the Promotion and Tenure Committee of the Dept. of Biomedical Engineering.
- 04/2020 Guest lecture in spring semester for *BME 422: Magnetic Resonance Imaging*.

### *Service to the Research Community*

- 10/2010 Implementation of Magnetic Resonance Elastography on a clinical MRI scanner (3.0 T) at the Clinical Research Imaging Centre, University of Edinburgh, Scotland, UK.
- 09/2012 Organizer and chair of symposium “Mechano-Imaging of the Brain” at the 34th Annual International Conference of the IEEE Engineering in Medicine & Biology Society in San Diego, Ca.
- 08/2013 – present Service as reviewer for scientific journals: *ASME Journal of Vibration and Acoustics*; *Journal of Biomechanics*; *NeuroImage*; *NeuroImage: Clinical*; *Magnetic Resonance in Medicine*; *Investigative Radiology*; *Journal of the Acoustical Society of America*; *Journal of Magnetic Resonance Imaging*; *NMR in Biomedicine*; *Magnetic Resonance Imaging*; *Journal of the Mechanical Behavior of Biomedical Materials*; *MDPI-Diagnostics*.
- 06/2013 – 12/2013 Guest associate editor of special issue *Fractional Calculus in Vibration and Acoustics* published in the *ASME Journal of Vibration and Acoustics* 136(5) on July 25<sup>th</sup> 2014.
- 08/2014 Organizer and chair of symposium “Oscillating Gradients in Motion-Sensitive Magnetic Resonance Imaging (MRI): A tool to Combine Diffusion MRI and MR Elastography?” at the 36<sup>th</sup> Annual International Conference of the IEEE Engineering in Medicine & Biology Society in Chicago, IL.
- 06/2015 Chair of Session “Elastography” at 23rd Annual Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM) in Toronto, CA; (2015).
- 09/2015 Implementation of Magnetic Resonance Elastography on a horizontal pre-clinical MRI Scanner (11.1 T) at the Advanced Magnetic Resonance Imaging and Spectroscopy

Facility (AMRIS), National High Magnetic Field Laboratory, University of Florida, Gainesville, FL.

- 04/2017 – 05/2021 Elected Executive Committee Member of the MR Elastography Study Group, International Society for Magnetic Resonance in Medicine (ISMRM).
- 09/2017 Co-organizer of first International MRE workshop. Berlin, Germany 9/27/17-9/29/17.
- 05/2019 – 08/2020 Member of the Workshop and Study Group Review Committee of the International Society for Magnetic Resonance in Medicine (ISMRM).
- 05/2019 Co-organizer of symposium “Imaging the Biomechanical Properties of Tissue: Pathways to Improving Clinical Value” at 27th Annual Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM) in Montreal, Canada; (2019).
- 07/2019 Organizer and chair of symposium “Magnetic Resonance Elastography: Quantification of Viscoelastic Parameters from Specimens to In-Vivo Organs.” At the 41<sup>st</sup> Annual International Conference of the IEEE Engineering in Medicine & Biology Society in Berlin, Germany.
- 12/2019 Co-organizer and moderator of the ISMRM MR Elastography Study Group Virtual Meeting "Remote Palpation using MRI: Quantification of Viscoelastic Parameters for Diagnosis".
- 06/2020 Co-organizer and moderator of the ISMRM MR Elastography Study Group Virtual Meeting "The Value of Quantifying Viscoelastic Parameters in Brain Imaging".
- 09/2020 Discussant in NIH workshop on Imaging Myofascial Pain (Session 3): Elastography approaches with potential application to MPS.
- 11/2020 NIH Fellowship Review Panel; 2021/01 ZRG1 F01B-J (20) L - Fellowships: Learning, Memory, Language, Communication, and Related Neuroscience.

## TEACHING

(all courses developed by Dieter Klatt)

- 08/2013 – present *BME/ME 520: Elastography* in fall semesters.  
Course description: Review of theoretical foundations of Elastography and overview of elastographic techniques with emphasis on Magnetic Resonance Elastography.
- 01/2014 – 05/2014 *BME 594: Recent Advances in MR Elastography* (spring semester 2014).  
Course description: Overview on innovative and creative approaches that reduce scan time in motion-encoding MRI. By the end of the class, the students are proficient in determining the mechanical parameters of tissue by analyzing data acquired using advanced MRE approaches.
- 01/2015 – present *BME 423: Biomedical Imaging Laboratory I* in spring semesters.  
Course description: This course is the lab component of Biomedical Imaging (BME 421) and includes hands-on acquisition and processing procedures of MRI, CT, Nuclear Medicine, Ultrasound and Optical Imaging.
- 08/2020 – present *BME 421: Biomedical Imaging* in fall semesters.  
Course description: Introduction to engineering and scientific principles associated with X-ray CT, magnetic resonance, ultrasound, and nuclear medicine imaging.

## GRADUATE STUDENTS

### *Completed*

Shujun Lin	(Ph.D., 2023)
Thesis:	Development of in vivo human brain DTI-MRE.
Placement:	Department of Radiology and Imaging Sciences, Emory University School of Medicine, Atlanta, GA.
Shreyan Majumdar	(Ph.D., 2020)
Thesis:	Development of Magnetic Resonance Elastography for Assessing Small Regions of Interest in Murine Models.
Placement:	Beckman Institute, University of Illinois at Urbana-Champaign, Urbana, IL.
Rolf Reiter, M.D.	(Post-Doc 04/2017 - 05/2019).
Placement:	Charite, University Medicine Berlin, Germany.
Marco Zampini	(M.S., 2018)
Thesis:	0.5T Benchtop Magnet: Development of a MR Elastography Setup and Tissue Samples Characterization.
Placement:	MR Solutions, Guildford, United Kingdom.
Spencer Brinker	(Ph.D., 2016).
Thesis:	Synchronous Measuring Techniques in Parallel to MRE: Study of Pressure, Pre-tension, and Surface Dynamics.
Placement:	Brigham and Women's Hospital, Harvard Medical School, Boston, MA.
David Burns	(M.S., 2014).
Thesis:	Synchronous Multi-Directional Motion Encoding in Magnetic Resonance Elastography.
Placement:	Grayhill Inc., La Grange, IL.

## GRADUATE STUDENT COMMITTEE MEMBER

### Ph.D.

Shujun Lin (BME, UIC 2023); Melika Salehabadi (BME, UIC 2023); Joseph Crutison (BME, UIC 2022); Mounica Bandela (BME, UIC 2022); Taehoon Kim (BME, UIC 2022); Nihar Seth (BME, UIC 2021); Michael Sun (BME, UIC 2021); Alessandro Scotti (BME, UIC 2021); Harish Palnitkar (MIE, UIC 2021); Shreyan Majumdar (BME, UIC 2020); Minhaj Alam (BME, UIC 2020); Martina Guidetti (BME, UIC 2020); Yiming Lu (BME, UIC 2019); Grant Hartung (BME, UIC 2019); Shreya Gosh (BME, UIC 2019); Meltem Uyanik (BME, UIC 2019); Altaf Khan (MIE, UIC 2018); Vidyani Suryadevara (BME, UIC 2018); Brian Henry (BME, UIC 2018); Benquan Wang (BME, UIC 2017); Paras Parikh (BME, UIC 2017); Vishal Varma (BME, UIC 2017); Les Bogdanowicz (BME, UIC 2017); Maleeha Mashiatulla (BME, UIC 2017); Spencer Brinker (MIE, UIC 2016); Steven Kearney (MIE, UIC 2015); Eric Barnhill (Clinical Research Imaging Centre, University of Edinburgh (UK) 2015); Yifei Liu (MIE, UIC 2015); Yi Sui (BME, UIC 2015); Ying Peng (MIE, UIC 2014); Temel Kaya Yasar (MIE, UIC 2014); Ajay Kurani (BME, UIC 2014).

### M.S.

Giulia De Campo (BME, UIC 2023); Silvia Leccabue (BME, UIC 2022); Federica Dibennardo (BME, UIC 2021); Alberto Giarola (MIE, UIC 2021); Luca Leonie (BME, UIC 2020); Chiara Gambacorta (BME, UIC 2020); Bekah Allen (BME, UIC 2020); Chiara Gatti (BME, UIC 2018); Giulia Gandini (BME, UIC 2018); Marco Zampini (BME, UIC 2018); Andrea Carmignotto (BME, UIC 2017); Martina Guidetti (BME, UIC 2017); Lorenzo Aliboni (BME, UIC 2017); David Zumba (BME, UIC 2016); Hemanti Chavada (BME, UIC 2016); David Burns (MIE, UIC 2014); Shreyan Majumdar (BME, UIC 2014); Dan Yu (BME, UIC 2013).

## INVENTIONS

### *Issued Patents*

Klatt D, Yasar TK, Royston TJ, Magin RL. Title: Sample Interval Modulation Magnetic Resonance Elastography (SLIM-MRE). International Patent Application PCT/US13/71830. Filed: 11/26/2013. Patent Issue Date: 06/12/2018. Patent No.: 9,995,813.

#### *Intellectual Property Disclosures*

Yasar TK, Klatt D, Royston TJ, Magin RL. Title: Selective spectral displacement projection Magnetic Resonance Elastography. US National Patent Application PCT/US14/15294. Filed: 02/07/2014.

Klatt D, Magin R. Yin Z. Title: Concurrent Acquisition of Diffusion Tensor Imaging (DTI) and 3D Magnetic Resonance Elastography (MRE) Information: DTI-MRE. Provisional Patent Application filed on 05/12/2014; UIC OTM Identification number 2014-152 (DH152).

Yasar TK, Klatt D, Royston TJ, Magin RL. Title: Unified Sampling Time Interval Modulation (ULTIMATE MRE). Intellectual Property Disclosure filed on 8/28/2014; UIC OTM Identification number 2015-023 (DI023).

Klatt D, Magin R. Yin Z. Title: Simultaneous Acquisition of Diffusion Magnetic Resonance Imaging and Magnetic Resonance Elastography: Diffusion-MRE (dMRE). Provisional Patent Application filed on 03/16/2015; UIC OTM Identification number 2014-040 (DH039).

#### **HONORS AND AWARDS**

- |      |                                                                                                                                                                                    |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2006 | Best poster at the 9th meeting of the German section of the International Society for Magnetic Resonance in Medicine (ISMRM), Jena, Germany (Abstract # P9).                       |
| 2014 | Magna cum laude ISMRM Merit Award at the 22 <sup>nd</sup> Annual Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM), Milan, Italy (Abstract # 87).    |
| 2015 | Summa cum laude ISMRM Merit Award at the 23 <sup>rd</sup> Annual Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM), Toronto, Canada (Abstract #108). |
| 2016 | HOPE: Honoring Our Professors' Excellence Award presented by UIC Campus Housing, Chicago, IL.                                                                                      |
| 2017 | College of Engineering Faculty Award for Advising, UIC, Chicago, IL.                                                                                                               |
| 2019 | College of Medicine Departmental Rising Star Award, UIC, Chicago, IL.                                                                                                              |
| 2019 | Poster Award for Best Computational Approach at ASME International Mechanical Engineering Congress and Exposition in Salt Lake City, Utah (Abstract # 13710).                      |
| 2021 | College of Engineering Research Award, UIC, Chicago, IL.                                                                                                                           |
| 2021 | College of Engineering Teaching Award, UIC, Chicago, IL.                                                                                                                           |
| 2022 | College of Engineering Faculty Award for Advising, UIC, Chicago, IL.                                                                                                               |

#### **RESEARCH SUPPORT**

##### *Ongoing Research Support*

**Title:** Transformation Elastography.

Award# 1852691 (PI: T. Royston)

07/01/19 – 06/30/22

0.5 summer

NSF

\$422,094.

In this research a new strategy, Transformation Elastography, is planned that involves spatial distortion in order to make an anisotropic inversion problem become isotropic. Development and experimental validation of this new strategy requires inverting the algorithm and extending initial developments from two- to three-dimensional problems with inhomogeneity.

Role: Co-I.

**Title:** Adding MRE to DTI for free.

1R21EB026238-01A1 (PI: Dieter Klatt) 09/18/18-06/30/21 1.3 summer  
NIH \$478,974.

This project aims to implement *in vivo* human brain DTI-MRE on a 3.0T human scanner and to validate the technique in a volunteer study by comparing the resulting values of diffusion and mechanical properties with the values obtained in conventional acquisitions.

My role: PI.

**Title:** Noninvasive tools for assessing muscle structure and function.

1R01AR071162-01 (PIs: E. Perreault, T. Royston) 07/09/16 – 08/31/21 1.2 summer  
NIH \$2,804,204  
(UIC subcontract: \$712,000)

While many therapeutic interventions target joint stiffness, there are no validated methods to directly quantify the contributions of individual muscles independently from the other factors influencing the mechanics of a joint. This is a major obstacle to identifying, treating, and monitoring muscle contributions to stiffness related impairments. This proposal will determine if a relatively new clinical imaging technology, known as ultrasound-based elastography, can be used for this purpose.

Role: Co-I.

### *Completed Research Support*

**Title:** Pathogenic Role of hepatocyte-derived high-mobility group box1 isoforms as potential therapeutic targets to prevent and/or resolve liver fibrosis.

1R01DK111677-01A1 (PI: Natalia Nieto) 07/01/17 – 06/30/19 0.6 summer  
(in year 2)  
NIH \$2,015,754

The goal of this project is to elucidate how group box1 isoforms participate in the progression of liver fibrosis. These studies will contribute to design new therapies to prevent and/or reverse liver fibrosis.

My role: Co-I

**Title:** Acquisition of Hyperpolarized Gas System for Lung MR Imaging.

1S10OD021745-01A1 (PI: Thomas Royston) 04/01/17 – 03/31/18 0.5 calendar (no pay)  
NIH \$479,745

Subproject: Hyperpolarized Xenon Magnetic Resonance Imaging of Murine Brain.

In this sub-project we intend to implement HP 129Xe imaging of *in vivo* murine brain and to assess the diagnostic potential of the technique in a murine model of ischemic stroke.

Role: Co-I.

**Title:** Low maintenance table-top magnetic resonance imaging system with elastography functionality for undergraduate and graduate teaching and research.

UIC College of Engineering Seed and Annual Funds.

(PI: Dieter Klatt) 07/16-06/17 1.0 calendar (no pay)  
UIC \$40,000.

Role: PI.

**Title:** F<sup>3</sup>: Force Feedback for the Fingertips.

IIS-1302517 (PIs: E. Colgate, T. Royston) 06/01/13 – 05/31/17 0.5 summer  
NSF \$1,200,000

The purpose of our proposed research is to bring true force feedback to touch screens. We call this force feedback for fingertips (F<sup>3</sup>). From a technological standpoint, the challenge is essentially to make the fingertip into the rotor of a motor, and the top surface of the touch screen into a stator.

Role: Co-I.

**Title:** MR Elastography for Early Diagnosis of Alzheimer's Disease.

UIC Chancellor's Discovery Fund for Multidisciplinary Research.

(PIs: Dieter Klatt, Orly Lazarov) 06/14-05/16 1.2 calendar (no pay)

UIC \$ 40,000

The purpose of this research project is to investigate the early diagnostic potential of MRE in a mouse model of familial Alzheimer's Disease.

Role: PI.

**Title:** Validation of in vivo SLIM - MR Elastography.

UIC Chancellor's Innovation Fund – Proof of Concept Award.

(PI: Dieter Klatt) 08/14-07/15 1.5 calendar (no pay)

UIC \$50,148

The purpose of this research project is to validate rapid, multidirectional SLIM-MRE in vivo.

Role: PI.

**Title:** Phase-contrast based MRI for the measurement of volumetric strain induced by harmonic waves:

Method development and feasibility study.

UIC Campus Research Board

(PI: Dieter Klatt) 01/13-12/13 1.5 calendar (no pay)

UIC \$20,000

This research project extended the accessibility of the field of phase contrast-based MRI towards compressional tissue properties and represents a first step towards the noninvasive measurement of pressure within human organs.

Role: PI.

#### **INVITED TALKS**

Klatt D. Magnetic Resonance Elastography: Technical Development and Applications. Research Conference Series of the Pulmonary Division, Department of Medicine, University of Illinois at Chicago. Chicago, IL; 10/17/2019.

Klatt D. Magnetic Resonance Elastography for the Assessment of the Mechanical Properties of Skeletal Muscle. 21<sup>st</sup> Congress of the International Society of Electrophysiology and Kinesiology (ISEK). Workshop IV: Investigation of muscle physiology, force generation and tissue dynamics through imaging. Challenges for estimating muscle force and properties. Chicago, IL; 07/05/2016.

Klatt D. Strategies for Multi-directional Motion Encoding in MR Elastography. Invited Talk at Mini-Symposium on Magnetic Resonance Elastography in Man and Mouse at Charite-University Medicine, Berlin, Germany; 05/19/2014.

Klatt D. Magnetic Resonance Elastography: A remote palpation technique. Seminar – AbbVie Inc. North Chicago, IL; 04/02/2014.

Klatt D. Magnetic Resonance Elastography: A remote palpation technique. Seminar – The University of Illinois College of Medicine at Rockford. Rockford, IL; 10/14/2013.

Klatt D. Magnetic Resonance Elastography: Methodology and Applications. Seminar – Dept. Bioengineering at Penn State University; 09/26/2012.

Klatt D. Multifrequency Magnetic Resonance Elastography: Methods and In Vivo Applications. Seminar – Dept. Mechanical Engineering & Materials Science at Washington University St. Louis. St. Louis, MO; 09/13/2012.

Klatt D. Multifrequency Magnetic Resonance Elastography: Methods and In Vivo Applications. Seminar – Dept. Biomechanics at Rush University. Chicago, IL; 06/06/2012.

Klatt D. Multifrequency Magnetic Resonance Elastography: Methods and In Vivo Applications. Seminar – Dept. of Biomedical Engineering at The University of Illinois at Chicago. Chicago, IL; 02/20/2012.



Klatt D. Multifrequency Magnetic Resonance Elastography: Methods and In Vivo Applications. Seminar – Center for Translational Imaging at Northwestern University. Chicago, IL; 02/16/2012.

## PUBLICATIONS

### ***Peer-reviewed Journal Publications***

Salehabadi, M., Crutison, J., Klatt, D., & Royston, T. J. Decoupling Uniaxial Tensile Prestress and Waveguide Effects From Estimates of the Complex Shear Modulus in a Cylindrical Structure Using Transverse-Polarized Dynamic Elastography.. *Journal of Engineering and Science in Medical Diagnostics and Therapy* 2023; 6(2), 021003. <https://doi.org/10.1115/1.4056411>.

Brinker, S. T., & Klatt, D. MR elastography of soft porous tissue phantoms with varying macrostructure and pore pressure. *Journal of the Mechanics and Physics of Solids* 2023; 174, 105243. <https://doi.org/10.1016/j.jmps.2023.105243>.

Reiter, R., Zampini, M. A., Guidetti, M., Majumdar, S., Royston, T. J., & Klatt, D. Tabletop MR elastography for investigating effects of the freeze-thaw cycle on the mechanical properties of biological tissues. *Journal of the Mechanical Behavior of Biomedical Materials* 2022; 135, 105458. <https://doi.org/10.1016/j.jmbbm.2022.105458>.

Sun M, Son T, Crutison J, Guaiquil V, Lin S, Nammari L, Klatt D, Yao X, Rosenblatt M, Royston T. Optical Coherence Elastography for assessing the influence of intraocular pressure on elastic wave dispersion in the cornea. *Journal of the Mechanical Behavior of Biomedical Materials* 2022; 128: 105100. <https://doi.org/10.1016/j.jmbbm.2022.105100>.

Reiter R, Majumdar S, Kearney S, Kajdacsy-Balla A, Macias V, Crivellaro S, Abern M, Royston T, Klatt D. Investigating the heterogeneity of viscoelastic properties in prostate cancer using MR elastography at 9.4T in fresh prostatectomy specimens. *Magnetic Resonance Imaging* 2022; 87: 113-118. <https://doi.org/10.1016/j.mri.2022.01.005>.

Zampini MA, Guidetti M, Royston TJ, Klatt, D. Measuring viscoelastic parameters in Magnetic Resonance Elastography: a comparison at high and low magnetic field intensity. *Journal of the Mechanical Behavior of Biomedical Materials* 2021; 120: 104587. <https://doi.org/10.1016/j.jmbbm.2021.104587>.

Reiter R, Shahryari M, Tzschätzsch H, Klatt D, Siegmund B, Hamm B, Braun J, Sack I, Asbach P. Spatial heterogeneity of hepatic fibrosis in primary sclerosing cholangitis vs. viral hepatitis assessed by MR elastography. *Scientific Reports* 2021; 11: 9820. <https://doi.org/10.1038/s41598-021-89372-4>.

Majumdar S, Klatt D. Longitudinal study of sub-regional cerebral viscoelastic properties of 5XFAD Alzheimer's disease mice using multifrequency MR elastography. *Magnetic Resonance in Medicine* 2021; 86(1): 405-414. <https://doi.org/10.1002/mrm.28709>.

Reiter R, Majumdar S, Kearney S, Kajdacsy-Balla A, Macias V, Crivellaro S, Caldwell B, Abern M, Royston T, Klatt D. Prostate cancer assessment using MR elastography of fresh prostatectomy specimens at 9.4 T. *Magnetic Resonance in Medicine* 2020; 84 (1): 396-404. <https://doi.org/10.1002/mrm.28127>.

Reiter R, Tzschätzsch H, Schwahofer F, Haas M, Bayerl C, Mucche M, Klatt D, Majumdar S, Uyanik M, Hamm B, Braun J, Sack I, Asbach P. Diagnostic Performance of Tomoelastography of the Liver and Spleen for Staging Hepatic Fibrosis. *European Radiology* 2020; 30 (3): 1719-1729. <https://doi.org/10.1007/s00330-019-06471-7>.

Palnitkar H, Reiter RO, Majumdar S, Lewis P, Hammersley M, Shah RN, Royston TJ, Klatt D. An investigation into the relationship between inhomogeneity and wave shapes in phantoms and ex vivo skeletal muscle using Magnetic Resonance Elastography and Finite Element Analysis. *Journal of the Mechanical Behavior of Biomedical Materials* 2019; 98 (October): 108-120. <https://doi.org/10.1016/j.jmbbm.2019.06.007>.

Guidetti M, Lorgna G, Hammersly M, Lewis P, Klatt D, Vena P, Shah R, Royston TJ. Anisotropic Composite Material Phantom to Improve Skeletal Muscle Characterization Using Magnetic Resonance Elastography. *Journal of the Mechanical Behavior of Biomedical Materials* 2019; 89: 199-208.

Brinker ST, Kearney SP, Royston TJ, Klatt D. Simultaneous magnetic resonance and optical elastography acquisitions: Comparison of displacement images and shear modulus estimations using a single vibration source. *Journal of the Mechanical Behavior of Biomedical Materials* 2018; 84: 135-144. <https://doi.org/10.1016/j.jmbbm.2018.05.010>.

Reiter R, Wetzel M, Hamesch K, Strnad P, Asbach P, Haas M, Siegmund B, Trautwein C, Hamm B, Klatt D, Braun J, Sack I, Tzschätzsch H. Comparison of non-invasive assessment of liver fibrosis in patients with alpha1-antitrypsin deficiency using magnetic resonance elastography (MRE), acoustic radiation force impulse (ARFI) Quantification, and 2D-shear wave elastography (2D-SWE). *PLoS One* 2018; 13(4): e0196486. doi: 10.1371/journal.pone.0196486.

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