

Hendrik Mattern

Personal details

Date of Birth 21/06/1989
Nationality German
Personal status married, one child

Education

- 02/2015– **PhD student**, *Otto-von-Guericke-University, Magdeburg*.
12/2019
 - Title: *Prospective motion correction for high resolution gradient recalled echo-based magnetic resonance imaging at ultra-high field*
 - Examiners:
 - Prof. Dr. rer. nat. Georg Rose
 - Prof. Dr. rer. nat. habil. Oliver Speck
 - Prof. Dr. rer. nat. Nikolaus Weiskopf
 - Grade: summa cum laude
 - DOI: 10.10.25673/32326
- 04/2012– **Master of Science**, *Otto-von-Guericke-University, Magdeburg*.
01/2015
 - Medical Systems Engineering
 - Final grade: 1.2
 - Master thesis:
 - Title: *Analysis of a Prospective Motion Correction System for Magnetic Resonance Imaging*
 - Supervisor: Prof. Dr. rer. nat. habil. Oliver Speck
 - Grade: 1.1
- 10/2007– **Bachelor of Science**, *Otto-von-Guericke-University, Magdeburg*.
06/2012
 - Electrical Engineering and Information Technology
 - Final grade: 2.5
 - Bachelor thesis:
 - Title: *Blind Source Separation for Electrocardiography during Magnetic Resonance Imaging*
 - Supervisor: Prof. Dr. rer. nat. Georg Rose
 - Grade: 1.3

Professional experience

- 05/2022– **Visiting researcher**, *Deutsches Zentrum für Neurodegenerative Erkrankungen (DZNE)*,
Today Magdeburg.
- 02/2015– **Researcher**, *Otto-von-Guericke-University, Magdeburg*.
Today
 - Prospective motion correction for high resolution MRI at ultra-high field
 - Sequence development in IDEA
 - Ultra-high resolution Time-of-Flight angiography and quantitative susceptibility mapping
 - Quantitative assessment and pattern analysis of the cerebral vasculature
- 01/2019– **Parental leave**.
03/2019

- 01/2011– **Programmer**, *G&K Medizinische Systeme*, Magdeburg.
12/2012 Development and programming of medical software in Delphi
Support in quality management and certification of medical software
Installation and support for a PACS and RIS

Awards & stipends

- 2022 Educational Stipend for ISMRM Workshop on Neurofluids: Anatomy, Physiology & Imaging, Rome
- 2021 ESMRMB Early Career Fellowship
- 2021 Young scientist at the 70th Lindau Nobel Laureate Meeting
- 2020 Young scientist at the Lindau Nobel Laureate Meetings' Online Sciences Days
- 2020 Merit Award, 36th Annual Scientific Meeting ESMRMB, online meeting
- 2020 Magma cum laude award, 28th Annual Meeting ISMRM, virtual meeting
- 2019 Participant of the 9th Nachwuchsakademie Medizintechnik (NAMT-2019) "Quantitative MRI as a key modality in life sciences"
- 2019 Magma cum laude award, 27th Annual Meeting ISMRM, Montreal
- 2018 Educational Stipend for Joint Annual Meeting ISMRM-ESMRMB 2018, Paris
- 2017 Educational Stipend for 25th Annual Meeting ISMRM, Honolulu
- 2017 Summa cum laude award, 25th Annual Meeting ISMRM, Honolulu
- 2016 Educational Stipend for 24th Annual Meeting ISMRM, Singapore
- 2016 Best Poster Award, 7th Annual Scientific Symposium Ultrahigh Field Magnetic Resonance, Berlin

Grants and funding

- G1 Quantification of perivascular spaces in neuropsychiatric long-COVID/post-COVID (LC/PC) syndrome as a biomarker for persisting perivascular inflammation and disease trajectories (JE2/TP5)
by the BMBF as part of the start phase for the German Center for Mental Health (DZPG)
01.07.2023-30.06.2025 as Co-PI
- G2 Vascular resistance and resilience in ALS – an ultrahigh-resolution 7T MRI study of the motor cortex
DFG MA 9235/3-1
01.10.2022-30.09.2024 as PI
- G3 MD-DARS: MagDeburger DrAinage-Reserve-Score for patient-specific, MRI-based prediction of perivascular drainage in the Alzheimer's continuum
by the Deutsche Alzheimer Gesellschaft (DAG) e.V.
01.10.2022-30.09.2024 as Co-PI
- G4 Vessel distance mapping: Quantification of subcortical arterial and venous vascular patterns to study their interdependency
DFG MA 9235/1-1 (NAMT9)
01.07.2020-30.06.2021 as PI

Book chapters

- B1 **Mattern H**, Lüsebrink F, Speck O
High Resolution Structural Brain Imaging published in *Motion Correction in MR: Correction of Position, Motion, and Dynamic Field Changes* edited by van der Kouwe A, Andre J, 2022, ISBN: 9780128244609

Journal publications

- J1 Morton L, Arndt P, Garza AP, Henneicke S, **Mattern H**, Gonzalez M, Dityatev A, Yilmazer-Hanke D, Schreiber S, Dunay IR.
Spatio-temporal dynamics of microglia phenotype in human and murine cSVD: impact of acute and chronic hypertensive states
Acta Neuropathologica Communications 2023
DOI: 10.1186/s40478-023-01672-0
- J2 Sangal M, Anikeeva M, Priese CS, **Mattern H**, Hövener J-B, Speck O.
MR based magnetic susceptibility measurements of 3D printing materials at 3 Tesla
Journal of Magnetic Resonance Open 2023
DOI:10.1016/j.jmro.2023.100138
- J3 Garcia-Garcia B*, **Mattern H***, Vockert N, Yakupov R, Schreiber F, Spallazzi M, Perosa V, Haghikia A, Speck O, Düzel E, Maass A, Schreiber S.
Vessel Distance Mapping: A novel methodology for assessing vascular-induced cognitive resilience
NeuroImage 2023
DOI:10.1016/j.neuroimage.2023.120094
***equal contribution**
- J4 Schreiber S, Bernal J, Arndt P, Schreiber F, Müller P, Morton L, Braun-Dullaeus RC, Valdés-Hernández MC, Duarte R, Wardlaw JM, Meuth SG, Mietzner G, Vielhaber S, Dunay IR, Dityatev A*, Jandke S*, **Mattern H***.
Brain Vascular Health in ALS Is Mediated through Motor Cortex Microvascular Integrity
Cells 2023
DOI:10.3390/cells12060957
***equal contribution**
- J5 Perosa V, Rotta J, Yakupov R, Kuijf HJ, Schreiber F, Oltmer JT, **Mattern H**, Heinze HJ, Düzel E, Schreiber S.
Implications of quantitative susceptibility mapping at 7 Tesla MRI for microbleeds detection in cerebral small vessel disease
Frontiers in Neurology 2023
DOI: 10.3389/fneur.2023.1112312
- J6 Spitz L, Gaidzik F, Stucht D, **Mattern H**, Preim B, Saalfeld S.
A hybrid hierarchical strategy for registration of 7T TOF-MRI to 7T PC-MRI intracranial vessel data
International Journal of Computer Assisted Radiology and Surgery 2023
DOI: 10.1007/s11548-023-02836-y
- J7 Chatterjee S, Prabhu L, Pattadkal M, Bortsova G, Sarasaen C, Dubost F, **Mattern H**, de Bruijne M, Speck O, Nürnberger A.
DS6: Deformation-Aware Semi-Supervised Learning: Application to Small Vessel Segmentation with Noisy Training Data
Journal of Imaging 2022
DOI: 10.3390/jimaging8100259
- J8 Bollmann S, **Mattern H**, Bernier M, Robinson SR, Park D, Speck O, Polimeni JR.
Imaging of the pial arterial vasculature of the human brain in vivo using high-resolution 7T time-of-flight angiography
eLife, 2022
DOI: 10.7554/eLife.71186

- J9 Perosa V, Arts T, Assmann A, **Mattern H**, Speck O, Oltmer J, Heinze H-J, Düzel E, Schreiber S, Zwanenburg JJM.
Pulsatility index in the basal ganglia arteries increases with age in elderly with and without cerebral small vessel disease
American Journal of Neuroradiology, 2022
DOI: 10.3174/ajnr.A7450
- J10 Iamshchinina P, Kaiser D, Yakupov R, Hänel D, Sciarra A, **Mattern H**, Lüsebrink F, Düzel E, Speck O, Weiskopf N, Cichy R.
Perceived and mentally rotated contents are differentially represented in cortical layers of V1
Communications Biology, 2021
DOI: 10.1038/s42003-021-02582-4
- J11 Sciarra A, **Mattern H**, Yakupov R, Chatterjee S, Oeltze-Jafra S, Speck O.
Quantitative Evaluation of Prospective Motion Correction in Healthy Subjects at 7T MRI
Magnetic Resonance in Medicine, 2021
DOI: 10.1002/mrm.28998
- J12 Vockert N, Perosa V, Ziegler G, Schreiber F, Priester A, Spallazzi M, Garcia-Garcia B, Aruci M, **Mattern H**, Haghikia A, Düzel E, Schreiber S, Maass A.
Hippocampal vascularization patterns exert local and distant effects on brain structure but not vascular pathology in old age
Brain Communications, 2021
DOI: 10.1093/braincomms/fcab127
- J13 Lüsebrink F, **Mattern H**, Yakupov R, Acosta-Cabronero J, Ashtarayeh M, Oeltze-Jafra S, Speck O.
Comprehensive ultrahigh resolution whole brain in vivo MRI dataset as a human phantom
Scientific Data, 2021
DOI: 10.1038/s41597-021-00923-w
- J14 **Mattern H**, Knoll M, Lüsebrink F, Speck O.
Chemical sHift bAseD pRospective k-Space anonyMizAtion (CHARISMA)
Magnetic Resonance in Medicine, 2020
DOI: 10.1002/mrm.28460
- J15 Gretsch F*, **Mattern H***, Gallichan D, Speck O.
Fat navigators and Moiré phase tracking comparison for motion estimation and retrospective correction
Magnetic Resonance in Medicine, 2019
DOI: 10.1002/mrm.27908
***equal contribution**
- J16 Betts MJ, Kirilina E, Otaduy M, Ivanov D, Acosta-Cabronero J, Callaghan M, Lambert C, Cardenas-Blanco A, Pine K, Passamonti L, Loane C, Keuken MC, Trujillo P, Lüsebrink F, **Mattern H**, Liu K, Priovoulos N, Fließbach K, Dahl MJ, Maass A, Madelung CF, Meder D, Ehrenberg AJ, Speck O, Weiskopf N, Dolan R, Inglis B, Tosun D, Morawski M, Zucca ZA, Siebner HR, Mather M, Uludag K, Heinsen H, Poser BA, Howard R, Zecca L, Rowe JB, Grinberg LT, Jacobs HIL, Düzel E, Hämmerer D.
Locus coeruleus imaging as a biomarker for noradrenergic dysfunction in neurodegenerative diseases
Brain, 2019
DOI: 10.1093/brain/awz193

- J17 **Mattern H**, Sciarra A, Lüsebrink F, Acosta-Cabronero J, Speck O.
Prospective motion correction improves high resolution quantitative susceptibility mapping at 7T
Magnetic Resonance in Medicine, 2018
DOI: 10.1002/mrm.27509
- J18 Acosta-Cabronero J, Milovic C, **Mattern H**, Tejos C, Speck O, Callaghan MF.
A robust multi-scale approach to quantitative susceptibility mapping
NeuroImage, 2018
DOI: 10.1016/j.neuroimage.2018.07.065
- J19 Milovic C, Acosta-Cabronero J, Pinto JM, **Mattern H**, Andia M, Uribe S, Tejos C.
A new discrete dipole kernel for quantitative susceptibility mapping
Magnetic resonance imaging, 2018
DOI: 10.1016/j.mri.2018.04.004
- J20 **Mattern H**, Sciarra A, Godenschweger F, Stucht D, Lüsebrink F, Rose G, Speck O.
Prospective motion correction enables highest resolution time-of-flight angiography at 7T
Magnetic Resonance in Medicine, 2017
DOI: 10.1002/mrm.27033
- J21 Lüsebrink F, Sciarra A, **Mattern H**, Yakupov R, Speck O.
T1-weighted in vivo human whole brain MRI dataset with an ultrahigh isotropic resolution of 250 μ m
Scientific Data, 2017
DOI: 10.1038/sdata.2017.32
- J22 Yarach U, In MH, Chatnuntawech I, Bilgic B, Godenschweger F, **Mattern H**, Sciarra A, Speck O.
A Model-based Iterative Reconstruction for Single-shot EPI at 7T
Magnetic Resonance in Medicine, 2017
DOI: 10.1002/mrm.26633

Letters & comments

- L1 Schreiber S, Arndt P, Meuth SG, Dityatev A, **Mattern H**
Brain microvascular disease and functional network connectivity – a call for a stage-based approach
Brain Communications, 2023
DOI:10.1093/braincomms/fcad135
- L2 Schreiber S*, John A-C*, Werner C, Vielhaber S, Heinze H-J, Speck O, Würfel J, Behme D*, **Mattern H***
Counteraction of inflammatory activity in CAA-related subarachnoid hemorrhage
Journal of Neurology, 2022
DOI:10.1007/s00415-022-11437-9
***equal contribution**
- L3 Schreiber S, **Mattern H**
Semi-automated Segmentation and Quantification of Perivascular Spaces at 7 Tesla in COVID-19
Qeios, 2022
DOI: 10.32388/Z0 HEWQ

Workshops & Challenges

- X1 *SMILE-UHURA : Small Vessel Segmentation at Mesoscopic ScaLE from Ultra-High ResolUtion 7T Magnetic Resonance Angiograms*
Organizers: Chatterjee S, **Mattern H**, Dubost F, Schreiber S, Nürnberger A, Speck O.
Conference: IEEE - ISBI 2023, Cartagena de Indias, Colombia / hybrid
DOI: 10.7303/syn47164761 , Challenge homepage

Conference papers

- C1 Chatterjee S, Prabhu K, Pattadkal M, Bortsova G, Sarasaen C, Dubost F, **Mattern H**, de Bruijne M, Speck O, Nürnberger A
DS6, Deformation-aware Semi-supervised Learning: Application to Small Vessel Segmentation with Noisy Training Data
Medical Imaging with Deep Learning, 2021
Link to online version
- C2 Preeth CJ, **Mattern H**, Juneja M, Vogt J, Speck O, Hartkens T
Entropy based SVM Classifier for Automatic Detection of Motion Artifacts in Clinical MRI
Bildverarbeitung für die Medizin, 2020
DOI: 10.1007/978-3-658-29267-6 _23
- C3 Thoma N, Odenbach R, **Mattern H**, Friebe M
Remotely controllable phantom rotation system for ultra-high field MRI to improve Cross Calibration
Current Directions in Biomedical Engineering, 2019
DOI: 10.1515/cdbme-2019-1570538325

Conference abstracts

- A1 **Mattern H**, Schreiber S, Speck O; *Combining vessel distance mapping and non-negative matrix factorization to identify arterial and venous patterns in the putamen*; 2023 ICP Network Meeting Utrecht, November 2023, Utrecht
- A2 Mietzner G, Schreiber F, Lümckemann L, Brüggemann J, Sciarra A, Knoll C, Kuehn E, Speck O, Schreiber S, **Mattern H**; *Enabling in vivo assessment of motor cortex vessel dominance patterns using 7T MRI and vessel distance mapping*; 39th Annual Scientific Meeting of European Society for Magnetic Resonance in Medicine and Biology. ESMRMB, October 2023, Bern; DOI: 10.1007/s10334-023-01108-9
- A3 Fuchs E **Mattern H**, Vockert N, Arndt P, Neumann K, John A-C, Kühn E, Maass A, Düzel E, Schreiber S, Behme D; *Aging, cognition, and cerebral small vessel disease correlate with MR-based patterns of blood brain barrier breakdown*; 58. Jahrestagung der Deutschen Gesellschaft für Neuroradiologie e.V. Neurorad, October 2023, Kassel
- A4 Stoll S, Lüsebrink F, Schwarzkopf DS, **Mattern H**, Liu P, Kühn E; *Modeling Population Receptive Fields of the Fingertips in Human Primary Somatosensory Cortex*; Touch 2023: Festival of Touch, July 2023, Marseille
- A5 Behrenbruch N, Incesoy E, Bernal J, Menze I, Vockert N, Kleineidam L, Buerger K, Wolfsgruber S, Spottke A, Fleissbach K, Laske C, Perneczky R, Peters O, Priller J, Schneider A, Heneka MT, Wagner M, Teipel S, Wiltfang J, Speck O, Perosa V, Yakupov R, Jessen F, Düzel E, **Mattern H**, Schreiber S, Ziegler G, Maass A; *Altered Blood Oxygen Level Dependent Signal Fluctuations in the Spectrum of Alzheimer's Dementia and in Patients with White Matter Hyperintensities*; Alzheimer's Association International Conference, July 2023, Amsterdam
- A6 Stoll S, Lüsebrink F, Schwarzkopf DS, **Mattern H**, Liu P, Kühn E; *Modeling Population Receptive Fields of the Fingertips in Human Primary Somatosensory Cortex*; Touch 2023: Festival of Touch, July 2023, Marseille

- A7 **Mattern H**, Speck O; *The potential of ultra-high resolution 7T T2-weighted TSE to assess the glymphatic system's structure*; 31st Annual Meeting of International Society of Magnetic Resonance in Medicine. ISMRM, June 2023, Toronto
- A8 **Mattern H**, Lüsebrink F, Speck O; *The effect of imaging parameters, aging, and circadian rhythm on Freesurfer's estimates: A single subject study at 7T over 7 years*; 31st Annual Meeting of International Society of Magnetic Resonance in Medicine. ISMRM, June 2023, Toronto
- A9 Oltmer J, Beck J, **Mattern H**, Yakupov R, Auger C, Düzel E, van Veluw S, Schreiber S, Perosa V; *Enlarged Perivascular Spaces in the Basal Ganglia Surround Arteries, not Veins*; 31st Annual Meeting of International Society of Magnetic Resonance in Medicine. ISMRM, June 2023, Toronto
- A10 Chatterjee S, Gaidzik F, Sciarra A, **Mattern H**, Janiga G, Speck O, Nürnberger A, Pathiraja S; *Exploiting the inter-rater disagreement to improve probabilistic segmentation*; 31st Annual Meeting of International Society of Magnetic Resonance in Medicine. ISMRM, June 2023, Toronto
- A11 Chatterjee S, Chintalapati KV, Radhakrishna C, Kumar SCHR, Sutrave R, **Mattern H**, Speck O, Nürnberger A; *Enhancing Vessel Continuity in Deep Learning based Segmentation using Maximum Intensity Projection as Loss*; 31st Annual Meeting of International Society of Magnetic Resonance in Medicine. ISMRM, June 2023, Toronto
- A12 Besteher B, Kantola J, Li M, Bernal J, Machnik M, Reuken P, Finke K, Opel N, Kiviniemi V, **Mattern H**, Walter M; *From inflammation to degeneration – Enlarged perivascular spaces and glymphatic clearance in neuropsychiatric long-COVID syndrome*; Psychoimmunology Expert Meeting 2023, April 2023, Ulm; DOI: 10.1016/j.jadr.2023.100522
- A13 John A-C, Schreiber S, Werner C, Vielhaber S, Heinze H-J, Speck O, Würfel J, Behme D, **Mattern H**; *Evolution of cortical superficial siderosis in a 75-year-old patient with cerebral amyloid angiopathy*; 8th International Cerebral Amyloid Angiopathy (CAA) Conference, November 2022, Perth
- A14 Fuchs E, **Mattern H**, John A-C, Zubel S, Vielhaber S, Düzel E, Maass A, Kühn E, Schreiber S, Behme D; *Investigation of Blood Brain Barrier Breakdown and Early Clearance in Patients with Cerebral Small Vessel Disease using Contrast Enhanced MRI*; 57. Jahrestagung der Deutschen Gesellschaft für Neuroradiologie e.V. Neurorad, October 2022, Kassel
- A15 John A-C, Schreiber S, Werner C, Vielhaber S, Heinze H-J, Speck O, Würfel J, Behme D, **Mattern H**; *Entwicklung einer kortikalen superfiziellen Siderose bei einer 75-jährigen Patientin mit zerebraler Amyloidangiopathie (CAA)*; 57. Jahrestagung der Deutschen Gesellschaft für Neuroradiologie e.V. Neurorad, October 2022, Kassel
- A16 **Mattern H**, Speck O; *The potential of ultra-high resolution T2-weighted TSE acquired at 7T to assess structures of the glymphatic system*; ISMRM Workshop on Neurofluids. September 2022, Rome
- A17 Velasquez Vides JR, Speck O, Niendorf T, **Mattern H**; *Development of Freely Available 3D Radial Gradient Echo Sequences and Reconstruction*; 13th Annual Scientific Symposium Ultrahigh Field Magnetic Resonance. September 2022, Berlin
- A18 Garcia-Garcia B, **Mattern H**, Vockert N, Yakupov R, Schreiber F, Spallazzi M, Perosa V, Speck O, Düzel E, Maass A, Schreiber S; *Vessel distance mapping: a novel methodology for assessing vascular-induced cognitive resilience*; Alzheimer's Association International Conference, July 2022, San Diego; DOI: 10.1002/alz.063391
- A19 Ulbrich P, Morton L, Briese M, Lämmlin N, **Mattern H**, Hasanuzzaman M, Westhues M, Garz C, Becker A, Dityatev A, Jandke S, Yilmazer-Hanke D, Sendtner M, Dunay I, Schreiber S; *Stage-dependent responses of vascular and parenchymal cells in the hypertensive rat brain*; 31st European Meeting on Hypertension and Cardiovascular Protection, June 2022, Athens/Hybrid; DOI: 10.1097/01.hjh.0000836812.14897.03

- A20 **Mattern H**, Angenstein F, Mawrin C, Perosa V; *Post mortem study of R2* and vessel distance maps across cortical depth*; Joint Annual Meeting ISMRM-ESMRMB 2022, May 2022, London, UK
- A21 **Mattern H**, Speck O; *Resolution-dependency of arterial and venous density estimates and vessel distance maps in deep gray matter*; Joint Annual Meeting ISMRM-ESMRMB 2022, May 2022, London, UK
- A22 Anikeeva M, Sangal M, Pravdivtseva MS, **Mattern H**, Speck O, Hövener J-B; *Magnetic Resonance Relaxometry and susceptibility of contemporary 3D printing materials*; First International Workshop on Reacting Particle-Gas Systems, June 2022, Bochum, Germany
- A23 Neumann K, Aruci M, Aki C, Günther M, Mistelbauer G, Garcia-Garcia B, Oeltze-Jafra S, Stucht D, **Mattern H**, Speck O, Perosa V, Düzel E, Schreiber S; *Vaskuläre Ursachen kognitiver Defizite bei Patienten mit zerebraler Mikroangiopathie*; Research Days 2021, Magdeburg, Germany
- A24 **Mattern H**; *Vessel distance mapping of the aging subcortical venous vasculature*; 37th Annual Scientific Meeting of European Society for Magnetic Resonance in Medicine and Biology. ESMRMB, October 2021, Online; DOI: 10.1007/s10334-021-00947-8
- A25 Bollmann S, **Mattern H**, Bernier M, Robinson SR, Park D, Speck O, Polimeni JR; *High resolution time-of-flight angiography of the pial arterial vasculature of the human brain in vivo*; 12th Annual Scientific Symposium Ultrahigh Field Magnetic Resonance. September 2021, Berlin, Germany
- A26 **Mattern H**; *Openly available sMall vEsSEL sEgmenTaTion pipelinE (OMELETTE)*; 29th Annual Meeting of International Society of Magnetic Resonance in Medicine. ISMRM, May 2021, virtual meeting
- A27 **Mattern H**, Schreiber S, Speck O; *Vessel distance mapping for deep gray matter structures*; 29th Annual Meeting of International Society of Magnetic Resonance in Medicine. ISMRM, May 2021, virtual meeting
- A28 Iamshchinina P, Kaiser D, Yakupov R, Haenelt D, Sciarra A, **Mattern H**, E. Düzel, Speck O, Weiskopf N, Cichy R; *Perceived and mentally rotated contents are differentially represented in cortical layers of V1*; 20th Annual Meeting Vision Sciences Society, October 2020; DOI: 10.1167/jov.20.11.766
- A29 **Mattern H**, Speck O; *Vessel distance mapping*; 36th Annual Scientific Meeting of European Society for Magnetic Resonance in Medicine and Biology. ESMRMB, September 2020, Online; DOI: 10.1007/s10334-020-00876-y
- A30 **Mattern H**, Knoll M, Lüsebrink F, Speck O; *Chemical sHift bAsed pRospective k-Space anonyMizAtion (CHARISMA)*; 28th Annual Meeting of International Society of Magnetic Resonance in Medicine. ISMRM, August 2020, virtual meeting
- A31 **Mattern H**, Sciarra A, Dünnwald M, Chatterjee S, Müller U, Oeltze-Jafra S, Speck O; *Contrast prediction-based regularization for iterative reconstructions (PROSIT)*; 28th Annual Meeting of International Society of Magnetic Resonance in Medicine. ISMRM, August 2020, virtual meeting
- A32 **Mattern H**, Odenbach R, Thoma N, Godenschweger F, Speck O; *Remotely controllable phantom rotation device for cross-calibration at 7T*; 28th Annual Meeting of International Society of Magnetic Resonance in Medicine. ISMRM, August 2020, virtual meeting
- A33 Lüsebrink F, **Mattern H**, Yakupov R, Oeltze-Jafra S, Speck O; *The human phantom: Comprehensive ultrahigh resolution whole brain in vivo single subject dataset*; 28th Annual Meeting of International Society of Magnetic Resonance in Medicine. ISMRM, August 2020, virtual meeting data available at DOI: 10.24352/UB.OVGU-2020-145
- A34 Sciarra A, Dünnwald M, **Mattern H**, Speck O, Oeltze-Jafra S; *Super-Resolution with Conditional-GAN for MR Brain Images*; 28th Annual Meeting of International Society of Magnetic Resonance in Medicine. ISMRM, August 2020, virtual meeting

- A35 Iamshchinina P, Kaiser D, Yakupov R, Haenelt D, Sciarra A, **Mattern H**, E. Duezel, Speck O, Weiskopf N, Cichy R; *Perceived and mentally rotated contents are differentially represented in cortical layers of V1*; 26th Annual Meeting of the Organization for Human Brain Mapping. OHBM, June 2020, virtual meeting
- A36 Lüsebrink F, **Mattern H**, Oeltze-Jafra S, Speck O; *Beyond high resolution: Denoising during image reconstruction to improve image quality*; 36th Annual Scientific Meeting of European Society for Magnetic Resonance in Medicine and Biology. ESMRMB, October 2019, Rotterdam; DOI: 10.1007/s10334-019-00755-1
- A37 Lüsebrink F, **Mattern H**, Oeltze-Jafra S, Speck O; *Image reconstruction pipeline*; 36th Annual Scientific Meeting of European Society for Magnetic Resonance in Medicine and Biology. ESMRMB, October 2019, Rotterdam; DOI: 10.1007/s10334-019-00756-0
- A38 Thoma N, Odenbach R, **Mattern H**, Friebe M; *Remotely controllable phantom rotation system for ultra-high field MRI to improve Cross-Calibration*; 53rd Annual Conference of the German Society for Biomedical Engineering, September 2019, Frankfurt am Main, Germany
- A39 Lüsebrink F, **Mattern H**, Oeltze-Jafra S, Speck O; *Denoising during image reconstruction to improve image quality of high resolution MR data*; 3rd Brain in Depth Symposium, April 2019, Leipzig, Germany
- A40 **Mattern H**, Acosta-Cabronero J, Speck O; *High resolution imaging of the arterial and venous vasculature in deep gray matter*; 27th Annual Meeting of International Society of Magnetic Resonance in Medicine. ISMRM, May 2019, Montreal, Canada
- A41 Gretsch F, **Mattern H**, Gallichan D, Speck O; *Direct comparison of fat navigators and Moiré phase tracking for retrospective brain motion correction at 7T*; 27th Annual Meeting of International Society of Magnetic Resonance in Medicine. ISMRM, May 2019, Montreal, Canada
- A42 Cardenas-Blanco A, Chen Y, Valdes-Herrera JP, Yakupov R, **Mattern H**, Sciarra A, Berron D, Maass A, Speck O, Düzel E; *Hippocampal subfield segmentation and partial volume effects - reliability assessment*; 27th Annual Meeting of International Society of Magnetic Resonance in Medicine. ISMRM, May 2019, Montreal, Canada
- A43 **Mattern H**, Speck O; *Optimizing Cartesian compressed sensing for ultra-high resolution Time of Flight angiography*; Joint Annual Meeting ISMRM-ESMRMB 2018, June 2018, Paris, France
- A44 Sciarra A, **Mattern H**, Speck O; *Machine learning algorithms for detection of motion artifacts: a general approach*; Joint Annual Meeting ISMRM-ESMRMB 2018, June 2018, Paris, France
- A45 **Mattern H**, Odenbach R, Parsanejad P, Friebe M; *3D-printed MRI marker for personalized interventional applications through T1 and T2 relaxation time matching*; Computer Assisted Radiology and Surgery Congress and Exhibition. CARS, June 2018, Berlin, Germany; DOI: /10.1007/s11548-018-1766-y
- A46 Lüsebrink F, **Mattern H**, Speck O; *Beyond high resolution: A glimpse into the future*; 2nd Brain in Depth Symposium, May 2018, Magdeburg, Germany
- A47 Lüsebrink F, **Mattern H**, Sciarra A, Yakupov R, Speck O; *Ultrahoch aufgelöster T1-gewichteter in vivo MRT Datensatz des gesamten menschlichen Gehirns*; 20th Annual Meeting German Chapter of International Society of Magnetic Resonance in Medicine, November 2017, Göttingen; ISSN: 1863-6365
- A48 **Mattern H**, Sciarra A, Speck O; *Non-iterative, retrospective background suppression in time of flight angiography*; 34th Annual Scientific Meeting of European Society for Magnetic Resonance in Medicine and Biology. ESMRMB, October 2017, Barcelona; DOI: 10.1007/s10334-017-0632-1
- A49 **Mattern H**, Sciarra A, Speck O; *Wavelet entropy: quantifying small-scale head motion artifacts*; 34th Annual Scientific Meeting of European Society for Magnetic Resonance in Medicine and Biology. ESMRMB, October 2017, Barcelona; DOI: 10.1007/s10334-017-0632-1

- A50 **Mattern H**, Lüsebrink F, Speck O; *Ultrahochauflöste MRT des Gehirns mittels prospektiver Bewegungskorrektur*; 52. Jahrestagung der Deutschen Gesellschaft für Neuroradiologie e.V. Neurorad, October 2017, Cologne
- A51 **Mattern H**, Lüsebrink F, Sciarra A, Speck O; *More than meets the eye: Quantitative evaluation of prospective motion correction at 7T*; 25th Annual Meeting of International Society of Magnetic Resonance in Medicine. ISMRM, April 2017, Honolulu, USA
- A52 **Mattern H**, Sciarra A, Godenschweger F, Stucht D, Lüsebrink F, Speck O; *Beyond the biological resolution limit: Prospectively motion corrected Time of Flight angiography at 7T*; 25th Annual Meeting of International Society of Magnetic Resonance in Medicine. ISMRM, April 2017, Honolulu
- A53 Sciarra A, **Mattern H**, Yakupov R, Stucht D, Schulze P, Godenschweger F, Speck O; *Quantitative Evaluation of Prospective Motion Correction for Structural Imaging at 7T*; 25th Annual Meeting of International Society of Magnetic Resonance in Medicine. ISMRM, April 2017, Honolulu
- A54 Cardenas-Blanco A, Berron D, Chen Y, **Mattern H**, Yakupov R, Sciarra A, Speck O, Düzel E; *Impact of Prospective Motion Correction in 7T fMRI Studies*; 25th Annual Meeting of International Society of Magnetic Resonance in Medicine. ISMRM, April 2017, Honolulu
- A55 Rua C, In MH, Yakupov R, **Mattern H**, Costagli M, Symms M, Del Guerra A, Tosetti M, Speck O; *Study of the PSF Distortion Correction for Ultra-High Field BOLD fMRI*; 25th Annual Meeting of International Society of Magnetic Resonance in Medicine. ISMRM, April 2017, Honolulu
- A56 Lüsebrink F, **Mattern H**, Sciarra A, Speck O; *Quantitative and Qualitative Evaluation of Bias Field Correction Methods*; 25th Annual Meeting of International Society of Magnetic Resonance in Medicine. ISMRM, April 2017, Honolulu
- A57 Yarach U, **Mattern H**, Speck O; *Iterative SENSE with Integrated EPI Nyquist Ghost and Distortion Corrections*; 25th Annual Meeting of International Society of Magnetic Resonance in Medicine. ISMRM, April 2017, Honolulu
- A58 **Mattern H**, Acosta-Cabronero J, Sciarra A, Speck O; *Prospectively motion-corrected QSM at 7 Tesla*; 33rd Annual Scientific Meeting of European Society for Magnetic Resonance in Medicine and Biology. ESMRMB, September 2016, Vienna; DOI: 10.1007/s10334-016-0570-3
- A59 **Mattern H**, Sciarra A, Godenschweger F, Stucht D, Lüsebrink F, Speck O; *Beyond high resolution: Prospectively motion corrected Time of Flight angiography with 150 μm isotropic resolution at 7T under SAR constraints*; 28th Annual International Conference of Society of Magnetic Resonance Angiography. SMRA, September 2016, Chicago
- A60 **Mattern H**, Acosta-Cabronero J, Sciarra A, Speck O; *Prospective motion correction for high-resolution QSM*; 4th International Workshop on Quantitative Susceptibility Mapping. September 2016, Graz
- A61 Sciarra A, **Mattern H**, Stucht D, Yakupov R, Schulze P, Godenschweger F, Speck O; *Prospective Motion Correction Applications at 7T*; ITN Network HiMR Final Meeting. June 2016, Magdeburg
- A62 Rua C, Costagli M, Biagi L, Symms M, Cosottini M, Wastling S, Barker G, In MH, Yakupov R, **Mattern H**, Speck O, Del Guerra A, Tosetti M; *Strategies for high-resolution fMRI at 7 Tesla*; ITN Network HiMR Final Meeting. June 2016, Magdeburg
- A63 **Mattern H**, Acosta-Cabronero J, Sciarra A, Speck O; *Prospectively motion corrected QSM-based venograms at 7 Tesla*; 7th Annual Scientific Symposium Ultrahigh Field Magnetic Resonance. June, 2016 Berlin

- A64 **Mattern H**, Sciarra A, Godenschweger F, Stucht D, Lüsebrink F, Speck O; *Prospective motion correction for ultra-high resolution Time of Flight angiography at 7T under SAR constraints*; 24th Annual Meeting of International Society of Magnetic Resonance in Medicine. ISMRM, May 2016, Singapore
- A65 Lüsebrink F, Sciarra A, **Mattern H**, Yakupov R, Speck O; *Beyond High Resolution MPRAGE: In Vivo T1-Weighted Imaging at 7T with 250 μm Isotropic Resolution Using Prospective Motion Correction*; 24th Annual Meeting of International Society of Magnetic Resonance in Medicine. ISMRM, May 2016, Singapore
- A66 Yarach U, **Mattern H**, Sciarra A, Speck O; *Combination of Individual Coil QSM at High Field Strength (7T)*; 24th Annual Meeting of International Society of Magnetic Resonance in Medicine. ISMRM, May 2016, Singapore
- A67 Yarach U, Stucht D, **Mattern H**, Godenschweger F, Speck O; *Gradient Nonlinearity and B0-Induced Distortion Corrections of Prospective Motion Correction Data at 7T MRI*; 24th Annual Meeting of International Society of Magnetic Resonance in Medicine. ISMRM, May 2016, Singapore
- A68 **Mattern H**, Godenschweger F, Sciarra A, Stucht D, Speck O; *Ultra-high resolution Time of Flight angiography at 7T with prospective motion correction under SAR constraints*; 18th Annual Meeting German Chapter of International Society of Magnetic Resonance in Medicine. DS-ISMIR, November 2015, Münster; ISSN: 1863-6365

Supervision of students

- ongoing **jascha Brüggemann**, *Vessel distance mapping to assess vascular resistance and resilience*, PhD thesis, supervisor.
- 2022 **Elnaz Khosroshahi**, *Investigation of vascular contributions to Alzheimer's disease with vessel distance mapping technique*, Master thesis, examiner & supervisor.
- 2020 **Jose Raul Velasquez Vides**, *Development of an freely available 3D radial gradient echo sequence and reconstruction*, Master thesis, examiner & supervisor.
- 2020 **Mahantesh Vishvanath Pattadkal & Kartik Prabhu**, *DS6: Deformation-aware learning for small vessel segmentation with small, imperfectly labeled dataset*, Team project, supervisor.
- 2019 **Ursula Müller**, *Compressed Sensing for high resolution Time of Flight angiographic Ultra High Field Magnetic Resonance Imaging*, Master thesis, examiner & supervisor.
- 2019 **Martin Quitmann**, *Variable k-space averaging of Inversion Recovery Sequences for high-resolution MR images with increased SNR*, Master thesis, examiner & supervisor.
- 2019 **Chandrakanth Jayachandran Preetha**, *Simulation of motion artifacts in magnetic resonance imaging*, Research project, examiner & supervisor.
- 2018 **Ursula Müller**, *Analysis of undersampling patterns for compressed sensing in magnetic resonance imaging*, Research project, examiner & supervisor.

Teaching

- since 2023 **Magnetic Resonance System Engineering**, *Tutor*, course provided to Siemens employees exclusively.
- since 2019 **Basics of Magnetic Resonance**, *Tutor*, winter term.
- since 2018 **Physics for Engineers**, *Tutor*, winter & summer term.

Invited talks

- IT1 *Ultra-high field MRI*, lecture at the 54th annual meeting of the Deutschen Gesellschaft für Medizinische Physik (DGMP), 28.09.2023

- IT2 *Ultra-high field imaging to study the brain's vasculature and structure*, Seminar of the Berlin Ultra High Field Facility, 16.11.2022
- IT3 *Ultra-high resolution structural and vascular MRI*, lecture for British chapter of the ISMRM online series, 14.10.2022
- IT4 *MR vessel imaging oversimplified*, lecture for the developmental psychology course at the University of Innsbruck, 18.05.2022
- IT5 *In-vivo imaging of vascular and (g)lymphatic system of the human brain with MRI*, SynAGE Workshop: Assessment of vascular and (g)lymphatic functions, Magdeburg, 05.05.2022
- IT6 *(f)MRI oversimplified*, lecture for the developmental psychology course at the University of Innsbruck, 16.03.2022
- IT7 *Vessel distance mapping*, Online meeting of the Vascular Research Group, Magdeburg, 27.10.2021
- IT8 *MRI oversimplified*, SynAGE Summer School, Magdeburg, 24.09.2021
- IT9 *High resolution lumen imaging at 7T*, Online meeting of the Vascular Research Group, Magdeburg, 22.01.2021
- IT10 *Robustness and Motion Correction: Hardware and Sequence Solutions*, 36th ESMRMB, Rotterdam, 05.10.2019
- IT11 *Bewegungskorrektur*, DGMP: 54. Arbeitskreistreffen, Erlangen, 23.09.2019
- IT12 *Motion corrected, high resolution MRI of the human anatomy and vasculature*, Max-Planck-Institut für Kognitions- und Neurowissenschaften, Leipzig, 18.07.2019
- IT13 *Prospective Motion Correction*, MR Method Meeting at DZNE, Magdeburg, 08.12.2016
- IT14 *Time-of-Flight Angiography at 7T*, 2nd MR Symposium at LIN, Magdeburg, 05.11.2015

Committee & Memberships

- 2022-2024 Congress Program Committee for the 39th & 40th Annual Meeting of the ESMRMB (trainee observer)
- since 2023 Center for Behavioral Brain Sciences
- since 2021 ESMRMB Early Career Researchers ad hoc Committee
 - o 2021-2023 Member
 - o 2024 Vice-Chair
- 2021-2022 ISMRM Motion Correction Study Group Committee (trainee representative)
- since 2017 DS-ISMRM
- since 2016 ESMRMB
- since 2016 ISMRM

Language skills

German mother tongue

English fluent in speech and writing

Programming skills

since 2012 MATLAB

since 2019 Python

since 2015 C/C++

since 2015 IDEA