

CV – Elmar Laistler

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Elmar Laistler holds an MSc (2005) and PhD (2011) in Physics from Vienna University of Technology and is the head of the Radio Frequency Lab, which he initiated and built up at the Division MR Physics, Center for Medical Physics and Biomedical Engineering at the Medical University of Vienna.

He has established collaboration projects with Austrian, Czech, French, German, Korean, Turkish, UK and US partner institutions, and is teaching Medical Physics.

His research focus lies in hardware development for (ultra-)high field magnetic resonance systems, including electromagnetic simulation, multi-channel and multi-nuclear radio frequency coils, and flexible RF coil technology in particular.

Professional Record

Since 2020	Co-founder of ALSIX GmbH , MedTech startup for MRI hardware
Since 2018	Associate Professor at High Field MR Center (HFMRC), Division MR Physics, Center for Medical Physics and Biomedical Engineering (CMPBME), Medical University of Vienna (MUV), Austria
2015-2018	Assistant Professor at HFMRC, CMPBME, MUV, Austria
Since 2011	Head of Radio Frequency Lab , HFMRC, CMPBME, MUV, Austria
2011 - 2015	University Assistant (post-doc) at HFMRC, CMPBME, MUV, Austria
2010 + 2011	Visiting Scientist , Physikalisch Technische Bundesanstalt, Berlin, Germany
2010 - 2011	University Assistant (post-graduate) at HFMRC, CMPBME, MUV, Austria
2007 - 2010	PhD student at HFMRC, CMPBME, MUV, Austria
2005 - 2006	PhD student at U2R2M, Université Paris Sud, France
2004 - 2005	Master Student at HFMRC, CMPBME, MUV, Austria
2004	Internship at HFMRC, CMPBME, MUV, Austria
2003 + 2004	Internships at Solar cell systems and superconductivity research groups, Atomic Institute of the Austrian Universities, Vienna University of Technology, Austria
2002 + 2003	Internships at Fraunhofer Institute for Solar Energy Systems (ISE), Freiburg, Germany

Grants

2022 - present	Co-PI of Horizon Europe project , collaboration with partners in Turkey, Germany, and the UK " <i>MRITwins – Twinning of Magnetic Resonance Imaging Research Institutes</i> "
2022	Co-author of research grant by the Austrian Society of Senology , " <i>Breast MRI with a flexible radio frequency coil vest: in vivo technical and clinical performance evaluation</i> "
2019 - 2022	PI of Jubiläumsfonds project by Austrian National Bank , collaboration with Massachusetts General Hospital " <i>FlexShim - Flexible RF Coil Array with Local B₀ Shimming for 3 Tesla Breast MRI</i> "
2018 - 2021	PI of ANR/FWF project , collaboration with Université de Lorraine and Université Paris Sud " <i>BRACOIL – Smart bra-shaped MRI breast coil</i> "
2018 - 2020	PI of contract research project " <i>16-channel head coil for canine fMRI studies at 3T</i> "
2018 - 2019	PI of contract research project " <i>Flexible 23-channel RF coil for 3 T</i> "
2017 - 2020	Co-PI and supervisor of a 3-year PhD project grant from Université Paris-Sud
2015 - 2018	PI of FWF project , collaboration with TU Vienna " <i>pULSE – parallel transmit Ultra-fast Local SAR Estimation</i> "
2015 - 2018	Co-PI of FWF project " <i>Integrated Transmission Measurement System for PET/MR Imaging</i> "
2015 - present	Co-PI of contract research project " <i>A coil array for combined TMS/fMRI experiments at 3 T</i> "
2015 - 2016	PI of contract research project " <i>Flexible 23-channel RF coil for 3 T</i> "
2015 - 2016	Co-author of "OeAD WTZ Amadée" international mobility grant France/Austria
2014 - 2018	PI of ANR/FWF project , collaboration with Université Paris-Sud " <i>FLEXAR7 - Multi-purpose flexible coil array for high resolution 7T MRI</i> "
2013 - 2014	PI of "OeAD WTZ Amadée" international mobility grant France/Austria
2011 - 2015	Co-author and work package leader of FFG Research Studio Austria project " <i>Vienna Research Studio for Ultra-High Field Magnetic Resonance Applications</i> "
2011 - 2014	Co-PI and supervisor of a 3-year PhD project grant from Université Paris-Sud
2010 - 2012	Co-author of "KORANET"-grant , collaboration South Korea/Germany/Austria
2010 - 2011	Co-author of "OeAD WTZ Amadée" international mobility grant France/Austria
2007 - 2008	Co-author of "OeAD WTZ Amadée" international mobility grant France/Austria

Publications

35 Peer-reviewed Articles, 1 Patent granted, 1 Patent pending, >150 Peer-reviewed Conference Proceedings
794 citations, $h = 17$ (Google scholar). Corresponding authorships underlined.

1. Guran C-NA, Sladky R, Karl S, Boch M, Laistler E, Windischberger C, Huber L, Lamm C. Validation of a new coil array tailored for dog functional magnetic resonance imaging studies. *eNeuro* 2022; (accepted).
2. Frass-Kriegel R, Broche LM, Ginefri J-C, Ladd ME, Roat S, Sarracanie M, Winkler SAS, Laistler E. Editorial: Innovations in MR hardware from ultra-low to ultra-high field. *Front Phys* 2022; 10:1015289. doi:10.3389/fphy.2022.1015289
3. Rogelj L, Dolenc R, Tomšič MV, Laistler E, Simončič U, Milanič M, Hren R. Anatomically Accurate, High-Resolution Modeling of the Human Index Finger Using In Vivo Magnetic Resonance Imaging. *Tomography* 2022; 8(5), 2347-2359. doi:10.3390/tomography8050196
4. Renner A, Rausch I, Gonzalez JC, Laistler E, Moser E, Jochimsen T, Sattler T, Sabri O, Beyer T, Figl M, Birkfellner W, Sattler B. Technical Note: A PET/MR coil with an integrated, orbiting 511 keV transmission source for PET/MR imaging validated in an animal study. *Medical Physics* 2022; 49:2366–2372. doi:10.1002/mp.15586
5. Beyer T, Bailey DL, Birk UJ, Buvat I, Catana C, Cheng Z, Fang Q, Giove F, Kuntner C, Laistler E, Moscato F, Nekolla SG, Rausch I, Ronen I, Saarakkala S, Thielemans K, van Elmpst W, and Moser E. Medical Physics and Imaging – A Timely Perspective. *Front Phys* 2021; 9:634693. doi:10.3389/fphy.2021.634693.
6. Nohava L, Czerny R, Roat S, Obermann M, Kuehne A, Frass-Kriegel R, Felblinger J, Ginefri J-C, Laistler E. Flexible multi-turn multi-gap coaxial RF coils: design concept and implementation for Magnetic Resonance Imaging at 3 and 7 Tesla. *IEEE TMI* 2021; early access. doi:10.1109/TMI.2021.3051390
7. Roat S, Vít M, Wampl S, Schmid AI, Laistler E. A flexible array for cardiac ^{31}P MR spectroscopy at 7 T. *Front Phys* 2020; 8:92.
8. Gruber B, Rehner R, Laistler E, Zink S. Anatomically Adaptive Coils for MRI – A 6-Channel array for knee Imaging at 1.5 Tesla. *Front Phys* 2020; 8:80.
9. Nohava L, Ginefri J-C, Willoquet G, Laistler E, Frass-Kriegel R. Perspectives in wireless radio frequency coil development for magnetic resonance imaging. *Front Phys* 2020; 8:11.
10. Frass-Kriegel R, Hosseinnzhadian S, Poirier-Quinot M, Laistler E, and Ginefri J-C. Multi-loop radio frequency coil elements for magnetic resonance imaging: Theory, simulation and experimental investigation. *Front Phys* 2020; 7:237.
11. Dolenc R, Laistler E, Milanič M. Assessing spectral imaging of the human finger for detection of arthritis. *Biomed Opt Exp* 2019; 10(12), 6129–6144.
12. Navarro de Lara LI, Frass-Kriegel R, Renner A, Sieg J, Pichler M, Bogner T, Moser E, Beyer T, Birkfellner W, Figl M, Laistler E. Design, Implementation, and Evaluation of a Head and Neck MRI RF Array Integrated with a 511 keV Transmission Source for Attenuation Correction in PET/MR. *Sensors* 2019; 19(5):3297.
13. Aissani S, Laistler E, Felblinger J. MR-Sicherheitsbewertung von aktiven implantierbaren medizinischen Geräten. *Der Radiologe* 2019; 59:869–874.
14. Hosseinnzhadian S, Frass-Kriegel R, Goluch-Roat S, Pichler M, Sieg J, Vít M, Poirier-Quinot M, Darrasse L, Moser E, Ginefri J-C, Laistler E. A flexible 12-channel transceiver array of transmission line resonators for 7 T MRI. *J Magn Reson* 2018; 296:47–59.
15. Renner A, Rausch I, Cal-Gonzales J, Frass-Kriegel R, Navarro de Lara LI, Sieg J, Laistler E, Dungl D, Glanzer M, Moser E, Beyer T, Figl M, Birkfellner W. A head coil system with an integrated orbiting transmission point source mechanism for attenuation correction in PET/MRI. *Phys Med Biol* 2018; 63:225014.
16. Frass-Kriegel R, Navarro de Lara LI, Pichler M, Sieg J, Moser E, Windischberger C, Laistler E. Flexible 23-channel coil array for high-resolution magnetic resonance imaging at 3 Tesla. *PLoS ONE* 2018; 13(11): e0206963.
17. Laistler E, Moser E. Handy Magnetic Resonance Coils. *Nature Biomed Eng* 2018; 2(8):557–558.
18. Goluch S, Frass-Kriegel R, Meyerspeer M, Pichler M, Sieg J, Gajdošik M, Krššák M, Laistler E. Proton-decoupled carbon magnetic resonance spectroscopy in human calf muscles at 7 T using a multi-channel radiofrequency coil. *Scientific Reports* 2018; 8:6211.
19. Laistler E, Dymerska B, Sieg J, Goluch S, Frass-Kriegel R, Kuehne A, Moser E. In vivo MRI of the human finger at 7 T. *Magn Reson Med* 2018; 79(1):588–592.
20. Ambrosch S, Duliban C, Heger H, Moser E, Laistler E, Windischberger C, Heuberger E. Effects of 1,8 - Cineole and (-) - Linalool on Functional Brain Activation in a Working Memory Task. *Flavour Fragr J* 2018; 33:235–244.
21. Niess F, Fiedler GB, Schmid AI, Laistler E, Frass-Kriegel R, Wolzt M, Moser E, Meyerspeer M. Dynamic multivoxel - localized ^{31}P MRS during plantar flexion exercise with variable knee angle. *NMR Biomed* 2018; e3905.
22. Moser E, Laistler E, Schmitt F, Kontaxis G. Ultra-High Field NMR and MRI – The Role of Magnet Technology to Increase Sensitivity and Specificity. *Front Phys* 2017; 5:33.
23. Navarro de Lara LI, Tik M, Woletz M, Frass-Kriegel R, Moser E, Laistler E, Windischberger C. High-sensitivity TMS/fMRI of the Human Motor Cortex Using a Dedicated Multichannel MR Coil. *Neuroimage* 2017; 150:262–269.
24. Frass-Kriegel R, Laistler E, Hosseinnzhadian S, Schmid AI, Moser E, Poirier-Quinot M, Darrasse L, Ginefri J-C. Multi-turn multi-gap transmission line resonators – Concept, design, and first implementation at 4.7 T and 7 T. *J Magn Reson* 2016; 273:65–72.
25. Fiedler GB, Schmid AI, Goluch S, Schewzow K, Laistler E, Niess F, Unger E, Wolzt M, Mirzahosseini A, Kemp GJ, Moser E, Meyerspeer M. Skeletal muscle ATP synthesis and cellular H^+ handling measured by localized ^{31}P -MRS during exercise and recovery. *Scientific Reports* 2016; 6:32037.
26. Navarro de Lara LI, Windischberger C, Kuehne A, Woletz M, Sieg J, Bestmann S, Weiskopf N, Strasser B, Moser E, Laistler E. A novel coil array for combined TMS/fMRI experiments at 3 T. *Magn Reson Med* 2015; 74(5):1492–1501.
27. Kuehne A, Goluch S, Waxmann P, Ittermann B, Moser E, Laistler E. Power balance and Loss Mechanism Analysis in RF transmit coil arrays. *Magn Reson Med* 2015; 74(4):1165–1176.
28. Goluch S, Kuehne A, Meyerspeer M, Kriegel R, Schmid AI, Herrmann T, Mallow J, Hong S-M, Cho Z-H, Bernarding J, Moser E, Laistler E. A form-fitted 3 channel ^{31}P , two channel ^1H transceive coil array for calf muscle studies at 7 T. *Magn Reson Med* 2015; 73(6):2376–2389.
29. Schmid AI, Meyerspeer M, Robinson SD, Goluch S, Wolzt M, Fiedler GB, Bogner W, Laistler E, Krššák M, Moser E, Trattnig S, Valkovič L. Dynamic PCr and pH imaging of human calf muscles during exercise and recovery using ^{31}P gradient-echo MRI at 7 T. *Magn Reson Med* 2015; 75(6):2324–2331.
30. Kriegel R, Ginefri J-C, Poirier-Quinot M, Darrasse L, Goluch S, Kuehne A, Moser E, Laistler E. A novel inductive decoupling technique for flexible transceiver arrays of monolithic transmission line resonators. *Magn Reson Med* 2015; 73(4):1669–1681.
31. Fiedler GB, Meyerspeer M, Schmid AI, Goluch S, Schewzow K, Laistler E, Mirzahosseini A, Niess F, Unger E, Wolzt M, Moser E. Localized semi-LASER dynamic ^{31}P magnetic resonance spectroscopy of the soleus during and following exercise at 7 T. *Magn Reson Mater Phys* 2015; 28(5):493–501.
32. Schewzow K, Fiedler GB, Meyerspeer M, Goluch S, Laistler E, Wolzt M, Moser E, Schmid AI. Dynamic ASL and T_2^* -weighted MRI in exercising calf muscle at 7 T – a feasibility study. *Magn Reson Med* 2015; 73(3):1190–1195.
33. Laistler E, Poirier-Quinot M, Lambert S, Dubuisson R-M, Girard OM, Moser E, Darrasse L, Ginefri J-C. In vivo human skin imaging at sub-nanoliter resolution on a clinical 1.5 T MR scanner using a superconducting surface coil. *J Magn Reson Imag* 2015; 41(2):496–504
34. Schmid AI, Schewzow K, Fiedler GB, Goluch S, Laistler E, Wolzt M, Moser E, Meyerspeer M. Exercising calf muscle T_2^* time courses correlate with pH, PCr recovery and maximum oxidative phosphorylation. *NMR Biomed* 2014; 27(5):553–560.
35. Laistler E, Loewe R, Moser E. Magnetic resonance micro-imaging of human skin vasculature in vivo at 3 Tesla. *Magn Reson Med* 2011; 65(6):1718–1723.

Patents

1. Navarro de Lara LI, Windischberger C, Laistler E, Sieg J, Moser E, Kuehne A. Method and system for combined transcranial magnetic stimulation (TMS) and functional magnetic resonance imaging (fMRI) studies. US Patent US9924889B2, 2018.
2. Laistler E, Obermann M, Nohava L, Roat S. Coil module for magnetic resonance imaging applications. European patent application number EP21020242.0, 2021. (pending).

Journal Roles

Associate Editor for Frontiers in Physics | Section Medical Physics and Imaging

Reviewer for Nature Comm, Sci Rep, Magn Reson Med, NMR in Biomed, JMRI, MRI, Med Phys, Front Phys, Magn Reson Mater Phys.