Nils Marc Joel Plähn

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Professional Experience

PhD candidate in Biomedical Sciences — **Bern, Switzerland**
Quantitative MRI, Department of Radiology, University Bern — *Feb 2022 – Present*
Swiss National Science Foundation (SNF) (grant number: PCEFP2 194296)

Supervisor of Master's Student — **Bern, Switzerland**
AI driven MRI image segmentation and classification using bSSFP data — *Mar 2024 – Dec 2024*

Teaching Assistant — **Bern, Switzerland**
Introduction to Medical Imaging (Master module) — *Sep 2024 – Jan 2025*

Teaching Assistant — **Würzburg, Germany**
Tutor in Physics of Complex Systems (Master module) — *Sep 2020 – Feb 2021*

Teaching Assistant — **Würzburg, Germany**
Supervisor in Physics Laboratory Course (Bachelor module) — *Aug 2017 – Feb 2021*

Key Skills

Analytical & Strategic Problem-Solving: Proven ability to analyze abstract and complex problems, extract key insights, and develop data-driven solutions in interdisciplinary contexts.

Quantitative & Data Analysis: Experience in applying mathematical modeling, statistical analysis, and computational methods to solve real-world challenges.

Collaborative Leadership & Project Management: Coordinated multi-disciplinary research projects with diverse teams.

Intellectual Property & Innovation: Experienced in scientific innovation and intellectual property development, bridging research and legal frameworks to secure a patent.

Programming: Proficient in Python, MATLAB, C/C++, and LaTeX

Effective Communication: Delivered presentations at national and international conferences, engaging multidisciplinary audiences.

Languages & Cross-Cultural Competence: English (Fluent), German (Native), French (Basic); accustomed to working in international environments.

Education

PhD candidate in Biomedical Sciences — **Bern, Switzerland**
Quantitative MRI, Department of Radiology, University Bern — *Feb 2022 – Present*
Title: Development of simultaneous and robust multi-parameter quantification in magnetic resonance imaging
Swiss National Science Foundation (SNF) (grant number: PCEFP2 194296)

Master Thesis — **Würzburg, Germany**
Development of Novel Methods for Exchange Rate Quantification (A^+) — *Apr 2021 - Jan 2022*

Master of Science in Physics — **Würzburg, Germany**
University of Würzburg, Final Grade: A^+ — *Apr 2019 - Jan 2022*

Bachelor Thesis — **Würzburg, Germany**
The holographic Weyl semimetal (A^+) — *Sep 2018 - Mar 2019*

Bachelor of Science in Physics — **Würzburg, Germany**
University of Würzburg, Final grade: B — *Sep 2014 - Mar 2019*

Awards

2022: Wilhelm-Conrad-Röntgen Studienpreis, Würzburg, Germany

2024: ISMRM trainee stipend for conference attendance, Singapore

2023: ISMRM trainee stipend for conference attendance, Toronto, Canada

2022: ISMRM trainee stipend for conference attendance, London, United Kingdom

Patents

Nov 2024: Off-resonant encoded analytical parameter quantification using multi-dimensional linearised equations, Publication Number: WO2024/231819

Conferences

May 2024: **Analytical T1, T2, proton density, and magnetic field inhomogeneity quantification in the brain using phase-cycled bSSFP**
ISMRM 2024, Poster Presentation
Singapore

September 2024: **Single Shot Exchange Rate Quantification using Turbo PS-WEX**
International CEST workshop 2024, Oral presentation
Nürnberg, Germany

June 2023: **Decoding the phase-cycled BSSFP signal for maximized parameter quantification-T1, T2, proton density and magnetic field inhomogeneity**
ISMRM 2023, Oral presentation
Toronto, Canada

June 2023: **Decoding of 3T and 7T BSSFP profile asymmetries for T1, T2, and fraction quantification in two-compartment systems**

ISMRM 2023, Poster presentation
Toronto, Canada

September 2022: **T1-unabhängige Quantifizierung von Austauschraten mittels Phasensensitiver-Water-Exchange Spektroskopie**
DS-ISMRM 2022, Oral presentation
Achen, Germany

May 2022: **An Alternative to WEX: T1-Independent Exchange Rate Quantification using Phase Sensitive Water Exchange Spectroscopy**
ISMRM 2024, Oral Presentation
London, United Kingdom

Publications

2024: **ORACLE: An analytical approach for T1, T2, proton density, and off-resonance mapping with phase-cycled balanced steady-state free precession**
N. M. J. Plähn, Y. Safarkhanlo, B. C. Açikgöz, A. L. C. Mackowiak, P. Radojewski, et al.
Magnetic Resonance in Medicine, DOI: 10.1002/mrm.30388

2024: **Getting the phase consistent: The importance of phase description in balanced steady-state free precession MRI of multi-compartment systems**
N. M. J. Plähn, S. Poli, E. S. Peper, B. C. Açikgöz, R. Kreis, C. Ganter, et al.
Magnetic Resonance in Medicine, DOI: 10.1002/mrm.30033

2022: **T1-independent exchange rate quantification using saturation-or phase sensitive-water exchange spectroscopy**
N. M. J. Plaehn, S. Mayer, P. M. Jakob, F. T. Gutjahr.
Journal of Magnetic Resonance, DOI: 10.1016/j.jmr.2021.107141

2024: **Analytical T1, T2, proton density, and magnetic field inhomogeneity quantification in the brain using phase-cycled bSSFP**
N. M. J. Plähn, Y. Safarkhanlo, G. Bonanno, A. Mackowiak, B. Açikgöz, E. Peper, et al.,
Abstract #2172, ISMRM2024, Singapore

2023: **Decoding the phase-cycled BSSFP signal for maximized parameter quantification-T1, T2, proton density and magnetic field inhomogeneity**
N. M. J. Plähn, A. Mackowiak, B. C. Açıkgöz, E. S. Peper, G. Rossi, J. Bastiaansen.,
Abstract #1349, ISMRM2023, Toronto

2023: **Decoding of 3T and 7T BSSFP profile asymmetries for T1, T2, and fraction quantification in two-compartment systems**
N. M. J. Plähn, A. Mackowiak, B. C. Açıkgöz, J. Bastiaansen.,
Abstract #2200, ISMRM2023, Toronto

2023: **Rapid T1, T2 and fraction quantification in two-compartment systems using bSSFP profile asymmetries**
N. Plähn, B. Açikgöz, J. Bastiaansen, A. Mackowiak.,
Abstract #4768, ISMRM2024, Toronto

2022: **An Alternative to WEX: T1-Independent Exchange Rate Quantification using Phase Sensitive Water Exchange Spectroscopy**
N. M. J. Plaehn, S. Mayer, P. Albertová, P. M. Jakob, F. T. Gutjahr.,
Abstract #0292, ISMRM2022, London

2024: **Simultaneous brain susceptibility, T1, and T2 quantification at 7T with phase-cycled balanced steady-state free precession**
B. C. Acikgoz, C. S. Martinez, A. L. C. Mackowiak, N. M. J. Plähn, Y. Safarkhanlo, et al., *Abstract #3715, ISMRM2024, Singapore*

2023: **Cluster Based Sparse Variational Minimization for Multi-Compartment Dictionary Fitting to BSSFP Signal Profiles**
B. C. Açıkgöz, A. L. C. Mackowiak, N. M. J. Plähn, Y. Safarkhanloo, E. S. Peper, et al.,
Abstract #4613, ISMRM2023, Toronto

2023: **Low Rank Subspace-Constrained Compressed Sensing Reconstruction of Highly Accelerated Phase-Cycled BSSFP MRI for Fat Fraction Quantification**
E. S. Peper, A. L. C. Mackowiak, B. C. Açıkgöz, N. Plähn, Y. Safarkhanlo, L. Feng, et al.,
Abstract #4963, ISMRM2023, Toronto