

Dr. Matthias Weigel

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[Research Interests](#)

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Research Interests

- MR Diffusion Imaging
- High Resolution MR Imaging
- Dedicated Low Field MR Imaging
- The Art of Teaching
- Traditional Chinese Medicine vs. East Indian Ayurveda vs. Modern Western Medicine
- People(s) and Life

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Publications

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Unique Researcher ID :
[C-7668-2009](#)

Journal papers (selected)

- Y. Han, M. Weigel, S. Huff, U. Ludwig Whole-Body Diffusion-Weighted Imaging with a Continuously Moving Table Acquisition Method: Preliminary Results Magn Reson Med 2011; 65:1557-1563
- M. Reisert, I. Mader, C. Anastasopoulos, M. Weigel, S. Schnell, V. Kiselev Global Fiber Reconstruction Becomes Practical Neuroimage 2011; 54(2):955-62
- M. Weigel, S. Schwenk, V.G. Kiselev, K. Scheffler, J. Hennig Extended Phase Graphs with Anisotropic Diffusion J Magn Reson 2010; 205:276-285
- K.J. Lee, B. Zahneisen, J. Hennig, M. Weigel, J. Leupold Multiplex RARE: a simultaneous multislice spin-echo sequence which fulfils CPMG conditions Magn Reson Med 2010; 64(1):299-305
- M. Weigel, G. Helms, J. Hennig Investigation and Modeling of Magnetization Transfer Effects in 2D Multi-Slice Turbo Spin Echo Sequences with Low Constant or Variable Flip Angles at 3T Magn Reson Med 2010; 63(1):230-4
- W.A. Lagrèze, M. Gaggl, M. Weigel, J. Schulte-Moenting, M. Bach, R. Munk, T.A. Bley Retrobulbar optic nerve diameter measured by high speed magnetic resonance imaging as a biomarker for axonal loss in glaucomatous optic atrophy Invest Ophthalmol Vis Sci 2009; 50(9):4223-8

- M. Weigel, J. Hennig Development and Optimization of T2 weighted Methods with Reduced RF Power Deposition (Hyperecho-TSE) for Magnetic Resonance Imaging Z Med Phys 2008; 18:151-161
- M. Weigel, M. Zaitsev, J. Hennig Inversion Recovery Prepared Turbo Spin Echo Sequences with reduced SAR using Smooth Transitions between Pseudo Steady States Magn Reson Med 2007; 57:631-637
- M. Weigel, J. Hennig Contrast Behavior and Relaxation Effects of Conventional and Hyperecho-Turbo Spin Echo Sequences at 1.5T and 3T Magn Reson Med 2006; 55:826-835
- M. Weigel, W.A. Lagrèze, A. Lazzaro, J. Hennig, T.A. Bley Fast and Quantitative High Resolution MRI of the optic nerve at 3T Invest Radiol 2006; 41:83-86 , Special Issue "Clinical MRI at 3T"
- J. Hennig, M. Weigel, K. Scheffler Calculation of Flip Angles for Echo Trains With Predefined Amplitudes With the Extended Phase Graph (EPG)-Algorithm: Principles and Applications to Hyperecho and TRAPS Sequences Magn Reson Med 2004; 51:68-80
- J. Hennig, M. Weigel, K. Scheffler Multiecho sequences with variable refocusing flip angles: Optimization of signal behavior using smooth transitions between pseudo steady states (TRAPS) Magn Reson Med 2003; 49:527-535

Lectures, Invited Talks & Symposia (selected)

- "Gradient Echo Imaging" (30 min) MR 2011 Compact, Bamberg, Germany
- "Spin Phase Graphs and the Analysis of Echo Formation and Signal Contrast" (30min) MR Physics for Physicists, Weekend Education Course, Annual Meeting of ISMRM 2011, Montreal, Canada
- "Diffusion and Perfusion" (40min) MR Physics for Clinicians, Education Course, Annual Meeting of ISMRM 2011, Montreal, Canada
- "What is (tissue) diffusion and how to measure it ?" (25min) SORSA – RSSA 2011 Imaging Congress, Durban, South Africa
- "Novel Types of TSE (Turbo Spin Echo) Sequences" (90min) Weekly Seminar of NMR, Experimental Physics V, Dept. of Physics, University of Würzburg, Germany
- "Extended Phase Graphs and the Analysis of Echo Formation" (30min) MR Physics for Physicists' Weekend Education Course, Annual Meeting of ISMRM 2010, Stockholm, Sweden
- "Novel Turbo Spin Echo Sequences" (90min) MR Physics PhD seminar, Center for Biomedical Imaging, Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland
- "Calculation of Effective Relaxation Times and Weighting in Fast Sequences" (25min) MR Physics for Physicists' Weekend Education Course, Annual Meeting of ISMRM 2009, Honolulu, USA
- "Diffusionsgewichtete MRT des Skeletts" (15min) Frühjahrskurse der Vereinigung Südwestdeutscher Radiologen und Nuklearmediziner (VSRN), Karlsruhe, Germany
- "(The Universe of) Spin Echoes" (60min) Scandinavian MR Physics Course, Dept. of Medical Radiation Physics, Lund University Hospital, Lund, Sweden
- "Hyperechoes and Pseudo Steady States (PSS)" (45min) Scandinavian MR Physics Course, Dept. of Medical Radiation Physics, Lund University Hospital, Lund, Sweden
- "Contrast Behavior and Relaxation Effects of Conventional and Hyperecho-Turbo Spin Echo Sequences at 1.5T and 3T" (45min) Weekly Seminar of MRI and MRS, Dept. of Radiology, University Hospital Freiburg, Freiburg, Germany
- "Principle and Contrast Behavior of TSE sequences with variable flip angles (Hyperechoes and TRAPS)" (30min) Seminar of Modern MRI Techniques, Freudenberg, Germany
- "Turbo Spin Echo Sequences with Variable Flip Angles and their Description by means of the Extended Phase Graph Concept" (90min) Weekly Seminar of NMR, Experimental Physics V, Dept. of Physics, University of Würzburg, Würzburg, Germany
- "High Resolution Imaging at 1.5T and 3T" (45min) Workshop of Advanced High Field Imaging, Tian Tan Hospital, Beijing, China
- "Implementation of Variable Flip Angle Sequences" (15min) European IDEA Users Group Meeting, University Hospital Tübingen, Tübingen, Germany

Conference abstracts : Not listed, approx. 50

Services to the Society

- Reviewer for Journal of Magnetic Resonance Imaging (JMRI)
- Reviewer for IEEE Transactions on Medical Imaging (IEEE-TMI)
- Reviewer for Magnetic Resonance Materials in Physics, Biology and Medicine (MAGMA)
- Reviewer for Magnetic Resonance in Medicine (MRM)
- Webmaster of the German Chapter of ISMRM from December 2002 until February 2007

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Awards & Stipends

- Outstanding Teacher Award, International Society for Magnetic Resonance in Medicine (ISMRM) in 2011
- Toshiba Research Award, German Society for Medical Physics (DGMP) in 2006
- Gorter "Young Investigator" Award, German Chapter of International Society for Magnetic Resonance in Medicine (DS-ISMRM) in 2006
- "Conference's Best Talk" Award, German Chapter of International Society for Magnetic Resonance in Medicine (DS-ISMRM) in 2002
- "Certificate of Merit" Poster Award, European Society for Magnetic Resonance in Medicine (ESMRMB) in 2000
- Travel Grant of the German Research Foundation (DFG) in 2006
- Student Stipend of the ISMRM, Miami Beach in 2005
- Travel Grant of the German Scientific Society (Wissenschaftliche Gesellschaft) in 2004
- Student Stipend of the ISMRM, Kyoto in 2004
- Travel Grant of the GlaxoSmithKline Foundation in 2004
- Student Stipend of the ISMRM, Toronto in 2003
- Student Stipend of the ESMRMB, Rotterdam in 2003
- Student Stipend of the ESMRMB, Cannes in 2002
- Student Stipend of the ESMRMB, Paris in 2000
- Tuition Waiver of the SUNY Stony Brook, USA, in 1997 and 1998
- Study Abroad Stipend USA of the German Academic Exchange Service (DAAD) in 1997 and 1998

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