

CONTENTS

■ OBITUARY

- In Memoriam: Seymour H. Koenig (1927–2018),**
Peter Caravan, Claudio Luchinat,
and A. Dean Sherry 743
Published online 22 October 2018

■ SPECTROSCOPIC METHODOLOGY

- Full Paper**
**Investigation of the Influence of Macromolecules
and Spline Baseline in the Fitting Model of Human
Brain Spectra at 9.4T,** Ioannis-Angelos Giapitzakis,
Tamas Borbath, Saipavitra Murali-Manohar,
Nikolai Avdievich, and Anke Henning..... 746
Published online 17 October 2018

Notes

- Uncertainties of Calculated Cramér-Rao Lower
Bounds: Implications for Quantitative MRS,**
Jean-Marie Bonny and Guilhem Pagès..... 759
Published online 11 September 2018

- Calibration of Methylene-Referenced Lipid-
Dissolved Xenon Frequency for Absolute MR
Temperature Measurements,**
Michael A. Antonacci, Le Zhang, Simone Degan,
Detlev Erdmann, and Rosa T. Branca..... 765
Published online 14 September 2018

- Gamma-Aminobutyric Acid Edited Echo-Planar
Spectroscopic Imaging (EPSI) with
MEGA-sLASER at 7T,** Peter O. Magnusson,
Vincent O. Boer, Anouk Marsman, Olaf B. Paulson,
Lars G. Hanson, and Esben T. Petersen 773
Published online 29 August 2018

■ PRECLINICAL AND CLINICAL SPECTROSCOPY

- Full Paper**
**Transcutaneous Oxygen Measurement in Humans
Using a Paramagnetic Skin Adhesive Film,**
Maciej M. Kmiec, Huagang Hou,
M. Lakshmi Kuppusamy, Thomas M. Drews,
Anjali M. Prabhat, Sergey V. Petryakov,
Eugene Demidenko, Philip E. Schaner,
Jay C. Buckey, Aharon Blank,
and Periannan Kuppusamy 781
Published online 11 September 2018

Note

- 3D High-Resolution Imaging of 2-Hydroxyglutarate
in Glioma Patients Using Drag-EPSI at 3T In Vivo,**
Zhongxu An, Vivek Tiwari, Jeannie Baxter,
Michael Levy, Kimmo J. Hatanpaa, Edward Pan,
Elizabeth A. Maher, Toral R. Patel, Bruce E. Mickey,
and Changho Choi 795
Published online 14 September 2018

■ IMAGING METHODOLOGY

- Mini-Review**
**Electrical Properties Tomography: Available
Contrast and Reconstruction Capabilities,**
Ileana Hancu, Jiaen Liu, Yihe Hua,
and Seung-Kyun Lee..... 803
Published online 16 October 2018

Full Papers

- A Bayesian Approach for 4D Flow Imaging of Aortic
Valve in a Single Breath-Hold,** Adam Rich,
Lee C. Potter, Ning Jin, Yingmin Liu,
Orlando P. Simonetti, and Rizwan Ahmad..... 811
Published online 28 September 2018

- Dynamic Per Slice Shimming for Simultaneous
Brain and Spinal Cord fMRI,** Haisam Islam,
Christine S. W. Law, Kenneth A. Weber,
Sean C. Mackey, and Gary H. Glover..... 825
Published online 4 October 2018

- A Regional Bolus Tracking and Real-Time B₁
Calibration Method for Hyperpolarized ¹³C MRI,**
Shuyu Tang, Eugene Milshteyn, Galen Reed,
Jeremy Gordon, Robert Bok, Xucheng Zhu,
Zihan Zhu, Daniel B. Vigneron, and
Peder E. Z. Larson..... 839
Published online 18 September 2018

- Whole-Heart Spiral Simultaneous Multi-Slice
First-Pass Myocardial Perfusion Imaging,**
Yang Yang, Craig H. Meyer, Frederick H. Epstein,
Christopher M. Kramer, and Michael Salerno 852
Published online 12 October 2018

- Compressed Sensing Acceleration of Biexponential
3D-T_{1ρ} Relaxation Mapping of Knee Cartilage,**
Marcelo V. W. Zibetti, Azadeh Sharafi, Ricardo Otazo,
and Ravinder R. Regatte 863
Published online 19 September 2018

CONTENTS

- Ultrafast 3D Bloch–Siegert B₁-Mapping Using Variational Modeling,** Andreas Lesch, Matthias Schlogl, Martin Holler, Kristian Bredies, and Rudolf Stollberger 881
Published online 12 October 2018
- Validation of Pressure Drop Assessment Using 4D Flow MRI-Based Turbulence Production in Various Shapes of Aortic Stenoses,** Hojin Ha, John-Peder Escobar Kvitting, Petter Dyverfeldt, and Tino Ebbers 893
Published online 25 September 2018
- Fast Quantitative MRI Using Controlled Saturation Magnetization Transfer,** Rui Pedro A.G. Teixeira, Shaihan J. Malik, and Joseph V. Hajnal 907
Published online 14 September 2018
- Orientation Dependence and Decay Characteristics of T₂^{*} Relaxation in the Human Meniscus Studied with 7 Tesla MR Microscopy and Compared to Histology,** Benedikt Hager, Sonja M. Walzer, Xeni Deligianni, Oliver Bieri, Andreas Berg, Markus M. Schreiner, Martin Zalaudek, Reinhard Windhager, Siegfried Trattnig, and Vladimir Juras 927
Published online 30 September 2018
- bSSFP Phase Correction and its Use in Magnetic Resonance Electrical Properties Tomography,** Safa Ozdemir and Yusuf Ziya Ider 934
Published online 25 October 2018
- Rigid Motion-Corrected Magnetic Resonance Fingerprinting,** Gastão Cruz, Olivier Jaubert, Torben Schneider, René M. Botnar, and Claudia Prieto 947
Published online 3 September 2018
- Imperfect Magnetic Field Gradients in Radial K-Space Encoding—Quantification, Correction, and Parameter Dependency,** Amir Moussavi and Susann Boretius 962
Published online 27 September 2018
- Shutter-Speed Dynamic Contrast-Enhanced MRI: Is it Fit for Purpose?** David L. Buckley 976
Published online 19 September 2018
- Optimized Diffusion-Weighting Gradient Waveform Design (ODGD) Formulation for Motion Compensation and Concomitant Gradient Nulling,** Óscar Peña-Nogales, Yuxin Zhang, Xiaoke Wang, Rodrigo de Luis-García, Santiago Aja-Fernández, James H. Holmes, and Diego Hernandez 989
Published online 5 November 2018
- Improved Sensitivity and Temporal Resolution in Perfusion fMRI Using Velocity Selective Inversion ASL,** Luis Hernandez-García, Jon-Fredrik Nielsen, and Douglas C. Noll 1004
Published online 6 September 2018
- Autocalibrated Multiband CAIPIRINHA with Through-Time Encoding: Proof of Principle and Application to Cardiac Tissue Phase Mapping,** Giulio Ferrazzi, Jean Pierre Bassenge, Clarissa Wink, Alexander Ruh, Michael Markl, Steen Moeller, Gregory J. Metzger, Bernd Ittermann, and Sebastian Schmitter 1016
Published online 17 September 2018
- A Three-Dimensional Free-Breathing Sequence for Simultaneous Myocardial T₁ and T₂ Mapping,** Rui Guo, Zhensen Chen, Daniel A. Herzka, Jianwen Luo, and Haiyan Ding 1031
Published online 12 September 2018
- T₂ Relaxation Time Bias in gagCEST at 3T and 7T: Comparison of Saturation Schemes,** Pernilla Peterson, Emma Olsson, and Jonas Svensson 1044
Published online 19 September 2018
- Three-Dimensional Diffusion Imaging with Spiral Encoded Navigators from Stimulated Echoes (3D-DISPENSE),** Qinwei Zhang, Bram F. Coolen, Aart J. Nederveen, and Gustav J. Strijkers 1052
Published online 26 September 2018
- Non-Contrast Enhanced Simultaneous 3D Whole-Heart Bright-Blood Pulmonary Veins Visualization and Black-Blood Quantification of Atrial Wall Thickness,** Giulia Ginami, Karina López, Rahul K. Mukherjee, Radhouene Neji, Camila Munoz, Sébastien Roujol, Peter Mountney, Reza Razavi, René M. Botnar, and Claudia Prieto 1066
Published online 19 September 2018
- Simultaneous High-Resolution Cardiac T₁ Mapping and Cine Imaging Using Model-Based Iterative Image Reconstruction,** Kirsten M. Becker, Jeanette Schulz-Menger, Tobias Schaeffter, and Christoph Kolbitsch 1080
Published online 6 September 2018
- Whole-Heart Coronary MR Angiography Using a 3D Cones Phyllotaxis Trajectory,** Mario O. Malavé, Corey A. Baron, Nii Okai Addy, Joseph Y. Cheng, Phillip C. Yang, Bob S. Hu, and Dwight G. Nishimura 1092
Published online 29 October 2018
- Multiple-Point Magnetic Resonance Acoustic Radiation Force Imaging,** Henrik Odéen, Joshua de Bever, Lorne W. Hofstetter, and Dennis L. Parker 1104
Published online 26 September 2018
- Targeted Partial Reconstruction for Real-Time fMRI with Arbitrary Trajectories,** Bruno Riemenschneider, Pierre LeVan, and Jürgen Hennig 1118
Published online 19 September 2018

CONTENTS

Optimization of Steady-State Free Precession MRI for Lung Ventilation Imaging with ^{19}F C_3F_8 at 1.5T and 3T, Adam Maunder, Madhwesha Rao, Fraser Robb, and Jim M. Wild..... 1130
Published online 2 November 2018

Real-Time Cardiovascular MR with Spatio-Temporal Artifact Suppression Using Deep Learning—Proof of Concept in Congenital Heart Disease, Andreas Hauptmann, Simon Arridge, Felix Lucka, Vivek Muthurangu, and Jennifer A. Steeden..... 1143
Published online 8 September 2018

Notes

MRI Gadolinium Dosing on Basis of Blood Volume, Chia-Ying Liu, Shenghan Lai, and João A.C. Lima..... 1157
Published online 2 November 2018

Design and Construction of an Innovative Brain Phantom Prototype for MRI, Anna Altermatt, Francesco Santini, Xeni Deligianni, Stefano Magon, Till Sprenger, Ludwig Kappos, Philippe Cattin, Jens Wuerfel, and Laura Gaetano..... 1165
Published online 17 September 2018

Zero-Gradient-Excitation Ramped Hybrid Encoding ($z\text{G}_{\text{RF}}\text{-RHE}$) Sodium MRI, Yasmin Blunck, Bradford A. Moffat, Scott C. Kolbe, Roger J. Ordidge, Jon O. Cleary, and Leigh A. Johnston..... 1172
Published online 25 September 2018

Motion-Robust Reconstruction of Multishot Diffusion-Weighted Images Without Phase Estimation Through Locally Low-Rank Regularization, Yuxin Hu, Evan G. Levine, Qiyuan Tian, Catherine J. Moran, Xiaole Wang, Valentina Taviani, Shreyas S. Vasanaawala, Jennifer A. McNab, Bruce L. Daniel, and Brian A. Hargreaves..... 1181
Published online 22 October 2018

■ PRECLINICAL AND CLINICAL IMAGING

Full Papers

Multi-Modal Functional MRI to Explore Placental Function Over Gestation, Jana Hutter, Paddy J. Slator, Laurence Jackson, Ana Dos Santos Gomes, Alison Ho, Lisa Story, Jonathan O’Muircheartaigh, Rui P. A. G. Teixeira, Lucy C. Chappell, Daniel C. Alexander, Mary A. Rutherford, and Joseph V. Hajnal..... 1191
Published online 21 September 2018

Caval to Pulmonary 3D Flow Distribution in Patients with Fontan Circulation and Impact of Potential 4D Flow MRI Error Sources, Kelly Jarvis, Susanne Schnell, Alex J. Barker, Michael Rose, Joshua D. Robinson, Cynthia K. Rigsby, and Michael Markl..... 1205
Published online 15 September 2018

Wideband Myocardial Perfusion Pulse Sequence for Imaging Patients with a Cardiac Implantable Electronic Device, KyungPyo Hong, Jeremy D. Collins, Bradley P. Knight, James C. Carr, Daniel C. Lee, and Daniel Kim..... 1219
Published online 9 September 2018

Note

Multicenter Reproducibility of Quantitative Susceptibility Mapping in a Gadolinium Phantom Using MEDI+0 Automatic Zero Referencing, Kofi Deh, Keigo Kawaji, Marjolein Bulk, Louise Van Der Weerd, Emelie Lind, Pascal Spincemaille, Kelly McCabe Gillen, Johan Van Audekerke, Yi Wang, and Thanh D. Nguyen..... 1229
Published online 4 October 2018

■ BIOPHYSICS AND BASIC BIOMEDICAL RESEARCH

Full Papers

Gradient-Echo and Spin-Echo Blood Oxygenation Level-Dependent Functional MRI at Ultrahigh Fields of 9.4 and 15.2 Tesla, SoHyun Han, Jeong Pyo Son, HyungJoon Cho, Jang-Yeon Park, and Seong-Gi Kim..... 1237
Published online 5 September 2018

Relevance of Time-Dependence for Clinically Viable Diffusion Imaging of the Spinal Cord, Francesco Grussu, Andrada Ianuș, Carmen Tur, Ferran Prados, Torben Schneider, Enrico Kaden, Sébastien Ourselin, Ivana Drobnjak, Hui Zhang, Daniel C. Alexander, and Claudia A. M. Gandini Wheeler-Kingshott..... 1247
Published online 5 September 2018

Influence of the Extracellular Matrix on Water Mobility in Subcortical Gray Matter, Jakob Georgi, Riccardo Metere, Carsten Jäger, Markus Morawski, and Harald E. Möller..... 1265
Published online 14 September 2018

Brain Active Transmembrane Water Cycling Measured by MR Is Associated with Neuronal Activity, Ruiliang Bai, Charles S. Springer Jr., Dietmar Plenz, and Peter J. Basser..... 1280
Published online 8 September 2018

CONTENTS

Note

Detection of Microscopic Diffusion Anisotropy in Human Cortical Gray Matter In Vivo with Double Diffusion Encoding, Marco Lawrenz and Jürgen Finsterbusch..... 1296
Published online 11 September 2018

■ COMPUTER PROCESSING AND MODELING

Full Papers

Toward 7T Breast MRI Clinical Study: Safety Assessment Using Simulation of Heterogeneous Breast Models in RF Exposure, Xin Li and Joseph V. Rispoli 1307
Published online 14 September 2018

Dual-Step Iterative Temperature Estimation Method for Accurate and Precise Fat-Referenced PRFS Temperature Imaging, Chuanli Cheng, Chao Zou, Qian Wan, Yangzi Qiao, Min Pan, Changjun Tie, Dong Liang, Hairong Zheng, and Xin Liu 1322
Published online 19 September 2018

Symplectomorphic Registration with Phase Space Regularization by Entropy Spectrum Pathways, Vitaly L. Galinsky and Lawrence R. Frank 1335
Published online 19 September 2018

Computation of Exact g-Factor Maps in 3D GRAPPA Reconstructions, Iñaki Rabanillo-Viloria, Ante Zhu, Santiago Aja-Fernández, Carlos Alberola-López, and Diego Hernando 1353
Published online 6 September 2018

Mapping Connectomes with Diffusion MRI: Deterministic or Probabilistic Tractography? Tabinda Sarwar, Kotagiri Ramamohanarao, and Andrew Zalesky 1368
Published online 10 October 2018

Segmentation of Left Ventricle in Late Gadolinium Enhanced MRI Through 2D-4D Registration for Infarct Localization in 3D Patient-Specific Left Ventricular Model, Chen Onn Leong, Einly Lim, Li Kuo Tan, Yang Faridah Abdul Aziz, Ganiga Srinivasaiah Sridhar, Dokos Socrates, Kok Han Chee, Zhen-Vin Lee, and Yih Miin Liew 1385
Published online 19 September 2018

Weak-Harmonic Regularization for Quantitative Susceptibility Mapping, Carlos Milovic, Berkin Bilgic, Bo Zhao, Christian Langkammer, Cristian Tejos, and Julio Acosta-Cabronero 1399
Published online 28 September 2018

■ HARDWARE AND INSTRUMENTATION

Rapid Communication

Safety of Active Catheters in MRI: Termination Impedance Versus RF-Induced Heating, Ali Caglar Özen, Thomas Lottner, and Michael Bock 1412
Published online 22 October 2018

Full Papers

Combined Imaging and Shimming with the Dynamic Multi-Coil Technique, S. Umesh Rudrapatna, Fabian Fluerebrock, Terence W. Nixon, Robin A. de Graaf, and Christoph Juchem 1424
Published online 10 October 2018

Performance Evaluation of RF Coils Integrated with an RF-Penetrable PET Insert for Simultaneous PET/MRI, Brian J. Lee, Ronald D. Watkins, Keum Sil Lee, Chen-Ming Chang, and Craig S. Levin 1434
Published online 9 September 2018

A Human Cerebral and Cerebellar 8-Channel Transceive RF Dipole Coil Array at 7T, Jérémie D. Clément, Rolf Gruetter, and Özlem Ipek 1447
Published online 5 September 2018

The Dual-Mode Dipole: A New Array Element for 7T Body Imaging with Reduced SAR, Georgiy Solomakha, Carel van Leeuwen, Alexander Raaijmakers, Constantin Simovski, Alexander Popugaev, Redha Abdeddaim, Irina Melchakova, and Stanislav Glybovski 1459
Published online 5 September 2018

■ ERRATUM

Erratum to: Fast Quantitative Parameter Maps Without Fitting: Integration Yields Accurate Mono-Exponential Signal Decay Rates (Magn Reson Med 2018;79:2978–2985), Ruitian Song, Ralf B. Loeffler, Joseph L. Holtrop, M. Beth McCarville, Jane S. Hankins, and Claudia M. Hillenbrand 1470
Published online 9 October 2018