

## CONTENTS

### Letter to the Editor

- Acetate Transport Into Mitochondria Does Not Require a Carnitine Shuttle Mechanism,** Arduino Arduini and Victor Zammit ..... 11  
*Published online 10 November 2016*

### Response

- Hyperpolarized  $^{13}\text{C}$ -Acetate-to-Acetylcarnitine Imaging: Correction of Acetate Transport Into Mitochondria,** Ulrich Koellisch, Concetta V. Gringeri, Rolf F. Schulte, and Axel Haase ..... 12  
*Published online 10 November 2016*

### Letter to the Editor

- The Underestimated Role of Gradient Coils in MRI Safety,** Luca Zilberti, Alessandro Arduino, Oriano Bottauscio, and Mario Chiampì ..... 13  
*Published online 7 November 2016*

## ■ SPECTROSCOPIC METHODOLOGY

### Rapid Communication

- Dual-Volume Excitation and Parallel Reconstruction for J-Difference-Edited MR Spectroscopy,** Georg Oeltzschner, Nicolaas A.J. Puts, Kimberly L. Chan, Vincent O. Boer, Peter B. Barker, and Richard A.E. Edden ..... 16  
*Published online 8 November 2016*

### Full Papers

- Advanced Processing and Simulation of MRS Data Using the FID Appliance (FID-A)—An Open Source, MATLAB-Based Toolkit,** Robin Simpson, Gabriel A. Devenyi, Peter Jezzard, T. Jay Hennessy, and Jamie Near ..... 23  
*Published online 30 December 2015*

- Influence of Macromolecule Baseline on  $^1\text{H}$  MR Spectroscopic Imaging Reproducibility,** Rebecca Birch, Andrew C. Peet, Hamid Dehghani, and Martin Wilson ..... 34  
*Published online 22 January 2016*

- Mechanisms of SNR and Line Shape Improvement by  $B_0$  Correction in Overdiscrete MRSI Reconstruction,** Thomas Kirchner, Ariane Fillmer, and Anke Henning ..... 44  
*Published online 10 February 2016*

### Note

- Second-Order Motion Compensated PRESS for Cardiac Spectroscopy,** Maximilian Fuetterer, Christian T. Stoeck, and Sebastian Kozerke ..... 57  
*Published online 13 January 2016*

## ■ PRECLINICAL AND CLINICAL SPECTROSCOPY

### Rapid Communication

- Monitoring Acute Metabolic Changes in the Liver and Kidneys Induced by Fructose and Glucose Using Hyperpolarized  $[2-^{13}\text{C}]\text{Dihydroxyacetone}$ ,** Irene Marco-Rius, Cornelius von Morze, Renuka Sriram, Peng Cao, Gene-Yuan Chang, Eugene Milshteyn, Robert A. Bok, Michael A. Ohliger, David Pearce, John Kurhanewicz, Peder E.Z. Larson, Daniel B. Vigneron, and Matthew Merritt ..... 65  
*Published online 17 November 2016*

## ■ IMAGING METHODOLOGY

### Rapid Communications

- Pulmonary Relaxometry with Inversion Recovery Ultra-fast Steady-State Free Precession at 1.5T,** Grzegorz Bauman, Francesco Santini, Orso Pusterla, and Oliver Bieri ..... 74  
*Published online 19 October 2016*

- Single-Shot Spiral Imaging Enabled by an Expanded Encoding Model: Demonstration in Diffusion MRI,** Bertram J. Wilm, Christoph Barmet, Simon Gross, Lars Kasper, S. Johanna Vannesjo, Max Haeberlin, Benjamin E. Dietrich, David O. Brunner, Thomas Schmid, and Klaas P. Pruessmann ..... 83  
*Published online 21 October 2016*

- Quantitative Measurement of Cerebral Blood Volume Using Velocity-Selective Pulse Trains,** Dexiang Liu, Feng Xu, Doris D. Lin, Peter C.M. van Zijl, and Qin Qin ..... 92  
*Published online 31 October 2016*

### Ful Papers

- Real-Time Monitoring of Inertial Cavitation Effects of Microbubbles by Using MRI: In Vitro Experiments,** Hsu-Hsia Peng, Chen-Hua Wu, Shih-Tsung Kang, Jia-Wei Zhang, Hao-Li Liu, Wen-Shiang Chen, Chung-Hsin Wang, and Chih-Kuang Yeh ..... 102  
*Published online 30 December 2015*

# CONTENTS

- A Fast and Flexible MRI System for the Study of Dynamic Vocal Tract Shaping**, Sajan Goud Lingala, Yinghua Zhu, Yoon-Chul Kim, Asterios Toutios, Shrikanth Narayanan, and Krishna S. Nayak ..... 112  
*Published online 17 January 2016*
- True and Apparent Optogenetic BOLD fMRI Signals**, Florian Schmid, Lydia Wachsmuth, Franziska Albers, Miriam Schwalm, Albrecht Stroh, and Cornelius Faber ..... 126  
*Published online 17 January 2016*
- Gradient-Based Electrical Conductivity Imaging Using MR Phase**, Necip Gurler and Yusuf Ziya Ider ..... 137  
*Published online 13 January 2016*
- Simultaneous Assessment of Cardiac Metabolism and Perfusion Using Copolarized [1-<sup>13</sup>C]pyruvate and <sup>13</sup>C-urea**, Angus Z. Lau, Jack J. Miller, Matthew D. Robson, and Damian J. Tyler ..... 151  
*Published online 7 January 2016*
- On the Accuracy and Precision of Cardiac Magnetic Resonance T<sub>2</sub> Mapping: A High-Resolution Radial Study Using Adiabatic T<sub>2</sub> Preparation at 3T**, Wajiha Bano, Hélène Feliciano, Andrew J. Coristine, Matthias Stuber, and Ruud B. van Heeswijk ..... 159  
*Published online 13 January 2016*
- Efficient Gradient Calibration Based on Diffusion MRI**, Irvin Teh, Mahon L. Maguire, and Jürgen E. Schneider ..... 170  
*Published online 8 January 2016*
- T<sub>2</sub> Shuffling: Sharp, Multicontrast, Volumetric Fast Spin-Echo Imaging**, Jonathan I. Tamir, Martin Uecker, Weitian Chen, Peng Lai, Marcus T. Alley, Shreyas S. Vasanawala, and Michael Lustig ..... 180  
*Published online 20 January 2016*
- Downfield-NOE-Suppressed Amide-CEST-MRI at 7 Tesla Provides a Unique Contrast in Human Glioblastoma**, Moritz Zaiss, Johannes Windschuh, Steffen Goerke, Daniel Paech, Jan-Eric Meissner, Sina Burth, Philipp Kickingereder, Wolfgang Wick, Martin Bendszus, Heinz-Peter Schlemmer, Mark E. Ladd, Peter Bachert, and Alexander Radbruch ..... 196  
*Published online 27 January 2016*
- High-Resolution Diffusion-Weighted Imaging of the Breast with Multiband 2D Radiofrequency Pulses and a Generalized Parallel Imaging Reconstruction**, Valentina Taviani, Marcus T. Alley, Suchandrima Banerjee, Dwight G. Nishimura, Bruce L. Daniel, Shreyas S. Vasanawala, and Brian A. Hargreaves ..... 209  
*Published online 17 January 2016*
- Thermal Noise Variance of a Receive Radiofrequency Coil as a Respiratory Motion Sensor**, A. Andreychenko, A.J.E. Raaijmakers, A. Sbrizzi, S.P.M. Crijns, J.J.W. Lagendijk, P.R. Luijten, and C.A.T. van den Berg ..... 221  
*Published online 13 January 2016*
- Measuring B1 Distributions by B1 Phase Encoding**, Kalina V. Jordanova, Dwight G. Nishimura, and Adam B. Kerr ..... 229  
*Published online 17 January 2016*
- Characterization of T<sub>1</sub> Bias in Skeletal Muscle from Fat in MOLLI and SASHA Pulse Sequences: Quantitative Fat-Fraction Imaging with T<sub>1</sub> Mapping**, Sarah Larmour, Kelvin Chow, Peter Kellman, and Richard B. Thompson ..... 237  
*Published online 10 February 2016*
- Real-Time Free-Breathing Cardiac Imaging with Self-Calibrated Through-Time Radial GRAPPA**, Ozan Sayin, Haris Saybasili, M. Muz Zviman, Mark Griswold, Henry Halperin, Nicole Seiberlich, and Daniel A. Herzka ..... 250  
*Published online 10 March 2016*
- Direct Comparison of <sup>129</sup>Xe Diffusion Measurements with Quantitative Histology in Human Lungs**, Robert P. Thomen, James D. Quirk, David Roach, Tiffany Egan-Rojas, Kai Ruppert, Roger D. Yussen, Talissa A. Altes, Dmitriy A. Yablonskiy, and Jason C. Woods ..... 265  
*Published online 17 January 2016*
- Concurrent 3D Acquisition of Diffusion Tensor Imaging and Magnetic Resonance Elastography Displacement Data (DTI-MRE): Theory and In Vivo Application**, Ziyang Yin, Steven P. Kearney, Richard L. Magin, and Dieter Klatt ..... 273  
*Published online 20 January 2016*
- The Importance of Correcting for Signal Drift in Diffusion MRI**, Sjoerd B. Vos, Chantal M. W. Tax, Peter R. Luijten, Sebastien Ourselin, Alexander Leemans, and Martijn Froeling ..... 285  
*Published online 29 January 2016*
- Stimulated Echo Diffusion Weighted Imaging of the Liver at 3 Tesla**, Hui Zhang, Aiqi Sun, Hongjun Li, Pairash Saiviroonporn, Ed X. Wu, and Hua Guo ..... 300  
*Published online 15 February 2016*
- Notes**
- Eliminating the Blood-Flow Confounding Effect in Intravoxel Incoherent Motion (IVIM) Using the Non-Negative Least Square Analysis in Liver**, Giulio Gambarota, Eric Hitti, Benjamin Leporq, Hervé Saint-Jalmes, and Olivier Beuf ..... 310  
*Published online 5 January 2016*

# CONTENTS

**Combining Phase Images from Array Coils Using a Short Echo Time Reference Scan (COMPOSER),** Simon Daniel Robinson, Barbara Dymerska, Wolfgang Bogner, Markus Barth, Olgica Zaric, Sigrun Goluch, Günther Grabner, Xenia Deligianni, Oliver Bieri, and Siegfried Trattnig..... 318  
*Published online 29 December 2015*

**Eddy Current Compensated Double Diffusion Encoded (DDE) MRI,** Lars Mueller, Andreas Wetscherek, Tristan Anselm Kuder, and Frederik Bernd Laun ..... 328  
*Published online 30 December 2015*

**Matrix Pencil Decomposition of Time-Resolved Proton MRI for Robust and Improved Assessment of Pulmonary Ventilation and Perfusion,** Grzegorz Bauman and Oliver Bieri..... 336  
*Published online 12 January 2016*

## ■ BIOPHYSICS AND BASIC BIOMEDICAL RESEARCH

### *Rapid Communication*

**Modeling Diffusion of Intracellular Metabolites in the Mouse Brain up to Very High Diffusion-Weighting: Diffusion in Long Fibers (Almost) Accounts for Non-Monoexponential Attenuation,** Marco Palombo, Clemence Ligneul, and Julien Valette ..... 343  
*Published online 7 November 2016*

### *Full Paper*

**In Vivo, High-Frequency Three-Dimensional Cardiac MR Elastography: Feasibility in Normal Volunteers,** Arvin Arani, Kevin L. Glaser, Shivaram P. Arunachalam, Phillip J. Rossman, David S. Lake, Joshua D. Trzasko, Armando Manduca, Kiaran P. McGee, Richard L. Ehman, and Philip A. Araoz..... 351  
*Published online 17 January 2016*

## ■ COMPUTER PROCESSING AND MODELING

### *Full Papers*

**Optimal Control Design of Turbo Spin-Echo Sequences with Applications to Parallel-Transmit Systems,** Alessandro Sbrizzi, Hans Hoogduin, Joseph V. Hajnal, Cornelis A. T. van den Berg, Peter R. Luijten, and Shaihan J. Malik ..... 361  
*Published online 22 January 2016*

**Local SAR, Global SAR, and Power-Constrained Large-Flip-Angle Pulses with Optimal Control and Virtual Observation Points,** Mads S. Vinding, Bastien Guérin, Thomas Vosegaard, and Niels Chr. Nielsen ..... 374  
*Published online 30 December 2015*

**Improved Estimation of MR Relaxation Parameters Using Complex-Valued Data,** S. Umesh Rudrapatna, C. J. G. Bakker, M. A. Viergever, A. van der Toorn, and R. M. Dijkhuizen ..... 385  
*Published online 13 January 2016*

**Automatic Recognition of Subject-Specific Cerebrovascular Trees,** Chih-Yang Hsu, Ben Schneller, Ali Alaraj, Michael Flannery, Xiaohong Joe Zhou, and Andreas Linninger ..... 398  
*Published online 17 January 2016*

**ISMRM Raw Data Format: A Proposed Standard for MRI Raw Datasets,** Souheil J. Inati, Joseph D. Naegele, Nicholas R. Zwart, Vinai Roopchansingh, Martin J. Lizak, David C. Hansen, Chia-Ying Liu, David Atkinson, Peter Kellman, Sebastian Kozerke, Hui Xue, Adrienne E. Campbell-Washburn, Thomas S. Sørensen, and Michael S. Hansen ..... 411  
*Published online 29 January 2016*

**Inter-Station Intensity Standardization for Whole-Body MR Data,** Oleh Dzyubachyk, Marius Staring, Monique Reijnierse, Boudewijn P. F. Lelieveldt, and Rob J. van der Geest..... 422  
*Published online 1 February 2016*

## ■ HARDWARE AND INSTRUMENTATION

### *Rapid Communication*

**Toward Imaging the Body at 10.5 Tesla,** M. Arcan Ertürk, Xiaoping Wu, Yiğitcan Eryaman, Pierre-François Van de Moortele, Edward J. Auerbach, Russell L. Lagore, Lance DelaBarre, J. Thomas Vaughan, Kâmil Uğurbil, Gregor Adriany, and Gregory J. Metzger ..... 434  
*Published online 21 October 2016*

### *Full Paper*

**A Prototype of Injector to Control and to Detect the Release of Magnetic Beads within the Constraints of Multibifurcation Magnetic Resonance Navigation Procedures,** Alexandre Bigot, Gilles Soulez, and Sylvain Martel..... 444  
*Published online 21 February 2016*