

## CONTENTS

### ■ SPECTROSCOPIC METHODOLOGY

#### Full Papers

- Oxidation of [U-<sup>13</sup>C]Glucose in the Human Brain at 7T Under Steady State Conditions,** Sergey Cheshkov, Ivan E. Dimitrov, Vikram Jakkamsetti, Levi Good, Dorothy Kelly, Karthik Rajasekaran, Ralph J. DeBerardinis, Juan M. Pascual, A. Dean Sherry, and Craig R. Malloy..... 2065  
*Published online 23 January 2017*

- Simultaneous Determination of Metabolite Concentrations, T<sub>1</sub> and T<sub>2</sub> Relaxation Times,** Li An, Shizhe Li, and Jun Shen ..... 2072  
*Published online 5 February 2017*

- Weighted Averaging in Spectroscopic Studies Improves Statistical Power,** Jack J. Miller, Lowri Cochlin, Kieran Clarke, and Damian J. Tyler..... 2082  
*Published online 26 January 2017*

- Phosphodiester Content Measured in Human Liver by In Vivo <sup>31</sup>P MR Spectroscopy at 7 Tesla,** Lucian A.B. Purvis, William T. Clarke, Ladislav Valkovič, Christina Levick, Michael Pavlides, Eleanor Barnes, Jeremy F. Cobbold, Matthew D. Robson, and Christopher T. Rodgers..... 2095  
*Published online 28 February 2017*

### ■ PRECLINICAL AND CLINICAL SPECTROSCOPY

#### Full Papers

- In Vivo Imaging of the Progression of Acute Lung Injury Using Hyperpolarized [1-<sup>13</sup>C] Pyruvate,** Mehrdad Pourfathi, Yi Xin, Stephen J. Kadlecck, Maurizio F. Cereda, Harrilla Profka, Hooman Hamedani, Sarmad M. Siddiqui, Kai Ruppert, Nicholas A. Drachman, Jennia N. Rajaei, and Rahim R. Rizzi..... 2106  
*Published online 11 January 2017*

- Direct Arterial Injection of Hyperpolarized <sup>13</sup>C-Labeled Substrates into Rat Tumors for Rapid MR Detection of Metabolism With Minimal Substrate Dilution,** Steven Reynolds, Stephen Metcalf, Edward J. Cochrane, Rebecca C. Collins, Simon Jones, Martyn N.J. Paley, and Gillian M. Tozer ..... 2116  
*Published online 12 February 2017*

### ■ IMAGING METHODOLOGY

#### Rapid Communication

- Prospective Motion Correction in 2D Multishot MRI Using EPI Navigators and Multislice-to-Volume Image Registration,** Daniel Christopher Hoinkiss and David Andrew Porter..... 2127  
*Published online 5 October 2017*

#### Full Papers

- Imaging and T<sub>2</sub> Relaxometry of Short-T<sub>2</sub> Connective Tissues in the Knee Using Ultrashort Echo-Time Double-Echo Steady-State (UTEDESS),** Akshay S. Chaudhari, Bragi Sveinsson, Catherine J. Moran, Emily J. McWalter, Ethan M. Johnson, Tao Zhang, Garry E. Gold, and Brian A. Hargreaves ..... 2136  
*Published online 11 January 2017*

- Confirmation of Resting-State BOLD Fluctuations in the Human Brainstem and Spinal Cord after Identification and Removal of Physiological Noise,** Shreyas Harita and Patrick W. Stroman..... 2149  
*Published online 11 January 2017*

- In Vivo Imaging of Electrical Properties of an Animal Tumor Model With an 8-Channel Transceiver Array at 7 T Using Electrical Properties Tomography,** Jiaen Liu, Qi Shao, Yicun Wang, Gregor Adriany, John Bischof, Pierre-Francois Van de Moortele, and Bin He ..... 2157  
*Published online 23 January 2017*

- A Time-Efficient Acquisition Protocol for Multipurpose Diffusion-Weighted Microstructural Imaging at 7 Tesla,** Farshid Sepehrband, Kieran O'Brien, and Markus Barth ..... 2170  
*Published online 12 February 2017*

- Optimized Amplitude Modulated Multiband RF Pulse Design,** Samy Abo Seada, Anthony N. Price, Joseph V. Hajnal, and Shaihan J. Malik..... 2185  
*Published online 17 January 2017*

- New Method to Characterize and Correct With Sub-μs Precision Gradient Delays in Bipolar Multispoke RF Pulses,** Vincent Gras, Alexandre Vignaud, Alexis Amadon, Franck Mauconduit, Denis Le Bihan, and Nicolas Boulant ..... 2194  
*Published online 23 January 2017*

# CONTENTS

**Dual Echo Dixon Imaging With a Constrained Phase Signal Model and Graph Cuts Reconstruction,** Eric G. Stinson, Joshua D. Trzasko, Joel G. Fletcher, and Stephen J. Riederer ..... 2203  
*Published online 2 February 2017*

**B<sub>1</sub><sup>+</sup> Inhomogeneity Mitigation in CEST Using Parallel Transmission,** Desmond H.Y. Tse, Nuno Andre da Silva, Benedikt A. Poser, and N. Jon Shah ..... 2216  
*Published online 28 February 2017*

**Multifrequency Reconstruction for Frequency-Modulated bSSFP,** Anne Slawig, Tobias Wech, Valentin Ratz, Johannes Tran-Gia, Henning Neubauer, Thorsten Bley, and Herbert Köstler ..... 2226  
*Published online 10 February 2017*

**Diffusion-Relaxation Correlation Spectroscopic Imaging: A Multidimensional Approach for Probing Microstructure,** Daeun Kim, Eamon K. Doyle, Jessica L. Wisnowski, Joong Hee Kim, and Justin P. Haldar ..... 2236  
*Published online 19 March 2017; notable correction published online 21 June 2017*

**Model-Based Iterative Reconstruction for Single-Shot EPI at 7T,** Uten Yarach, Myung-Ho In, Itthi Chatnuntawech, Berkin Bilgic, Frank Godenschweger, Hendrik Mattern, Alessandro Sciarra, and Oliver Speck..... 2250  
*Published online 10 February 2017*

**Compressed Sensing MRI Reconstruction From 3D Multichannel Data Using GPUs,** Ching-Hua Chang, Xiangdong Yu, and Jim X. Ji ..... 2265  
*Published online 15 February 2017*

## Notes

**Feasibility of Through-Time Spiral Generalized Autocalibrating Partial Parallel Acquisition for Low Latency Accelerated Real-Time MRI of Speech,** Sajan Goud Lingala, Yinghua Zhu, Yongwan Lim, Asterios Toutios, Yunhua Ji, Wei-Ching Lo, Nicole Seiberlich, Shrikanth Narayanan, and Krishna S. Nayak..... 2275  
*Published online 10 February 2017*

**Assessing the Effects of Subject Motion on T<sub>2</sub> Relaxation Under Spin Tagging (TRUST) Cerebral Oxygenation Measurements Using Volume Navigators,** Jeffrey N. Stout, M. Dylan Tisdall, Patrick McDaniel, Borjan Gagoski, Divya S. Bolar, Patricia Ellen Grant, and Elfar Adalsteinsson..... 2283  
*Published online 28 February 2017*

**Golden-Ratio Rotated Stack-of-Stars Acquisition for Improved Volumetric MRI,** Ziwu Zhou, Fei Han, Lirong Yan, Danny J.J. Wang, and Peng Hu..... 2290  
*Published online 6 February 2017*

**Dual-Echo Z-Shimmed Proton Resonance Frequency-Shift Magnetic Resonance Thermometry Near Metallic Ablation Probes: Technique and Temperature Precision,** Yuxin Zhang, Megan E. Poorman, and William A. Grissom ..... 2299  
*Published online 10 February 2017*

## ■ PRECLINICAL AND CLINICAL IMAGING

### Rapid Communication

**Direct Saturation-Corrected Chemical Exchange Saturation Transfer MRI of Glioma: Simplified Decoupling of Amide Proton Transfer and Nuclear Overhauser Effect Contrasts,** Iris Yuwen Zhou, Enfeng Wang, Jerry S. Cheung, Dongshuang Lu, Yang Ji, Xiaoan Zhang, Giulia Fulci, and Phillip Zhe Sun ..... 2307  
*Published online 13 October 2017*

### Full Papers

**In Vivo Quantification of Aortic Stiffness Using MR Elastography in Hypertensive Porcine Model,** Huiming Dong, Ria Mazumder, Venkata Sita Priyanka Illapani, Xiaokui Mo, Richard D. White, and Arunark Kolipaka..... 2315  
*Published online 5 February 2017*

**Fractional Anisotropy Derived From the Diffusion Tensor Distribution Function Boosts Power to Detect Alzheimer's Disease Deficits,** Talia M. Nir, Neda Jahanshad, Julio E. Villalon-Reina, Dmitry Isaev, Artemis Zavaliangos-Petropulu, Liang Zhan, Alex D. Leow, Clifford R. Jack Jr., Michael W. Weiner, and Paul M. Thompson, for the Alzheimer's Disease Neuroimaging Initiative (ADNI)..... 2322  
*Published online 7 March 2017*

### Note

**High Spatial Resolution Hyperpolarized <sup>3</sup>He MRI of the Rodent Lung Using a Single Breath X-Centric Gradient-Recalled Echo Approach,** Alexei V. Ouriadov and Giles E. Santyr ..... 2334  
*Published online 23 January 2017*

## ■ BIOPHYSICS AND BASIC BIOMEDICAL RESEARCH

### Full Paper

**Ultralow-Field and Spin-Locking Relaxation Dispersion in Postmortem Pig Brain,** Hui Dong, Seong-min Hwang, Michael Wendland, Lixing You, John Clarke, and Ben Inglis ..... 2342  
*Published online 5 February 2017*

### Note

**Non-Invasive Evaluation of Blood Oxygen Saturation and Hematocrit From T<sub>1</sub> and T<sub>2</sub> Relaxation Times: In-Vitro Validation in Fetal Blood,** Sharon Portnoy, Mike Seed, John G. Sled, and Christopher K. Macgowan..... 2352  
*Published online 12 February 2017*

# CONTENTS

## ■ COMPUTER PROCESSING AND MODELING

### Full Papers

**Requirements for Accurate Estimation of Anisotropic Material Parameters by Magnetic Resonance Elastography: A Computational Study,** D.J. Tweten, R.J. Okamoto, and P.V. Bayly ..... 2360  
*Published online 17 January 2017*

**A Comparative Simulation Study of Bayesian Fitting Approaches to Intravoxel Incoherent Motion Modeling in Diffusion-Weighted MRI,** Peter T. While ..... 2373  
*Published online 31 March 2017*

**Diffusion-Compensated Tofts Model Suggests Contrast Leakage through Aneurysm Wall,** Charles G. Cantrell, Parmede Vakil, Yong Jeong, Sameer A. Ansari, and Timothy J. Carroll ..... 2388  
*Published online 23 January 2017*

**Improving Labeling Efficiency in Automatic Quality Control of MRSI Data,** Nuno Pedrosa de Barros, Richard McKinley, Roland Wiest, and Johannes Slotboom ..... 2399  
*Published online 7 February 2017*

**Parallel Radiofrequency Transmission at 3 Tesla to Improve Safety in Bilateral Implanted Wires in a Heterogeneous Model,** Clare E. McElcheran, Benson Yang, Kevan J.T. Anderson, Laleh Golestanirad, and Simon J. Graham ..... 2406  
*Published online 28 February 2017*

**Primal-Dual and Forward Gradient Implementation for Quantitative Susceptibility Mapping,** Youngwook Kee, Kofi Deh, Alexey Dimov, Pascal Spincemaille, and Yi Wang ..... 2416  
*Published online 1 March 2017*

**Model-Based Denoising in Diffusion-Weighted Imaging Using Generalized Spherical Deconvolution,** Jonathan I. Sperl, Tim Sprenger, Ek T. Tan, Marion I. Menzel, Christopher J. Hardy, and Luca Marinelli ..... 2428  
*Published online 28 February 2017*

**Automatic Segmentation of the Right Ventricle From Cardiac MRI Using a Learning-Based Approach,** Michael R. Avendi, Arash Kheradvar, and Hamid Jafarkhani ..... 2439  
*Published online 16 February 2017*

## ■ HARDWARE AND INSTRUMENTATION

### Full Papers

**MRI-Based Transfer Function Determination for the Assessment of Implant Safety,** J.P. Tokaya, A.J.E. Raaijmakers, P.R. Luijten, J.F. Bakker, and C.A.T. van den Berg ..... 2449  
*Published online 5 February 2017*

**Interchangeable Neck Shape-Specific Coils for a Clinically Realizable Anterior Neck Phased Array System,** Michael J. Beck, Dennis L. Parker, Bradley D. Bolster Jr., Seong-Eun Kim, J. Scott McNally, Gerald S. Treiman, and J. Rock Hadley ..... 2460  
*Published online 10 February 2017*