

## CONTENTS

### ■ ANNOUNCEMENT

ISMRM Young Investigator Award Winners .....xi

### ■ SPECTROSCOPY METHODOLOGY

#### *Rapid Communication*

**Parallel Reconstruction in Accelerated Multivoxel MR Spectroscopy,** V. O. Boer, D. W. J. Klomp, J. Laterra, and P. B. Barker ..... 599  
*Published online 17 June 2015*

#### *Note*

**Comparison of Brain Gray and White Matter Macromolecule Resonances at 3 and 7 Tesla,** Karim Snoussi, Joseph S. Gillen, Alena Horska, Nicolaas A. J. Puts, Subechhya Pradhan, Richard A. E. Edden, and Peter B. Barker ..... 607  
*Published online 22 September 2014*

### ■ IMAGING METHODOLOGY

#### *Rapid Communication*

**High-Resolution Variable-Density 3D Cones Coronary MRA,** Nii Okai Addy, R. Reeve Ingle, Holden H. Wu, Bob S. Hu, and Dwight G. Nishimura ..... 614  
*Published online 14 July 2015*

#### *Full Papers*

**Rapid In Vivo Apparent Diffusion Coefficient Mapping of Hyperpolarized <sup>13</sup>C Metabolites,** Bertram L. Koelsch, Galen D. Reed, Kayvan R. Keshari, Myriam M. Chaumeil, Robert Bok, Sabrina M. Ronen, Daniel B. Vigneron, John Kurhanewicz, and Peder E. Z. Larson ..... 622  
*Published online 11 September 2014*

**Gradient-Based Electrical Properties Tomography (gEPT): A Robust Method for Mapping Electrical Properties of Biological Tissues In Vivo Using Magnetic Resonance Imaging,** Jiaen Liu, Xiaotong Zhang, Sebastian Schmitter, Pierre-Francois Van de Moortele, and Bin He ..... 634  
*Published online 11 September 2014*

**Real-Time Motion Correction Using Gradient Tones and Head-Mounted NMR Field Probes,** Maximilian Haeberlin, Lars Kasper, Christoph Barmet, David O. Brunner, Benjamin E. Dietrich, Simon Gross, Bertram J. Wilm, Sebastian Kozerke, and Klaas P. Pruessmann ..... 647  
*Published online 12 September 2014*

**Designing Hyperbolic Secant Excitation Pulses to Reduce Signal Dropout in Gradient-Echo Echo-Planar Imaging,** Stephen J. Wastling and Gareth J. Barker ..... 661  
*Published online 9 September 2014*

**Quantitative Susceptibility Mapping in the Abdomen as an Imaging Biomarker of Hepatic Iron Overload,** Samir D. Sharma, Diego Hernando, Debra E. Horng, and Scott B. Reeder ..... 673  
*Published online 8 September 2014*

**ZTE Imaging With Enhanced Flip Angle Using Modulated Excitation,** Konrad Schieban, Markus Weiger, Franciszek Hennel, Andreas Boss, and Klaas P. Pruessmann ..... 684  
*Published online 19 September 2014*

**Increased SNR Efficiency in Velocity Selective Arterial Spin Labeling Using Multiple Velocity Selective Saturation Modules (mm-VSASL),** Jia Guo and Eric C. Wong ..... 694  
*Published online 22 September 2014*

**Balanced SSFP Dixon Imaging with Banding-Artifact Reduction at 3 Tesla,** Brady Quist, Brian A. Hargreaves, Bruce L. Daniel, and Manojkumar Saranathan ..... 706  
*Published online 16 September 2014*

**Susceptibility-Based Positive Contrast MRI of Brachytherapy Seeds,** Ying Dong, Zheng Chang, Guoxi Xie, Gregory Whitehead, and Jim X. Ji ..... 716  
*Published online 23 September 2014*

**Non-Contrast-Enhanced Peripheral Angiography Using a Sliding Interleaved Cylinder Acquisition,** Kie Tae Kwon, Adam B. Kerr, Holden H. Wu, Bob S. Hu, Jean H. Brittain, and Dwight G. Nishimura ..... 727  
*Published online 9 September 2014*

**Simultaneous Fat Saturation and Magnetization Transfer Contrast Imaging with Steady-State Incoherent Sequences,** Feng Zhao, Jon-Fredrik Nielsen, Scott D. Swanson, Jeffrey A. Fessler, and Douglas C. Noll ..... 739  
*Published online 22 September 2014*

# CONTENTS

## Notes

- Low Peak Power Multiband Spokes Pulses for B<sub>1</sub> Inhomogeneity-Compensated Simultaneous Multislice Excitation in High Field MRI,** Anuj Sharma, Roland Bammer, V. Andrew Stenger, and William A Grissom..... 747  
*Published online 9 September 2014*

- 100% Efficient Three-Dimensional Coronary MR Angiography with Two-Dimensional Beat-to-Beat Translational and Bin-to-Bin Affine Motion Correction,** Andrew P. Aitken, Markus Henningsson, Rene M. Botnar, Tobias Schaeffter, and Claudia Prieto..... 756  
*Published online 18 September 2014*

- Quantification of Myocardial Blood Flow Using Non-ECG-Triggered MR Imaging,** David Chen, Behzad Sharif, Rohan Dharmakumar, Louise E.J. Thomson, C. Noel Bairey Merz, Daniel S. Berman, and Debiao Li..... 765  
*Published online 16 September 2014*

## ■ PRECLINICAL AND CLINICAL IMAGING

### Full Papers

- Assessing Tumor Cytoarchitecture Using Multiecho DSC-MRI Derived Measures of the Transverse Relaxivity at Tracer Equilibrium (TRATE),** Natenael B. Semmineh, Junzhong Xu, Jack T. Skinner, Jingping Xie, Hua Li, Gregory Ayers, and C. Chad Quarles..... 772  
*Published online 16 September 2014*

- Bayesian Analysis of Transverse Signal Decay with Application to Human Brain,** Mustapha Bouhrara, David A. Reiter, and Richard G. Spencer..... 785  
*Published online 19 September 2014*

- Three-Dimensional Whole-Heart T<sub>2</sub> Mapping at 3T,** Haiyan Ding, Laura Fernandez-de-Manuel, Michael Schär, Karl H. Schuleri, Henry Halperin, Le He, M. Muz Zviman, Roy Beinart, and Daniel A. Herzka ..... 803  
*Published online 19 September 2014*

- Assessment of Altered Three-Dimensional Blood Characteristics in Aortic Disease by Velocity Distribution Analysis,** Julio Garcia, Alex J. Barker, Pim van Ooij, Susanne Schnell, Jyothy Puthumana, Robert O. Bonow, Jeremy D. Collins, James C. Carr, and Michael Markl..... 817  
*Published online 23 September 2014*

## ■ BIOPHYSICS AND BASIC BIOMEDICAL RESEARCH

### Full Papers

- Radiofrequency Pulse Design Using Nonlinear Gradient Magnetic Fields,** Emre Kopanoglu and R. Todd Constable ..... 826  
*Published online 9 September 2014*

- Simultaneous Exposure to MRI-Related Static and Low-Frequency Movement-Induced Time-Varying Magnetic Fields Affects Neurocognitive Performance: A Double-Blind Randomized Crossover Study,** Lotte E. van Nierop, Pauline Slottje, Martine van Zandvoort, and Hans Kromhout ..... 840  
*Published online 15 September 2014*

- In Vitro Study to Simulate the Intracardiac Magnetohydrodynamic Effect,** Waltraud B. Buchenberg, Wolfgang Mader, Georg Hoppe, Ramona Lorenz, Marius Menza, Martin Büchert, Jens Timmer, and Bernd Jung ..... 850  
*Published online 15 September 2014*

- Transverse Relaxivity of Iron Oxide Nanocrystals Clustered in Nanoemulsions: Experiment and Theory,** Sjoerd Hak, Pål Erik Goa, Sebastian Stenmark, Frøydis F. Bjerkholt, and Olav Haraldseth..... 858  
*Published online 18 September 2014*

## ■ COMPUTER PROCESSING AND MODELING

### Full Paper

- Manifold Learning in MR Spectroscopy Using Nonlinear Dimensionality Reduction and Unsupervised Clustering,** Guang Yang, Felix Raschke, Thomas R. Barrick, and Franklyn A. Howe ..... 868  
*Published online 8 September 2014*

### Note

- Relaxivity-Iron Calibration in Hepatic Iron Overload: Predictions of a Monte Carlo Model,** Nilesh R. Ghugre, Eamon K. Doyle, Pippa Storey, and John C. Wood..... 879  
*Published online 19 September 2014*

## ■ HARDWARE AND INSTRUMENTATION

### Full Papers

- Application Unit for the Administration of Contrast Gases for Pulmonary Magnetic Resonance Imaging: Optimization of Ventilation Distribution for <sup>3</sup>He-MRI,** M. Güldner, St. Becker, U. Wolf, C. Düber, A. Friesenecker, K. K. Gast, W. Heil, C. Hoffmann, S. Karpuk, E. W. Otten, J. Rivoire, Z. Salhi, A. Scholz, L. M. Schreiber, and M. Terekhov ..... 884  
*Published online 11 September 2014*

- Comparison of Optical and MR-Based Tracking,** Kazim Gumus, Brian Keating, Nathan White, Brian Andrews-Shigaki, Brian Armstrong, Julian Maclaren, Maxim Zaitsev, Anders Dale, and Thomas Ernst ..... 894  
*Published online 24 September 2014*