

CONTENTS

■ ANNOUNCEMENT

ISMRM Young Investigator Award Winners,

Rabi and W.S. Moore2909

Published online 29 August 2020

■ SPECTROSCOPIC METHODOLOGY

Note

Application of a Bilinear Rotation Decoupling (BIRD) Filter in Combination with J-Difference Editing for Indirect ¹³C Measurements in the Human Liver,

Pandichelvam Veeraiah, Kim Brouwers,
Joachim E. Wildberger, Vera B. Schrauwen-Hinderling,
and Lucas Lindeboom.....2911

Published online 3 July 2020

■ PRECLINICAL AND CLINICAL SPECTROSCOPY

Full Paper

Separate N-acetyl Aspartyl Glutamate, N-Acetyl Aspartate, Aspartate, and Glutamate Quantification after Pediatric Mild Traumatic Brain Injury in the Acute Phase, Petr Menshchikov, Anna Ivantsova, Andrei Manzhurtsev, Maxim Ublinskiy, Alexey Yakovlev, Ilya Melnikov, Dmitrii Kupriyanov, Tolib Akhadov, and Natalia Semenova2918

Published online 16 June 2020

■ IMAGING METHODOLOGY

Rapid Communications

Deep Learning Using a Biophysical Model for Robust and Accelerated Reconstruction of Quantitative, Artifact-Free and Denoised R_2^* Images, Max Torop, Satya V. V. N. Kothapalli, Yu Sun, Jiaming Liu, Sayan Kahali, Dmitriy A. Yablonskiy, and Ulugbek S. Kamilov2932

Published online 21 July 2020

A Variable Resolution Approach for Improved Acquisition of Hyperpolarized ¹³C Metabolic MRI,

Jeremy W. Gordon, Adam W. Autry, Shuyu Tang, Jasmine Y. Graham, Robert A. Bok, Xucheng Zhu, Javier E. Villanueva-Meyer, Yan Li, Michael A. Ohilger, Maria Roselle Abraham, Duan Xu, Daniel B. Vigneron, and Peder E. Z. Larson.....2943

Published online 22 July 2020

Full Papers

Dynamic Multicoil Technique (DYNAMITE) MRI on Human Brain, Christoph Juchem, Sebastian Theilenberg, Chathura Kumaragamage, Michael Mullen, Lance DelaBarre, Gregor Adriany, Peter B. Brown, Scott McIntyre, Terence W. Nixon, Michael Garwood, and Robin A. de Graaf2953

Published online 16 June 2020

Three-Dimensional Inhomogeneous Magnetization Transfer with Rapid Gradient-Echo (3D ihMTRAGE) Imaging,

Gopal Varma, Fanny Munsch, Brian Burns, Guillaume Duhamel, Olivier M. Girard, Arnaud Guidon, R. Marc Lebel, and David C. Alsop.....2964

Published online 30 June 2020

Multi-Parametric Artificial Neural Network Fitting of Phase-Cycled Balanced Steady-State Free Precession Data,

Rahel Heule, Jonas Bause, Orso Pusterla, and Klaus Scheffler2981

Published online 1 June 2020

Deep-Learned Short Tau Inversion Recovery Imaging Using Multi-Contrast MR Images,

Sewon Kim, Hanbyol Jang, Jinseong Jang, Young Han Lee, and Dosik Hwang.....2994

Published online 1 June 2020

3D Whole-Heart Isotropic-Resolution Motion-Compensated Joint T_1/T_2 Mapping and Water/Fat Imaging,

Giorgia Milotta, Aurelien Bustin, Olivier Jaubert, Radhouene Neji, Claudia Prieto, and René M. Botnar3009

Published online 16 June 2020

Investigating Biases in the Measurement of Apparent Alveolar Septal Wall Thickness with Hyperpolarized ¹²⁹Xe MRI,

Kai Ruppert, Faraz Amzajerjian, Yi Xin, Hooman Hamedani, Luis Loza, Tahmina Achekzai, Ian F. Duncan, Harrilla Profka, Yiwen Qian, Mehrdad Pourfathi, Stephen Kadlecsek, and Rahim R. Rizi.....3027

Published online 18 June 2020

Investigating the Accuracy and Precision of TE-Dependent Versus Multi-Echo QSM Using Laplacian-Based Methods at 3 T,

Emma Biondetti, Anita Karsa, David L. Thomas, and Karin Shmueli3040

Published online 3 June 2020

Advancing Machine Learning for MR Image Reconstruction with an Open Competition: Overview of the 2019 FastMRI Challenge,

Florian Knöll, Tullie Murrell, Anuroop Sriram, Nafissa Yakubova, Jure Zbontar, Michael Rabbat, Aaron Defazio, Matthew J. Muckley, Daniel K. Sodickson, C. Lawrence Zitnick, and Michael P. Recht.....3054

Published online 7 June 2020

CONTENTS

Whole-Heart, Ungated, Free-Breathing, Cardiac-Phase-Resolved Myocardial Perfusion MRI by Using Continuous Radial Interleaved Simultaneous Multi-Slice Acquisitions at spoiled Steady-State (CRIMP), Ye Tian, Jason Mendes, Brent Wilson, Alexander Ross, Ravi Ranjan, Edward DiBella, and Ganesh Adluru3071
Published online 3 June 2020

Free Breathing Lung T₁ Mapping Using Image Registration in Patients with Idiopathic Pulmonary Fibrosis, Laura C. Saunders, James A. Eaden, Stephen M. Bianchi, Andrew J. Swift, and Jim M. Wild.....3088
Published online 17 June 2020

Combined Simultaneous Multislice bSSFP and Compressed Sensing for First-Pass Myocardial Perfusion at 1.5 T with High Spatial Resolution and Coverage, Sarah McElroy, Giulio Ferrazzi, Muhummad Sohaib Nazir, Karl P. Kunze, Radhouene Neji, Peter Speier, Daniel Stäb, Christoph Forman, Reza Razavi, Amedeo Chiribiri, and Sébastien Roujol3103
Published online 12 June 2020

Minimizing the Echo Time in Diffusion Imaging Using Spiral Readouts and a Head Gradient System, Bertram Jakob Wilm, Franciszek Hennel, Manuela Barbara Roesler, Markus Weiger, and Klaas Paul Pruessmann3117
Published online 23 June 2020

Comparison of BOLD and CBV using 3D EPI and 3D GRASE for Cortical Layer Functional MRI at 7 T, Alexander J. S. Beckett, Tetiana Dadakova, Jennifer Townsend, Laurentius Huber, Suhyung Park, and David A. Feinberg3128
Published online 18 June 2020

Reproducibility and Repeatability of MRI-Based Body Composition Analysis, Magnus Borga, André Ahlgren, Thobias Romu, Per Widholm, Olof Dahlqvist Leinhard, and Janne West3146
Published online 10 June 2020

Macromolecular Proton Fraction Mapping Based on Spin-Lock Magnetic Resonance Imaging, Jian Hou, Vincent Wai-Sun Wong, Baiyan Jiang, Yi-Xiang Wang, Grace Lai-Hung Wong, Anthony Wing-Hung Chan, Winnie Chiu-Wing Chu, and Weitian Chen3157
Published online 6 July 2020

Self-Supervised Learning of Physics-Guided Reconstruction Neural Networks Without Fully Sampled Reference Data, Burhaneddin Yaman, Seyed Amir Hossein Hosseini, Steen Moeller, Jutta Ellermann, Kâmil Uğurbil, and Mehmet Akçakaya.....3172
Published online 2 July 2020

Fast Chemical Exchange Saturation Transfer Imaging Based on PROPELLER Acquisition and Deep Neural Network Reconstruction, Chenlu Guo, Jian Wu, Jens T. Rosenberg, Tangi Roussel, Shuhui Cai, and Congbo Cai3192
Published online 30 June 2020

An Optimized and Highly Repeatable MRI Acquisition and Processing Pipeline for Quantitative Susceptibility Mapping in the Head-and-Neck Region, Anita Karsa, Shonit Punwani, and Karin Shmueli3206
Published online 3 July 2020

Free-Breathing Self-Gated 4D Lung MRI Using Wave-CAIPI, Julian A. J. Richter, Tobias Wech, Andreas M. Weng, Manuel Stich, Stefan Weick, Kathrin Breuer, Thorsten A. Bley, and Herbert Köstler3223
Published online 7 July 2020

A Gradient Optimization Toolbox for General Purpose Time-Optimal MRI Gradient Waveform Design, Michael Loecher, Matthew J. Middione, and Daniel B. Ennis3234
Published online 7 July 2020

Ultrashort Echo Time Quantitative Susceptibility Mapping (UTE-QSM) for Detection of Hemosiderin Deposition in Hemophilic Arthropathy: A Feasibility Study, Hyungseok Jang, Annette von Drygalski, Jonathan Wong, Jenny Y. Zhou, Peter Agüero, Xing Lu, Xin Cheng, Scott T. Ball, Yajun Ma, Eric Y. Chang, and Jiang Du.....3246
Published online 14 July 2020

Fast Whole Brain MR Imaging of Dynamic Susceptibility Contrast Changes in the Cerebrospinal Fluid (cDSC MRI), Di Cao, Ningdong Kang, Jay J. Pillai, Xinyuan Miao, Adrian Paez, Xiang Xu, Jiadi Xu, Xu Li, Qin Qin, Peter C. M. Van Zijl, Peter Barker, and Jun Hua.....3256
Published online 3 July 2020

Quantification of Brain Oxygen Extraction Fraction Using QSM and a Hyperoxic Challenge, Yuhan Ma, Erin L. Mazerolle, Junghun Cho, Hongfu Sun, Yi Wang, and G. Bruce Pike3271
Published online 30 June 2020

Simultaneous Proton Density, T₁, T₂, and Flip-Angle Mapping of the Brain at 7 T Using Multiparametric 3D SSFP Imaging and Parallel-Transmission Universal Pulses, Lisa Leroi, Vincent Gras, Nicolas Boulant, Mathilde Ripart, Emilie Poirion, Mathieu D. Santin, Romain Valabregue, Franck Mauconduit, Lucie Hertz-Pannier, Denis Le Bihan, Ludovic de Rochefort, and Alexandre Vignaud3286
Published online 3 July 2020

CONTENTS

Notes

- ²³Na-T₁ Quantification with Saturation Recovery TrueFISP and Variable Flip Angle GRE at 3T: A Phantom Study**, Ryszard S. Gomolka, Alexander Ciritsis, and Cristina Rossi3300
Published online 16 June 2020

- Inflow Artifact Reduction Using an Adaptive Flip-Angle Navigator Restore Pulse for Late Gadolinium Enhancement of the Left Atrium**, Markus Henningsson and Carl-Johan Carlhäll.....3308
Published online 27 May 2020

- High Spatial Resolution Whole-Neck MR Angiography Using Thin-Slab Stack-Of-Stars Quiescent Interval Slice-Selective Acquisition**, Ioannis Koktzoglou, Rong Huang, Archie L. Ong, Pascale J. Aouad, Matthew T. Walker, and Robert R. Edelman3316
Published online 10 June 2020

- Improved PRF-Based MR Thermometry Using k-Space Energy Spectrum Analysis**, Shenyan Zong, Guofeng Shen, Chang-Sheng Mei, and Bruno Madore3325
Published online 25 June 2020

- Development of a Rotation Phantom for Phase Contrast MRI Sequence Validation and Quality Control**, Alireza Vali, Sebastian Schmitter, Liliana Ma, Sebastian Flassbeck, Simon Schmidt, Michael Markl, and Susanne Schnell3333
Published online 23 June 2020

- High-Sensitivity CEST Mapping Using a Spatiotemporal Correlation-Enhanced Method**, Lin Chen, Suyi Cao, Raymond C. Koehler, Peter C. M. van Zijl, and Jiadi Xu3342
Published online 29 June 2020

■ PRECLINICAL AND CLINICAL IMAGING

Full Paper

- Tensor Image Enhancement and Optimal Multichannel Receiver Combination Analyses for Human Hyperpolarized ¹³C MRSI**, Hsin-Yu Chen, Adam W. Autry, Jeffrey R. Brender, Shun Kishimoto, Murali C. Krishna, Maryam Vareth, Robert A. Bok, Galen D. Reed, Lucas Carvajal, Jeremy W. Gordon, Mark van Criekinge, David E. Korenchan, Albert P. Chen, Duan Xu, Yan Li, Susan M. Chang, John Kurhanewicz, Peder E. Z. Larson, and Daniel B. Vigneron3351
Published online 5 June 2020

■ BIOPHYSICS AND BASIC BIOMEDICAL RESEARCH

Full Paper

- Relaxometric Studies of Erythrocyte Suspensions Infected by *Plasmodium Falciparum*: A Tool for Staging Infection and Testing Anti-Malarial Drugs**, Enza Di Gregorio, Giuseppe Ferrauto, Evelin Schwarzer, Eliana Gianolio, Elena Valente, Daniela Ulliers, Silvio Aime, and Oleksii Skorokhod.....3366
Published online 30 June 2020

■ COMPUTER PROCESSING AND MODELING

Full Papers

- Conditional Safety Margins for Less Conservative Peak Local SAR Assessment: A Probabilistic Approach**, Ettore Flavio Meliadó, Alessandro Sbrizzi, Cornelis A. T. van den Berg, Bart R. Steensma, Peter R. Luijten, and Alexander J. E. Raaijmakers..... 3379
Published online 3 June 2020

- Automated Mitral Valve Vortex Ring Extraction from 4D-Flow MRI**, Corina Kräuter, Ursula Reiter, Clemens Reiter, Volha Nizhnikava, Marc Masana, Albrecht Schmidt, Michael Fuchsjäger, Rudolf Stollberger, and Gert Reiter3396
Published online 18 June 2020

- Slice-Selective Extended Phase Graphs in Gradient-Crushed, Transient-State Free Precession Sequences: An Application to MR Fingerprinting**, Jason Ostenson, David S. Smith, Mark D. Does, and Bruce M. Damon3409
Published online 22 July 2020

- SURE-Based Automatic Parameter Selection for ESPIRiT Calibration**, Siddharth Iyer, Frank Ong, Kawin Setsompop, Mariya Doneva, and Michael Lustig3423
Published online 19 July 2020

- Deblurring for Spiral Real-Time MRI Using Convolutional Neural Networks**, Yongwan Lim, Yannick Bliesener, Shrikanth Narayanan, and Krishna S. Nayak3438
Published online 25 July 2020

■ HARDWARE AND INSTRUMENTATION

Full Papers

- Bent Folded-End Dipole Head Array for Ultrahigh-Field MRI Turns “Dielectric Resonance” from an Enemy to a Friend**, Nikolai I. Avdievich, Georgiy Solomakha, Loreen Ruhm, Jonas Bause, Klaus Scheffler, and Anke Henning3453
Published online 6 July 2020

CONTENTS

Parallel Transmission Medical Implant Safety Testbed: Real-Time Mitigation of RF Induced Tip Heating Using Time-Domain E-Field Sensors,
Lukas Winter, Berk Silemek, Johannes Petzold, Harald Pfeiffer, Werner Hoffmann, Frank Seifert, and Bernd Ittermann3468
Published online 8 July 2020

Eight-Channel Parallel Transmit-Receive System for 7 T MRI with Optically Controlled and Monitored On-Coil Current-Mode RF Amplifiers,
Natalia Gudino, Jacco A. de Zwart, and Jeff H. Duyn.....3494
Published online 14 July 2020

Notes

Improving Radiofrequency Power and Specific Absorption Rate Management with Bumped Transmit Elements in Ultra-High Field MRI,
Alireza Sadeghi-Tarakameh, Gregor Adriany, Gregory J. Metzger, Russell L. Lagore, Steve Jungst, Lance DelaBarre, Pierre-Francois Van de Moortele, Kamil Ugurbil, Ergin Atalar, and Yigitcan Eryaman.....3485
Published online 23 June 2020